Afterschool Math Club Achievers
Afterschool
MATH CLUB
Achievers

Patsy F. Kanter
Alanna Arenivas
Esta T. Elizondo
Shara S. Hammet
Leigh E. Palmer
Pam Wallace

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What is Afterschool Achievers: Math Club?

Afterschool Achievers: Math Club is a complete, easy-to-use afterschool kit packed with a full year of fun, enriching activities aligned with the NCTM standards. Developed by some of the same authors who brought you Summer Success®: Math and the Every Day Counts® family of resources, each grade-level specific kit, K–8, covers all the major math strands through daily 20–30 minute activities that:

• provide meaningful daily practice that will improve students’ confidence and proficiency with number sense, basic operations, algebra, geometry, measurement, mental math, and problem solving;
• engage students through thought-provoking activities that encourage participation and enjoyment in learning math;
• prepare students for testing by offering consistent, yearlong practice across a variety of math strands;
• help students develop an understanding of how different types of math problems are related and solved through basic problem-solving strategies.

Designed for afterschool programs but ideal for any learning environment including Title I, Intervention, Remediation, and Enrichment programs, Afterschool Achievers: Math Club is an engaging, ready-to-use program that will help all students succeed and enjoy math.

What is included in each Afterschool Achievers: Math Club kit?

Compact, affordable, and ready-to-use, each grade-level specific Afterschool Achievers: Math Club kit provides enough materials for up to 18 students including:

• Instructors’ Guide with step-by-step implementation instructions, detailed lessons, and assessment guidelines;
• Student Book copymaster (also available as consumable Student Books);
• Math Jumble activity poster;
• Digit Cards and Coin Cards for Math Jumble activities;
• 36 decks of Math Maze games (cardstock)

Step-by-step instructions and easy-to-follow guidelines for each of the five groups of activities—Pattern Puzzler, Math Maze, Game Time, Math Jumble, and Rule Out Two—make Afterschool Achievers: Math Club a user-friendly resource for ready-to-use activities that will engage students in math.
How are the lessons organized?

Ideal for whole class and small group learning situations, Afterschool Achievers: Math Club provides reinforcement of key math strands through five different types of activities:

- **Pattern Puzzler** provides a variety of activities designed to help students recognize the different patterns that exist in numbers and geometry, and encourage algebraic thinking.
- **Math Maze** is a fast-paced group activity that challenges students' mental math and problem-solving skills as questions and answers move quickly from student to student.
- **Game Time** provides practice in critical thinking, computation, number sense, operations, measurement, and geometry through oral and written games that require the process of elimination to arrive at the correct answer.
- **Math Jumble** helps build students' basic operations and mental-math skills using posters and cards by challenging students to solve problems using only connected numbers.
- **Rule Out Two** offers useful test-taking practice as students rule out incorrect answers to multiple choice problems and explain their reasoning for identifying the correct answers.

Detailed lessons and implementation instructions for each of the five elements are clearly laid out in each Instructor's Guide so you can implement Afterschool Achievers: Math Club right away. References to the Great Source handbook Math to Know (MTK)* are provided for each concept of every lesson so your students can get any extra help they need.

How can I assess my students' progress?

Diagnostic pretests available in the program provide a convenient tool for evaluating students' strengths and weaknesses in math. Guidelines are provided in the Instructor's Guide to help instructors implement specific activities that target students' identified needs for improvement. The included post tests can be used to help judge progress.

Daily assessment tips for evaluating students' performance are provided for each of the five different activities in Afterschool Achievers: Math Club. Assessment cues, such as "Can students name the addends for 12?" at the end of each Instructor's Guide lesson page give you basic guidelines for monitoring students' progress activity by activity.

What kind of preparation do I need to implement the program?

All the planning tools and lessons you need are in the kit.

Flexible enough to be taught in a variety of learning environments by instructors of all levels, Afterschool Achievers: Math Club provides detailed guidelines in each Instructor's Guide so you can get started right away. From introducing the lesson to explaining "Today's Challenge" to assessing students' progress, the Instructor's Guide offers a scripted, efficient lesson plan that is easy to implement and fun for students. Student Book activities, posters, and activity cards are all provided in one convenient kit.

*Math to Know is a mathematics handbook published by Great Source Education Group. For ordering information call 800-289-4490 or visit www.greatsource.com.
What is the best way for me to get started?

To familiarize yourself with the five different types of activities, you may want to read the first week’s activities in the Instructor’s Guide. Then look over the rest of the materials in the kit.

- You may decide to start with Week 1 Activity 1 and work through the activities in order, or give the students some or all of the diagnostic tests to determine their strengths and weaknesses. The diagnostic tests are located on pages 181–190 of the student book. There are five separate two-page tests for the five different mathematics strands—number, operations, geometry, measurement, and algebra. Answers to the tests are found in the Instructor’s Guide, beginning on page 213.

The test items are correlated to the 180 activities in the program. You may decide to pick and choose activities based on specific math strands or concepts.

- Next, remove the Math Jumble activity poster from the kit. Slit the poster along the cut lines indicated on the poster. Insert paper clips and tape the paper clips to the back of the poster. When you do the Math Jumble activities, slide the digit or coin cards under the paper clips to attach them to the poster.

- You will need to punch out the Math Maze cards from the perforated sheets. Each sheet and the individual cards are labeled by week number and activity number. To keep the cards organized in your kit, you may want to bundle together each deck of cards with a rubber band or store them in plastic resealable bags.
Pattern Puzzler

Week 1 • Activity 1

Materials
Student page 1
Penny, nickel

Concepts and Handbook References
Review addition facts. (MTK 40–45)
Solve problems. (MTK 369, 374)
Count mixed change. (MTK 17–19)

Get Started
Discuss the value of the penny and the nickel. For example, ask questions such as, “How much is the penny worth?” “How much is the nickel worth?” (The penny is worth one cent; the nickel is worth five cents.) “How many pennies equal a nickel?” (five)

Next, play “Name Those Coins.” Tell the students there are 5 coins in your pocket that equal 9 cents, and you want them to figure out which coins you have. You might have them work in pairs to try to solve the problem. Allow for different students to share various strategies.

Today’s Challenge
Student page 1 Have students complete the chart on the student page using only pennies and nickels. Allow time for students to share the patterns they find.

Answers for student page 1: 1. The right hand column will read: 1, 2, 3, 4, 5, 2, 3, 4, 5, 6, 3. 2. The numbers count up by ones, then drop down 3 and count up again.

Go Further
Student page 1 Have students answer the question on the student page. Discuss how the chart might change if dimes were included. What would happen and why?

Answers for student page 1: 3. 10 cents. 4. You would need 1 less coin for each amount over 10 cents.

Assessment
Student self-assessment page 1 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Are the students able to add pennies and nickels with ease? Are they able to identify patterns?
Math Maze

Week 1 • Activity 2

Materials
Student page 2
Math Maze cards (Week 1 Activity 2)

Concept and Handbook References
Review addition and subtraction facts.
(MTK 40–45, 54–59)

Get Started
Ask students to brainstorm pairs of numbers that have a sum of 16. List all the pairs. Then ask students to tell the difference for each pair of numbers. Repeat the activity using 15 as the sum.

<table>
<thead>
<tr>
<th>Sum of 16</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 + 6 = 16</td>
<td>10 − 6 = 4</td>
</tr>
<tr>
<td>9 + 7 = 16</td>
<td>9 − 7 = 2</td>
</tr>
<tr>
<td>8 + 8 = 16</td>
<td>8 − 8 = 0</td>
</tr>
</tbody>
</table>

Today’s Challenge
Distribute the 18 Math Maze cards for Week 1. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.

Instructions for playing Math Maze Ask students to look at their cards. Ask one student to read the question that is written on his or her card. Next ask, “Who has the card with the answer to the question just read?” Ask that student to read the answer, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be read should be the answer on the first student’s card.

The correct sequence of questions and answers is shown on page 181.

Student page 2 When the group has finished playing the game, have students open their books and complete the Today’s Challenge activity on page 2 in the student book.

Answers for student page 2: 1. 4 and 4 2. 9 and 5 3. 6 and 5 4. 8 and 2 5. 9 and 8 6. 7 and 3 7. 9 and 3

Go Further
Student page 2 Have students make up a problem for a friend to solve. Have the friend write his or her name.

Answer for student page 2: 8. Check students’ work.

Assessment
Student self-assessment page 2 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students recall addition and subtraction facts?
Materials
Student page 3
Blank paper

Concept and Handbook Reference
Review names and attributes of solid figures.
(MTK 326–329)

Get Started
Remind students that a solid figure is a geometric figure with three dimensions. It differs from a plane figure which is flat. Review names of solid figures. Draw these figures on the board. Ask students to name the figures, and then write the names of the figures.

- Cones
- Rectangular prisms
- Cylinders
- Cubes
- Spheres

As you ask each of five questions, have the students look at their figures and answer the question. Yes answers will score points. Here are the questions to ask:

1. Does your figure have fewer edges than a rectangular prism? If yes, score 10 points.
2. Does your figure roll? If yes, score 5 points.
3. Is your figure a cube? If yes, score 9 points.
4. Does your figure have any square corners? If yes, score 8 points.
5. Can your figure be stacked? If yes, score 15 points.

Have students find their total scores. Determine which student has the highest score. Have that student draw the solid figure on the board and explain how he or she scored the points.

Go Further
Student page 3 Have students solve the riddle and create another riddle for a friend to solve. Have the solver sign his or her name.

Answers for student page 3: 3. Rectangular prism
4. Students’ own riddles will vary.

Assessment
Student self-assessment page 3 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students know the names and attributes of solid figures?

Today’s Challenge
Explain that today you will be playing a game called “Who Wants to be the Top Scorer?” Have each student take a blank sheet of paper and draw any solid figure he or she chooses. Then ask the students to number their papers from 1 to 5.
Materials
Student page 4
Math Jumble activity poster and digit cards

Concept and Handbook Reference
Use mental math for addition facts with sums less than ten. ($MTK$ 40-45)

Background
$3 + 4 = 7$
addend addend sum

Get Started
Begin by brainstorming addition facts with sums less than ten. One student calls out an addend. Another student calls out a second addend. Then a third student gives the fact and tells whether the sum is less than ten. For example, one student calls out 4, the second student calls out 3, and the third student says, “$4 + 3 = 7$; seven is less than ten.” If the sum is ten or greater, the three students try again. Do this until all students have had the opportunity to participate.

Today’s Challenge
Using the 0–9 digit cards, construct the 4 by 4 poster shown. Explain that the object of today’s Math Jumble is to make as many addition facts as possible with sums less than ten.

Fact equations can be made by adding any two adjoining numbers (top to bottom or left to right) on the poster. Numbers on the poster can be used more than once, but the sum must be less than ten. Record some of the facts students make.

Possible examples: $1 + 0 = 0$, $3 + 6 = 9$, $4 + 2 = 6$, and $1 + 2 = 3$

Student page 4 Have students use the Math Jumble on student page 4 to find facts with sums less than ten.

Answers for student page 4:

<table>
<thead>
<tr>
<th>sum of 1</th>
<th>sum of 2</th>
<th>sum of 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0 + 1 = 1$</td>
<td>$0 + 2 = 2$</td>
<td>$3 + 0 = 3$</td>
</tr>
<tr>
<td>$1 + 3 = 4$</td>
<td>$4 + 1 = 5$</td>
<td>$1 + 2 = 3$</td>
</tr>
<tr>
<td>$0 + 4 = 4$</td>
<td>$5 + 0 = 5$</td>
<td>$2 + 4 = 6$</td>
</tr>
<tr>
<td>$3 + 2 = 5$</td>
<td>$3 + 2 = 5$</td>
<td>$3 + 2 = 5$</td>
</tr>
<tr>
<td>sum of 4</td>
<td>sum of 5</td>
<td>sum of 6</td>
</tr>
<tr>
<td>$1 + 6 = 7$</td>
<td>$7 + 1 = 8$</td>
<td>$6 + 3 = 9$</td>
</tr>
<tr>
<td>$3 + 4 = 7$</td>
<td>$5 + 3 = 8$</td>
<td>$3 + 4 = 7$</td>
</tr>
</tbody>
</table>

Go Further
Student page 4 Using the grid on the student page, have each student create a Math Jumble to share with a friend.

Answer for student page 4: Answers will vary. Check students’ work.

Assessment
Student self-assessment page 4 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students add numbers with sums less than ten?
Materials
Student page 5
Blank paper

Concept and Handbook Reference
Review place value to the hundreds place. (MTK 5)

Get Started
Draw a place value chart on the board to show the number 978.

<table>
<thead>
<tr>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>

Point out that the 8 is in the ones place, the 7 is in the tens place, and the 9 is in the hundreds place.

Student page 5 To introduce the activity, work through the first problem on student page 5. Read or ask a student to read the problem. Next explain that when you have a problem and you are given several answers to choose from, it helps if you can “rule out” some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say A (0) is wrong because “Zero is not one of the digits in 286.” (If members of the class do not agree with the volunteer’s response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer’s choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (D). Be sure students understand why D is correct.

Today’s Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.

Then explain how points will be scored in today’s activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

Student page 5 Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.

When all students’ papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 5 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students identify the ones, tens, and hundreds places in 3-digit numbers?
Materials
Student page 6

Concepts and Handbook References
Recognize patterns of adding onto five.
(MTK 374–376)
Add onto numbers greater than 50. (MTK 105)

Background

Get Started
Draw a ten grid on the board and review with the students the facts 5 + 1, 5 + 2, 5 + 3, and 5 + 4. Then draw another full ten grid on the board alongside the first one to show how they can easily add 1, 2, 3, and 4 to 15. Write the two corresponding sets of equations one below the other as shown:

5 + 1 = 6  5 + 2 = 7  5 + 3 = 8  5 + 4 = 9
15 + 1 = 16  15 + 2 = 17  15 + 3 = 18  15 + 4 = 19

Ask the students to look for patterns. Ask “What is the same and what is different?” (Possible answers: the ones digits are all the same for each pair of equations, each equation in the bottom row has a 15 instead of a 5, each answer in the bottom row has a teen number that is 10 more than the answer above it, and so forth.)

Now ask, “If another 10 were added so that we were adding onto 25 for any of the equations, what would happen?” (There would be a 2 in the tens place.) Would the ones change at all? (no)

Today’s Challenge
Student page 6 Have the students complete the activity on the student page. Allow time to discuss the patterns the students find.

Answers for student page 6: 1. 58, 68, 78, 88 2. 49, 59, 69, 79 3. Answers will vary. Possible answers include: the ones digit is the same in each answer; the tens digit goes up by one in each problem.

Go Further
Student page 6 Have students complete the activity on the student page. Allow time to discuss the patterns the students find.

Answers for student page 6: 4. 62, 72, 82 5. 53, 63, 73

Assessment
Student self-assessment page 6 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Are the students able to add onto fives? Are the students able to extend the pattern of adding onto fives with numbers greater than 50?
Math Maze

Week 2 • Activity 7

Materials
Student page 7
Math Maze cards (Week 2 Activity 7)

Concepts and Handbook References
Review subtracting multiples of 10. (MTK 112, 117)
Review subtracting multiples of 100. (MTK 117)

Get Started
Present the following exercises orally to the students.

\[
\begin{align*}
5 - 2 & \quad 5 \text{ tens} - 2 \text{ tens} & \quad 50 - 20 \\
(3) & \quad (3 \text{ tens}) & \quad (30)
\end{align*}
\]

\[
\begin{align*}
9 - 7 & \quad 9 \text{ hundreds} - 7 \text{ hundreds} & \quad 900 - 700 \\
(2) & \quad (2 \text{ hundreds}) & \quad (200)
\end{align*}
\]

These exercises should help students to see how knowing basic subtraction facts can help them subtract multiples of 10 or multiples of 100.

Today’s Challenge
Distribute the 18 Math Maze cards for Week 2. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.

Instructions for playing Math Maze Ask students to look at their cards. Ask one student to read the question that is written on his or her card. Next ask, “Who has the card with the answer to the question just read?” Ask that student to read the answer, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be read should be the answer on the first student’s card.

The correct sequence of questions and answers is shown on page 182.

Student page 7 When the group has finished playing the game, have students open their books and complete the Today’s Challenge activity on page 7 in the student book.

Answers for student page 7: 1–4. Answers will vary. Check students’ work.

Go Further
Student page 7 Have students complete this section on the student page.

Answer for student page 7: 5. 600 and 200

Assessment
Student self-assessment page 7 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students use mental math to subtract multiples of 10 and multiples of 100?
**Materials**
Student page 8
Blank paper (heavyweight if possible) or index cards

**Concepts and Handbook References**
Review adding doubles. (MTK 42)
Review adding doubles plus one. (MTK 43)

**Get Started**
Remind students that knowing how to add “doubles” like $6 + 6$ can help them add “doubles plus one” like $6 + 7$.

$\star \star \star \star \star \quad \star \star \star \star \star \star \star \star \star \star \star \star$

$\star \star \star \star \star \quad \star \star \star \star \star \star \star \star \star \star \star \star$

$6 + 6 = 12 \quad 6 + 7$ is 1 more. $6 + 7 = 13$

Ask for a volunteer to explain how knowing $7 + 7$ can help you know $7 + 8$.

**Today’s Challenge**

**Student page 8** Have students complete student page 8.

**Answers for student page 8:** 1. 10 2. 11 3. 6 4. 7 5. 12 6. 13 7. 16 8. 17 9. 14 10. 15

Go over answers with the whole group or check students’ papers individually.

**Go Further**
Have pairs of students make a set of cards to play the game “Concentration.” Each pair of students will need 20 small pieces of paper or 20 index cards. Have the students use one slip of paper or card to copy the information from each box on student page 8.

**Instructions for playing “Concentration”** Shuffle the cards and lay them facedown in four equal columns. Each player turns over a card. The player with the larger value goes first. Turn the cards over so that all cards are again facedown. The first player turns over two cards. If the cards match (for example, $5 + 5$ and 10), the player keeps the cards and goes again. If the cards do not match, the player turns the cards back over and the other player takes a turn. Play continues until all cards have been taken. The player with more cards at the end of the game wins.

**Assessment**

**Student self-assessment page 8** Have students circle one of the three choices to describe how they feel about this activity.

**Assessment tip** Can students use “doubles” facts to find “doubles plus 1” facts?
Materials
Student page 9
Math Jumble activity poster and digit cards

Concept and Handbook Reference
Add 0 or 1 to any number. (MTK 40–41)

Background

\[ 1 + 2 = 3 \]
addend addend sum

Get Started
Begin by brainstorming addition equations that include 0 or 1 as an addend. One student calls out any number (1, 2, or 3 digits). Another student calls out either 0 or 1. Then a third student adds the first two numbers and gives the sum. For example, one student calls out 42, the second student calls out 1, and the third student says, “42 plus 1 equals 43.” Do this until all students have had the opportunity to participate.

Today’s Challenge
Using the 0–9 digit cards, construct the 4 by 4 poster shown. Explain that the object of today’s Math Jumble is to find strings of numbers that could be used to make addition equations with 0 or 1 as an addend.

Strings of numbers are made by connecting adjoining numbers (top to bottom and/or left to right) on the poster. For example, all of row 2 and the 8 from the third row could be used to form the string 48048, which could be used to make the equation 48 + 0 = 48.

Student page 9 Have students use the Math Jumble on student page 9 to find more strings of numbers. Students score 1 point for each digit used correctly in an equation. Determine which student scored the most points.

Answers for student page 9: 48 + 0 = 48;
1 + 2 = 3; 94 + 0 = 94; 82 + 0 = 82

Go Further
Student page 9 Have students answer the question in the student book.

Answer for student page 9: When you add 0 to any number, you get the same number. Explanations will vary.

Assessment
Student self-assessment page 9 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students understand the effect of adding 0 or 1 to any number?
Materials
Student page 10
Blank paper

Concept and Handbook Reference
Review addition of two-digit numbers with regrouping. (MTK 146–149)

Get Started
Ask a volunteer to explain how to add 54 and 78. Be sure it is clear that the 12 ones must be regrouped as 1 ten and 2 ones.

Student page 10 To introduce the activity, work through the first problem on student page 10. Read or ask a student to read the problem. Next explain that when you have a problem and you are given several answers to choose from, it helps if you can “rule out” some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say D (516 marbles) is wrong because “516 is too large,” or “I know the answer is less than 100 because both numbers are less than 50.” (If members of the class do not agree with the volunteer’s response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer’s choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (C). Be sure students understand why C is correct.

Then explain how points will be scored in today’s activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

Student page 10 Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.

When all students’ papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 10 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students add two-digit numbers with regrouping?

Today’s Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.
Materials
Student page 11
Blue, yellow, and orange markers or crayons

Concept and Handbook Reference
Practice adding onto 6, 7, 8, and 9. (MTK 45)

Background
"Fast Tens" is a strategy to help find sums for facts greater than 10. The idea is to use part of the second addend to make a ten, then easily add on the remainder to find the total. For instance, to find 8 + 5, think of 5 as 2 + 3. Add the 2 onto the 8 to make 10, then add on the 3 to make 13.

\[
\begin{align*}
8 + 5 &= ? \\
(8 + 2) + 3 &= ? \\
10 + 3 &= 13
\end{align*}
\]

Although this is a mental math strategy, using a hundred chart adds a visual dimension to the student’s understanding of the strategy.

Get Started
Draw two rows of a hundred chart on the board. Write the problem 18 + 3 on the board. Remind the students that since adding three is the same as adding two and then adding one, this sum can be found easily. Eighteen plus 2 is 20, and 1 more is 21. Circle the 18 from the hundred chart, then count aloud “one, two” as you shade the next two squares containing the numbers 19 and 20. Emphasize that adding 2 fills the row to 20. Adding the remaining 1 to 20 is easy, and gives the answer 21. Shade one more square on the next row. Circle the 21.

```
11 12 13 14 15 16 17 18 19 20
21 22 23 24 25 26 27 28 29 30
```

The students should be able to see that the three was split into two parts.

Give one or two more examples, using the problems 28 + 3 and 38 + 3.

Today’s Challenge
Student page 11 Have students complete the activity on the student page. Allow time to discuss the patterns the students find.

Answers for student page 11: 1. 24 2. 33 3. 42 4. 54 5. 63 6. 72

Go Further
Student page 11 Have students answer the questions on the student page. Allow time to discuss the patterns the students find.

Answers for student page 11: 7. 25 8. 34 9. 43 10. 55 11. 64 12. 73

Assessment
Student self-assessment page 11 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Are the students using an efficient strategy to solve the problems? Do the students understand the “Fast Ten” strategy?
Materials
Student page 12
Math Maze cards (Week 3 Activity 12)

Concept and Handbook Reference
Use mental math to add a two-digit number and a one-digit number with regrouping. (MTK 106)

Get Started
Have students tell the sums and look for patterns in each group.

- $5 + 7$ (12)
- $6 + 5$ (11)
- $8 + 2$ (10)
- $15 + 7$ (22)
- $26 + 5$ (31)
- $38 + 2$ (40)
- $85 + 7$ (92)
- $46 + 5$ (51)
- $68 + 2$ (70)

Students should notice that the basic fact can help them find the other two sums. In each case, the ones digit is the same as the ones digit from the basic fact. The tens digit is one more than the tens digit in the 2-digit addend.

Today's Challenge
Distribute the 18 Math Maze cards for Week 3. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.

Instructions for playing Math Maze Ask students to look at their cards. Ask one student to read the question that is written on his or her card. Next ask, "Who has the card with the answer to the question just read?" Ask that student to read the answer, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be read should be the answer on the first student's card.

The correct sequence of questions and answers is shown on page 182.

Student page 12 When the group has finished playing the game, have students open their books and complete the Today's Challenge activity on page 12 in the student book.

Answers for student page 12: 1. 13, 43, 53, 93, 63
2. 12, 32, 92, 22, 52
3. 10, 40, 20, 80, 60
4. 18, 38, 48, 68, 58

Go Further
Student page 12 Have students complete this section on the student page.

Answers for student page 12: 5–6. Answers will vary.

Assessment
Student self-assessment page 12 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students add 2-digit and 1-digit numbers mentally?
Materials
Student page 13
Blank paper
Yardstick or ruler (optional)

Concept and Handbook Reference
Review customary units of linear measurement.
(MTK 345–346)

Get Started
Write the following on the board and discuss the units of measurement.
1 inch: about the length from the knuckle on your thumb to the tip of your thumb
1 foot: about the length of your student book
1 yard: about the distance between the doorknob and the floor
  12 inches = 1 foot
  36 inches = 3 feet
  3 feet = 1 yard
If available, use a yardstick to show 1 inch, 1 foot, and 1 yard.

Today's Challenge
Explain that today the class will be playing a game called "Fantastic Finalist." Give each student a piece of paper with a number from 1 through 36.
You do not have to use all the numbers, but be sure that one student receives the number 19, since that number will be the "Fantastic Finalist."

Have all students hold their numbers and stand in a large circle. Explain that the object of the game is to be the "Fantastic Finalist," the last student to remain standing.

Read each of the following challenges, one at a time.
• If your number is equal to the number of inches in 1 foot, 2 feet, or 3 feet, sit down. (12, 24, 36)
• If your number is less than the number of inches in 1 foot, sit down. (1–11)
• If your number is greater than the number of inches in 2 feet, sit down. (25–35)
• If your number is less than the number of inches in 1 1/2 feet, sit down. (13–17)
• If your number is even, sit down. (18, 20, 22)
• If your number is greater than the total number of inches in 1 foot 8 inches, sit down. (21, 23)

At this point, only the student holding the number 19 should still be standing. That student is the "Fantastic Finalist."

Go Further
Student page 13 Have students complete the activity on the student page.

Answers for student page 13: 1. 12 inches
2. Possible answers: 3 feet, 1 yard

Assessment
Student self-assessment page 13 Have students circle one of the three choices to describe how they feel about this activity.
Assessment tip Do students understand units of linear measurement?
Materials
Student page 14
Math Jumble activity poster and digit cards

Concept and Handbook Reference
Use doubles and doubles plus one as strategies for addition. (MTK 42–43)

Background
6 + 6 = 12
double
6 + 7 = 13
doubles plus one

Get Started
Practice adding doubles. One student calls out an addend. Another student mentally adds that same number to itself and gives the sum. For example, one student calls out 4, the second student calls out 4 + 4 = 8. Do this until all students have had the opportunity to participate.

Next, have the students practice adding doubles plus one. One student calls out an addend. Another student mentally adds the number one greater to that number and gives the sum. For example, one student calls out 4 and the second student calls out 4 + 5 = 9.

Today’s Challenge
Using the 0–9 digit cards, construct the 4 by 4 poster shown. Explain that the object of today’s Math Jumble is to find doubles and doubles plus one pairs. Record a few pairs students find.

Possible Examples: 7 + 7 = 14 and 8 + 7 = 15

Student page 14 Have students use the Math Jumble on student page 14 to find doubles and doubles plus one pairs.

Possible answers for student page 14: 1-5.

<table>
<thead>
<tr>
<th>doubles facts</th>
<th>doubles plus one facts</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 + 2 = 4</td>
<td>3 + 2 = 5</td>
</tr>
<tr>
<td>3 + 3 = 6</td>
<td>3 + 4 = 7</td>
</tr>
<tr>
<td>4 + 4 = 8</td>
<td>4 + 5 = 9</td>
</tr>
<tr>
<td>5 + 5 = 10</td>
<td>5 + 6 = 11</td>
</tr>
<tr>
<td>6 + 6 = 12</td>
<td>6 + 7 = 13</td>
</tr>
<tr>
<td>7 + 7 = 14</td>
<td>8 + 7 = 15</td>
</tr>
</tbody>
</table>

Go Further
Student page 14 Have students answer the question on the student page.

Answer for student page 14: 6. Answers will vary. When I add doubles plus one, I think of the doubles fact and then add one to the sum.

Assessment
Student self-assessment page 14 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students add doubles and doubles plus one mentally?
Materials
Student page 15
Blank paper

Concept and Handbook Reference
Review definitions of rectangles and squares.
(MTK 312–313)

Get Started
Ask for a volunteer to draw a picture of a rectangle. Talk about what makes the figure a rectangle. (It has four sides and four square corners.) Have other students draw additional rectangles. Then ask for a volunteer to draw a picture of a square. Talk about what makes this figure a square. (It has four sides, four square corners, and all its sides have the same length.) Have other students draw additional squares. Then ask students to look around the room and find figures that have the shape of a square or a rectangle. Make a list of figures students find.

Student page 15 To introduce the activity, work through the first problem on student page 15. Read or ask a student to read the problem. Next explain that when you have a problem and you are given several answers to choose from, it helps if you can "rule out" some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say C is wrong because "C shows a circle, which does not have four sides." (If members of the class do not agree with the volunteer's response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer's choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (B). Be sure students understand why B is correct.

Today's Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.

Then explain how points will be scored in today's activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

Student page 15 Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary. Be sure students understand that all squares are rectangles because they all have four sides and four square corners. Squares are just special rectangles.

Answers for student page 15: 1. A 2. C

When all students' papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 15 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students draw and recognize rectangles and squares?
Materials
Student page 16

Concepts and Handbook References
Add two-digit numbers. (MTK 146-147)
Recognize the relationship between adding one- and two-digit numbers. (MTK 105)

Background
Seeing a pattern repeated helps to clarify a concept. Comparing two-digit addition to one-digit addition reveals useful similarities.

Get Started
Remind the children that they can easily add 15 + 1, 15 + 2, and 15 + 3. Write the problems, with answers, in a row across the board as shown.

15 + 1 = 16  15 + 2 = 17  15 + 3 = 18

Ask the students to point out patterns. (These may include: each problem starts with 15; each time a greater number is added on; each time the answer is greater by one; the ones digit is the only one that changes; the tens digit stays the same.) Suggest that they can use this knowledge to find answers to problems that look harder. Write a second, corresponding set of equations below the first:

15 + 1 = 16  15 + 2 = 17  15 + 3 = 18
15 + 11 = 26  15 + 12 = 27  15 + 13 = 28

Ask the students to find ways that the second row is the same as or different from the first row. The more observations the students can find, the better. (These may include some of the same as above, but should also include some new ones: the numbers in the second row are all two-digit numbers; the ones digits in the problems are the same in top and bottom rows; the ones digits in the answers are the same in the top and bottom rows; the tens digits in the second row answers are all twos).

Repeat this exercise, one row at a time, with the problems below:

23 + 2 = 25  23 + 3 = 26  23 + 4 = 27
23 + 12 = 35  23 + 13 = 36  23 + 14 = 37

Work with the students to compare the rows and find patterns. (The patterns will be the same as above.)

Today's Challenge
Student page 16 Have the students complete the activity on the student page. Allow time to discuss the patterns the students find.

Answers for student page 16: 1. 25, 26, 27  2. 38, 39  3. 47, 48, 49  4. 58, 59  5. 87, 88, 89  6. 45, 46, 47  7. 85, 86, 87

Go Further
Student page 16 Have the students complete the chart on the student page. Allow time to discuss the patterns the students find.

Answers for student page 16: 8. 258, 259  9. 267, 268, 269  10. 634, 635, 636  11. 644, 645, 646

Assessment
Student self-assessment page 16 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Are the students able to use patterns to add two-digit numbers?
Materials
Student page 17
Math Maze cards (Week 4 Activity 17)

Concept and Handbook References
Review linear measurement and time.
(MTK 334-335, 341-344, 345-347)

Get Started
Write the following on the board. Ask for volunteers to supply the missing numbers.
1 foot = ___ inches (12)
1 yard = ___ feet (3)
1 hour = ___ minutes (60)
1 meter = ___ centimeters (100)
1 meter = ___ decimeters (10)
1 day = ___ hours (24)
Leave these on the board while students are completing today's activity.

Today's Challenge
Distribute the 18 Math Maze cards for Week 4. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.

Instructions for playing Math Maze Ask students to look at their cards. Ask one student to read the question that is written on his or her card. Next ask, "Who has the card with the answer to the question just read?" Ask that student to read the answer, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be read should be the answer on the first student's card.

The correct sequence of questions and answers is shown on page 183.

Student page 17 When the group has finished playing the game, have students open their books and complete the Today's Challenge activity on page 17 in the student book.

Answers for student page 17: 1. 10; 2. 12; 12
3. 100; 60 4. 30; 30 or 31 5. 3; 36 6. ruler; clock
7. 24; 24 8. 365; 5280

Go Further
Student page 17 Have students complete this section on the student page.

Answer for student page 17: 9. Responses will vary. Possible responses: I could measure my height using inches and then using centimeters. I could measure the length of the chalkboard by using a ruler or by using a tape measure. I could measure a minute using a clock or a kitchen timer.

Assessment
Student self-assessment page 17 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students understand units and tools used for measuring length and time?
Materials
Student page 18
Blank paper

Concepts and Handbook References
Understand odd and even numbers. (MTK 91)
Understand the concepts of greater than and less than. (MTK 12)

Background
An even number is a whole number that is divisible by 2. An odd number is a whole number that is not divisible by 2.

Get Started
Write the numbers 0 through 10 on the board and illustrate each number as shown below.

1 2 3 4 5 6 7 8 9 10

Ask students, “Which of these numbers are even?” (2, 4, 6, 8, 10) “Which of these numbers are odd?” (1, 3, 5, 7, 9) “What can you say about each set of dots that shows an even number?” (The dots are all paired with none left over.) “What can you say about each set of dots that shows an odd number?” (There is always one dot that is not part of a pair.)

Today’s Challenge
Write the numbers 1 through 30 on separate sheets of scrap paper. Explain that today the class will be playing a game called “Fantastic Finalist.” Give each student a piece of paper with one of the numbers. You do not have to use all the numbers, but be sure that one student receives the number 10, since that number will be the “Fantastic Finalist.”

Have all students hold their numbers and stand in a large circle. Explain that the object of the game is to be the “Fantastic Finalist,” the last student to remain standing.

Read each of the following challenges, one at a time.
• If your number is an even number greater than 15, sit down. (16, 18, 20, 22, 24, 26, 28, 30)
• If your number is an odd number less than 15, sit down. (1, 3, 5, 7, 9, 11, 13)
• If your number is an even number less than 10, sit down. (2, 4, 6, 8)
• If your number is an odd number greater than 24, sit down. (25, 27, 29)
• If your number is an even number greater than 11, sit down. (12, 14)
• If your number is an odd number less than 25, sit down. (15, 17, 19, 21, 23)

At this point, only the student holding the number 10 should still be standing. That student is the “Fantastic Finalist.”

Go Further
Student page 18 Have students complete the activity on the student page.

Answers for student page 18: 1. 37 2. Answers will vary. Possible answer: 16 is an even number. 16 is less than 18. 16 is greater than 14.

Assessment
Student self-assessment page 18 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Do students understand odd and even? Do they understand greater than and less than?
**Materials**
Student page 19
Math Jumble activity poster and digit cards

**Concept and Handbook Reference**
Use 10 plus a number as a strategy for addition. (MTK 45)

**Background**
In this activity students will practice basic addition facts by restating equations as 10 plus a number. These are known as “Fast Tens.” For example, when practicing a fact, a student could think of $8 + 6$ as the same as $8$ plus $2$ more to make $10$. Then, $10$ plus $4$ more equals $14$. Therefore, $8 + 6$ is the same as $10 + 4$, which equals $14$.

**Get Started**
Practice finding sums of ten. One student calls out an addend. Another student adds a second number to make a sum of $10$. For example, one student calls out $6$, the second student calls out $6 + 4 = 10$. Do this until all students have had the opportunity to participate.

**Today’s Challenge**
Using the 0–9 digit cards, construct the $4$ by $4$ poster shown. Explain that the object of today’s Math Jumble is to make basic addition facts, then use the “Fast Tens” strategy.

```
  7 4 6 6
  5 4 8 5
  8 7 9 8
  8 5 2 3
```

Explain to students that they will choose two adjoining numbers to begin an equation. The digits chosen must be adjacent. The two numbers must add to $10$ or more. Ask students to state the problem and then restate it as $10$ plus a number. For example, “I see $7$ and $4$. I think of $7 + 4$ as the same as $10 + 1$, which equals $11$.” Continue with other examples.

**Possible examples:** $6 + 8 = 10 + 4 = 14$ and $8 + 5 = 10 + 3 = 13$

**Student page 19** Have students use the Math Jumble on student page 19 to make a basic fact and then restate it as a “Fast Ten”.

**Possible Answers for student page 19: 1–5.**
$4 + 6$ is the same as $10 + 0$, which equals $10$
$6 + 6$ is the same as $10 + 2$, which equals $12$
$7 + 5$ is the same as $10 + 2$, which equals $12$
$6 + 8$ is the same as $10 + 4$, which equals $14$
$6 + 5$ is the same as $10 + 1$, which equals $11$
$4 + 8$ is the same as $10 + 2$, which equals $12$
$8 + 5$ is the same as $10 + 3$, which equals $13$
$4 + 7$ is the same as $10 + 1$, which equals $11$
$8 + 9$ is the same as $10 + 7$, which equals $17$
$8 + 7$ is the same as $10 + 5$, which equals $15$
$7 + 9$ is the same as $10 + 6$, which equals $16$
$8 + 8$ is the same as $10 + 6$, which equals $16$
$9 + 2$ is the same as $10 + 1$, which equals $11$
$8 + 3$ is the same as $10 + 1$, which equals $11$

**Go Further**
**Student page 19** Have students answer the question on the student page.

**Answer for student page 19: 6.** Answers will vary.
Possible answer: I can increase the larger number of the equation to ten and then add what is left of the other number after I have taken away from it to make a ten.

**Assessment**
**Student self-assessment page 19** Have students circle one of the three choices to describe how they feel about this activity.

**Assessment tips** Can students break down a fact to create a “Fast Ten?” Can students verbalize mental math strategies?
Materials
Student page 4
Blank paper

Concept and Handbook Reference
Review measurement tools. (MTK 332)

Get Started
Ask students to brainstorm different tools used to make measurements. Make a list of the tools and talk about what these tools could be used to measure. Possible tools might include a foot ruler, a meter stick, a tape measure, a scale, a thermometer, a clock, a stopwatch, a cup, a teaspoon, and so on.

Student page 20 To introduce the activity, work through the first problem on student page 20. Read or ask a student to read the problem. Next explain that when you have a problem and you are given several answers to choose from, it helps if you can “rule out” some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say A (the thermometer) is wrong because “A thermometer is used to measure temperature, not weight.” (If members of the class do not agree with the volunteer’s response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer’s choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (C). Be sure students understand why C is correct.

Today’s Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.

Then explain how points will be scored in today’s activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

Student page 20 Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.


When all students’ papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 20 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Are students able to select the correct measurement tool for a given situation?
**Materials**
Student page 21

**Concepts and Handbook References**
Recognize patterns of adding or subtracting fives. \((MTK\ 374)\)
Count backward by fives. \((MTK\ 52)\)

**Background**
In the game “Beep” players count by ones from any given starting number, often beginning with the number one. The count passes around the room with each player speaking the next number, but substituting the word “Beep” or the word “Honk” for certain number words according to the rules of the day.

**Get Started**
Play “Beep” with your students. In today’s version, the players are required to say “Beep” in place of the number name when the count reaches five more than the beginning number. For example, if the first person starts with the number 23, the next 4 students would say “24, 25, 26, 27,” and the fifth student would say “Beep” because 28 is 5 more than 23. In today’s game, the count continues until the number that is 5 more than the first Beep is reached, when the number name is again replaced with word “Beep”. Continue the count with a “Beep” on every fifth number. In this example the next 4 players would say “29, 30, 31, 32,” and then the fifth player would say, “Beep” because 33 is 5 more than 28.

During each game, write on the board all the numbers that are “Beeps.” After one or two rounds students should discover that the numbers in the ones place form an ABAB pattern.

\[
\begin{align*}
23, 28, 33, 38, 43, \ldots
\end{align*}
\]

Once the students are comfortable playing, try counting backwards. If they need an extra challenge try to speed up the counting.

**Today’s Challenge**
**Student page 21** Have students complete the activity on the student page. Allow time to discuss the patterns the students find.

**Answers for student page 21:**
1. 22, 32, 37
2. 28, 33, 38
3. 37, 57, 62
4. 68, 63, 58
5. 67, 57, 52

**Go Further**
**Student page 21** Have students complete the activity on the student page.

**Answers for student page 21:**
6. 394, 404, 409, 419, 7, 201, 196, 186

**Assessment**
**Student self-assessment page 21** Have students circle one of the three choices to describe how they feel about this activity.

**Assessment tip** Are the students using the pattern in the ones place to skip-count easily?

---

**Beep**
For adding 5 starting with 23:

- 23
- 24 -
- 25 -
- 26 -
- 27 -
- 28 Beep!
- 29 -
- 30 -
- 31 -
- 32 -
- 33 Beep!
- 34 -
- 35 -
- And so on...
Materials
Student page 22
Math Maze cards (Week 5 Activity 22)

Concept and Handbook References
Review mathematical vocabulary and symbols. (MTK 442, 471)

Get Started
Ask students to tell:
- a word to describe what you do when you see this sign: + (add)
- a few words to tell what this symbol means: < (is less than)
- a few words to tell what this symbol means: > (is greater than)
- a word to describe what you do when you see this sign: − (subtract)

Today’s Challenge
Distribute the 18 Math Maze cards for Week 5. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.

Instructions for playing Math Maze Ask students to look at their cards. Ask one student to read the question that is written on his or her card. Next ask, “Who has the card with the answer to the question just read?” Ask that student to read the answer or write the symbol on the board, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be read should be the answer on the first student’s card.

The correct sequence of questions and answers is shown on page 184.

Student page 22 When the group has finished playing the game, have students open their books and complete the Today’s Challenge activity on page 22 in the student book.

Answers for student page 22: 1. e 2. h 3. d 4. j 5. c 6. b 7. f 8. i 9. a 10. g

Go Further
Student page 22 Have students complete this section on the student page.

Answer for student page 22: 11. Responses will vary. Possible response: The point of the symbol always points to the smaller number.

Assessment
Student self-assessment page 22 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students use the math vocabulary and symbols correctly?
Materials
Student page 23
Blank paper (heavyweight if possible) or index cards

Concepts and Handbook References
Understand multiplication as equal groups. (MTK 60)
Understand multiplication as repeated addition. (MTK 65)

Background
“Repeated addition” is the name given to addition when all addends are the same. Multiplication is a shortcut for repeated addition.

Get Started
Draw the following on the board.

\[
\begin{align*}
\bullet & \bullet \\
\bullet & \bullet \\
\bullet & \bullet
\end{align*}
\]

3 equal groups of 4 is 12.

\[
4 + 4 + 4 = 12 \quad 3 \times 4 = 12
\]

Answers for student page 23: 1. 3 \times 2
2. 4 + 4 + 4; 12
3. 2 + 2 + 2 + 2; 4 \times 2; 8
Go over answers with the whole group or check students’ papers individually.

Go Further
Have pairs of students make a set of cards to play the game “Concentration.” Each pair of students will need 12 small pieces of paper or 12 index cards. Have the students use one slip of paper or card to copy the information from each box on student page 23.

Instructions for playing “Concentration” Shuffle the cards and lay them facedown in equal columns. Each player turns over a card. The player with the higher value goes first. Turn the cards over so that all cards are again facedown. The first player turns over two cards. If the cards match (represent the same number), the player keeps the cards and goes again. If the cards do not match, the player turns the cards back over and the other player takes a turn. Play continues until all cards have been taken. The player with more cards at the end of the game wins.

Assessment
Student self-assessment page 23 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Do students understand the concept of multiplication as joining equal groups? Do they see that this is the same as repeated addition?
Materials
Student page 24
Math Jumble activity poster and digit cards

Concepts and Handbook References
Use mental math to add 10 to any number. (MTK 105)
Think of adding 9 to a number as adding 10 – 1. (MTK 110)

Get Started
Practice adding 10 mentally. One student calls out an addend. Another student adds 10 to the number mentally and gives the sum. For example, one student calls out "4," the second student calls out "4 + 10 = 14." Do this until all students have had the opportunity to participate.

Today’s Challenge
Using the 0–9 digit cards, construct the 4 by 4 poster shown. Explain that the object of today’s Math Jumble is to make numbers between 30 and 80, and then add 10 and 9 to those numbers.

Ask for volunteers to write a few examples on the board.

Possible examples: 43 + 10 = 53, 43 + 9 = 52; 41 + 10 = 51, 41 + 9 = 50

Student page 24 Have students use the Math Jumble on student page 24 to find numbers between 30 and 80, then add 10 and 9.

Answers for student page 24: 1–10. Answers will vary.

Go Further
Student page 24 Have students answer the question on the student page.

Answer for student page 24: 11. Answers will vary. Students may indicate that adding 9 to a number is like adding 10 then subtracting 1.

Assessment
Student self-assessment page 24 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students add 9 or 10 to a number mentally?
Materials
Student page 25
Blank paper

Concept and Handbook Reference
Practice reading a bar graph. (MTK 273)

Get Started
Student page 25 Have students look at the graph on page 25 of the student book. Ask volunteers to tell information that they see on the graph. Then, to introduce the activity, work through the first problem on student page 25. Read or ask a student to read the problem. Next explain that when you have a problem and you are given several answers to choose from, it helps if you can “rule out” some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say A (50) is wrong because “The bars cannot even go up to 50.” (If members of the class do not agree with the volunteer’s response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer’s choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (D). Be sure students understand why D is correct.

Student page 25 Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.


When all students’ papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 25 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students read information from a bar graph?

Today's Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.

Then explain how points will be scored in today’s activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.
Materials
Student page 26

Concept and Handbook Reference
Add on tens to one- and two-digit numbers.
(MTK 105)

Get Started
Discuss with the students ways to find the sum of 3 and 10. Have someone who “just knows” the answer explain why adding ten is easy. Have the students look at the hundred chart in their books on student page 26. Discuss the relationship between the starting number, 3, and the sum, 13. (Thirteen is just below three on the hundred chart.) Ask the students to find several more sums building on this answer: 13 +10, 23 +10, 33 + 10, 43 +10, etc. Then move on to a new series, such as 6 + 10, 16 +10, 26 +10, and 36 +10. Make sure the students notice how the tens digit is the only one that changes. See if they can make the connection between that and the change in rows on the hundred chart.

Today’s Challenge
Student page 26 Have the students complete the activity on the student page. Allow time to discuss the patterns the students find.

Answers for student page 26: 1. 24, 34, 44, 54
2. 57, 67, 67, 87 3. 51, 61, 71, 81

Go Further
Student page 26 Have the students answer the questions on the student page.

Answers for student page 26: 4. Adding 20 is like adding 10 because only the tens digit changes.
5. Adding 20 is different because the tens digit goes up by two instead of one.

Assessment
Student self-assessment page 26 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do the students recognize that the ones digit is unchanged when adding on ten?
Math Maze

Week 6 • Activity 27

Materials
Student page 27
Math Maze cards (Week 6 Activity 27)

Concepts and Handbook References
Find the perimeter of any polygon. (MTK 348–349)
Find the area of a rectangle. (MTK 352–353)

Background
The perimeter is the distance around a 2-dimensional figure. The area is the number of square units needed to cover a figure.

Get Started
Review perimeter and area by asking students to find the perimeter and area of this rectangle.

```
+---+---+---+---+
|   |   |   |   |
+---+---+---+---+
|   |   |   |   |
+---+---+---+---+
|   |   |   |   |
+---+---+---+---+
|   |   |   |   |
```

4 units
3 units

The perimeter, the distance around the outside of the figure, is 14 units.
The area, the number of square units needed to cover the figure, is 12 square units.

Today's Challenge
Distribute the 18 Math Maze cards for Week 6. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.

Instructions for playing Math Maze
Ask students to look at their cards. Ask one student to read the question that is written on his or her card. Next ask, “Who has a card with a figure that matches the description?” Ask that student to describe or draw the figure on the board, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be given should be the answer on the first student’s card.

The correct sequence of questions and answers is shown on page 185.

Student page 27 When the group has finished playing the game, have students open their books and complete the Today’s Challenge activity on page 27 in the student book.

Answers for student page 27: 1. e  2. b  3. f  4. a  5. c

Go Further
Student page 27 Have students complete this section on the student page.

Answers for student page 27: 6. a 3 by 4 rectangle  7. a 2 by 5 rectangle. Check students’ drawings.

Assessment
Student self-assessment page 27 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students know how to find perimeter and area?
Materials
Student page 28
Blank paper

Concept and Handbook Reference
Review line symmetry. (MTK 322)

Get Started
Explain that when a figure has a line of symmetry, if you fold the figure on the line, the two halves match. Demonstrate this using a piece of paper with the letter M written on it.

![M](image)

Use the letters B, H, and P to show that a figure may have one line of symmetry, more than one line of symmetry, or no line of symmetry.

B H P

Today's Challenge
Explain that today the class will be playing a game called "Fantastic Finalist." Give each student a piece of paper with one of the letters of the alphabet. Draw the letters as shown below.

A B C D E F G H I J K L M
N O P Q R S T U V W X Y Z

You do not have to use all the letters of the alphabet, but be sure that one student receives the letter X, since that letter will be the "Fantastic Finalist."

Have all students hold their letters and stand in a large circle. Explain that the object of the game is to be the "Fantastic Finalist," the last student to remain standing.

Read each of the following challenges, one at a time.
- If your letter is in the word LINE, sit down. (L, I, N, E)
- If your letter has exactly 1 line of symmetry, sit down. (A, B, C, D, K, M, T, U, V, W, Y)
- If your letter is the fifteenth letter of the alphabet, sit down. (O)
- If your letter is in the word SYMMETRY, sit down. (S, R)
- If your letter has no line of symmetry, sit down. (F, G, J, P, Q, Z)
- If your letter is the eighth letter in the alphabet, sit down. (H)

At this point, only the student holding the letter X should still be standing. That student is the "Fantastic Finalist."

Go Further
Student page 28 Have students complete the activity on the student page.

Answers for student page 28: 1. A 2. Answers will vary. Possible answer: 3; AMY

Assessment
Student self-assessment page 28 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students understand how to tell if a figure has a line of symmetry?
Materials
Student page 29
Math Jumble activity poster and digit cards

Concept and Handbook Reference
Add one to even and odd numbers. (MTK 91)

Background
Draw on students’ experiences of even and odd numbers in the real world to make his activity meaningful to students. For example, “I found three socks in the dryer. This made one pair and one extra.”

Get Started
Begin this activity by having students illustrate the even number 2. Have two students stand side by side for the class. Ask for volunteers to give examples of things that come in twos. Examples may be a pair of eyes, shoes, or wheels on a bicycle.

Now ask for a third student to stand next to the initial pair of students. Ask for volunteers to share their observations of what has now occurred when 1 is added to 2. Ask students to share an equation or a story.

Continue adding one more student to the line up, asking for equations and explanations of what is occurring as we add one more to odd and even numbers.

Today’s Challenge
Using the 0–9 digit cards, construct the 4 by 4 poster shown. Explain that the object of today’s Math Jumble is to make even and odd numbers between 10 and 80, and then add 1 to the numbers.

Ask for volunteers to write a few examples on the board.

Possible examples: (even number) 96 + 1 = 97, 26 + 1 = 27; (odd number) 79 + 1 = 80, 37 + 1 = 38

4 3 5 2
1 7 9 6
2 4 6 5
3 8 1 7

Student page 29 Have students use the Math Jumble on student page 29 to find numbers between 10 and 80.

Answers for student page 29: 1–4. Answers will vary.

Go Further
Student page 29 Have students answer the question on the student page.

Answer for student page 29: 5. Answers will vary. Students may indicate that adding 1 to an even number results in an odd sum and adding 1 to an odd number results in an even sum.

Assessment
Student self-assessment page 29 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students understand even and odd numbers?
Materials
Student page 30
Yardstick (if available)
Blank paper

Concept and Handbook Reference
Use a table to solve problems. (MTK 268)

Get Started
Student page 30 Have the students look at the table on page 30 of their books. Ask for volunteers to tell information that can be found in the table. Discuss the fact that 36 inches, 3 feet, and 1 yard are equivalent. Use a yardstick if one is available. Then to introduce the activity, work through the first problem on student page 30. Read or ask a student to read the problem. Next explain that when you have a problem and you are given several answers to choose from, it helps if you can “rule out” some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say B (2 in.) is wrong because “An inch and a yard are not the same.” (If members of the class do not agree with the volunteer’s response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer’s choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (D). Be sure students understand why D is correct.

Today’s Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.

Then explain how points will be scored in today’s activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

Student page 30 Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.

Answers for student page 30: 1. D 2. C
When all students’ papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 30 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students use a table to solve a word problem?
Materials
Student page 31

Concept and Handbook Reference
Add nine to one- and two-digit numbers. (MTK 110)

Background
"Fast Tens" is a strategy to help find sums for facts greater than 10. The idea is to use part of the smaller addend to make a ten, then easily add on the remainder to find the total. For instance, to find 9 + 5, think of 5 as 4 + 1. Add the 1 onto the 9 to make 10, then add on the remaining 4 to make 14.

Think: 5 = 1 + 4

To find 9 + 5
9 + 1 = 10
plus 4 more = 14

Get Started
Write these problems in pairs across the board and discuss with the students ways to find the answers.

\[
\begin{align*}
3 + 9 &= & 13 + 9 &= & 23 + 9 &= \\
2 + 10 &= & 12 + 10 &= & 22 + 10 &= 
\end{align*}
\]

For each pair, the answers are the same. If any of the students can explain why, encourage them to do so. (The number added to the ten is one less than the number added to the nine, but ten is one more than nine so the answer is the same.) Then see if the class can come up with an adding ten problem to pair with each of the following adding nine problems: 4 + 9, 14 + 9, 9 + 7, and 9 + 17. When the correct pairs have been made the board will have these equations:

\[
\begin{align*}
4 + 9 &= 13 & 14 + 9 &= 23 \\
3 + 10 &= 13 & 13 + 10 &= 23 \\
9 + 7 &= 16 & 9 + 17 &= 26 \\
10 + 6 &= 16 & 10 + 16 &= 26 
\end{align*}
\]

Work slowly to allow students to discover the connection, and allow discussion as students find new ways to describe what they are seeing.

Today's Challenge
Student page 31 Have the students complete the charts on the student page.

Answers for student page 31: 1. 12  2. 14  3. 7, 17  4. 22  5. 24  6. 7, 27

Go Further
Student page 31 Have the students complete the charts on the student page. Allow time to discuss the patterns the students find.

Answers for student page 31: 7. 12, 32  8. 17, 37

Assessment
Student self-assessment page 31 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Are the students able to add nine onto one- and two-digit numbers?
Materials
Student page 32
Math Maze cards (Week 7 Activity 32)

Concept and Handbook Reference
Review coins. (MTK 17-19).

Get Started
Have students brainstorm the names of coins. Then for each coin, ask the value of the coin and the number of that kind of coin that makes a dollar. For example, a nickel is worth 5 cents and 20 nickels make a dollar.

| 1 penny = 1¢ | 100 pennies = $1.00 |
| 1 nickel = 5¢ | 20 nickels = $1.00 |
| 1 dime = 10¢ | 10 dimes = $1.00 |
| 1 quarter = 25¢ | 4 quarters = $1.00 |

The correct sequence of questions and answers is shown on page 186.

Student page 32 When the group has finished playing the game, have students open their books and complete the Today's Challenge activity on page 32 in the student book.

Answers for student page 32: 1. 100, 10 2. 4, 8 3. 20, 10 4. 2, 12 5. 30 6. 15 7. 50 8. 4

Go Further
Student page 32 Have students complete this section on the student page.

Answers for student page 32: 9. a quarter, a dime, and a nickel 10. 2 quarters and 2 dimes

Assessment
Student self-assessment page 32 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students understand the value of coins?

Today's Challenge
Distribute the 18 Math Maze cards for Week 7. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.

Instructions for playing Math Maze Ask students to look at their cards. Ask one student to read the question that is written on his or her card. Next ask, "Who has the card with the answer to the question just read?" Ask that student to read the answer, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be read should be the answer on the first student's card.
Materials
Student page 33
Blank paper (heavyweight if possible) or index cards

Concept and Handbook Reference
Recognize addition and subtraction fact families. (MTK 54)

Background
Addition/subtraction fact family for 13, 6, 7:

\[ 6 + 7 = 13 \quad 7 + 6 = 13 \]
\[ 13 - 7 = 6 \quad 13 - 6 = 7 \]

Get Started
Explain that a fact family is a group of addition and subtraction facts that use the same numbers. Write the following example on the board. Explain that the three numbers are used to write the facts in this fact “family.”

\[ 8 + 9 = 17 \]
\[ 9 + 8 = 17 \]
\[ 17 - 9 = 8 \]
\[ 17 - 8 = 9 \]

Draw another triangle and write the numbers 11, 3, and 8 inside. Ask for volunteers to write the facts in the fact family. (\[ 3 + 8 = 11, 8 + 3 = 11, 11 - 3 = 8, 11 - 8 = 3 \])

Today's Challenge
Student page 33 Have students look at page 33 in the student book. Explain that the first two columns should show addition facts from a fact family. The last two columns should show the subtraction facts in the same fact family. Have students fill in the facts that are missing.

Answers for student page 33: 1. \[ 6 + 8 = 14 \]
2. \[ 14 - 6 = 8 \]
3. \[ 7 + 5 = 12 \]
4. \[ 12 - 5 = 7 \]
5. \[ 7 + 8 = 15 \]
6. \[ 15 - 8 = 7 \]
7. \[ 9 + 7 = 16 \]
8. \[ 16 - 9 = 7 \]

Go over answers with the whole group or check students' papers individually.

Go Further
Have pairs of students make a set of cards to play the game “Concentration.” Each pair of students will need 20 small pieces of paper or 20 index cards. Have the students use one slip of paper or card to copy the information from each box on student page 33.

Instructions for playing “Concentration” Shuffle the cards and lay them facedown in four equal columns. Each player turns over a card. The player with the higher sum or difference goes first. Turn the cards over so that all cards are again facedown. The first player turns over two cards. If the cards match (show two facts in the same fact family), the player keeps the cards and goes again. If the cards do not match, the player turns the cards back over and the other player takes a turn. Play continues until all cards have been taken. The player with more cards at the end of the game wins.

Assessment
Student self-assessment page 33 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students understand how to write all the facts in an addition/subtraction fact family?
Materials
Student page 34
Math Jumble activity poster and digit cards

Concepts and Handbook References
Use mental math for addition facts with sums of 7 and 8. (MTK 40)
Add three addends. (MTK 103)

Background
\[ 1 + 2 + 3 = 6 \]
addend  addend  addend  sum

Get Started
Begin by brainstorming addition facts with sums of 7 or 8. One student calls out an addend. Another student calls out a second addend. Then a third student gives the fact and tells whether the sum is 7 or 8. For example, one student calls out “4,” the second student calls out “3,” and the third student says, “4 + 3 = 7.” If the sum is not 7 or 8, the three students try again. Do this until all students have had the opportunity to participate.

Next, continue the game, but have four students at a time add three numbers to make the sum of 7 or 8. For example, 1 + 2 + 4 = 7.

Today’s Challenge
Using the 0–9 digit cards, construct the 4 by 4 poster shown. Explain that the object of today’s Math Jumble is to make as many addition facts as possible with sums equal to 7 or 8 using two or three addends.

Strings of numbers are made by connecting adjoining numbers (top to bottom and/or left to right) on the poster. For example, the 1 and 5 in the first column and the 2 in the second column form a string of numbers.

Ask for volunteers to write a few examples on the board.

Possible examples: 4 + 3 = 7, 4 + 1 + 3 = 8

Student page 34 Have students use the Math Jumble on student page 34 to find strings of numbers with sums equal to 7 or 8.

Possible Answers for student page 34:

<table>
<thead>
<tr>
<th>sum of 7</th>
<th>sum of 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 + 3 = 7</td>
<td>2 + 6 = 8</td>
</tr>
<tr>
<td>6 + 1 = 7</td>
<td>1 + 7 = 8</td>
</tr>
<tr>
<td>5 + 2 = 7</td>
<td>3 + 3 + 2 = 8</td>
</tr>
<tr>
<td>3 + 3 + 1 = 7</td>
<td>4 + 1 + 3 = 8</td>
</tr>
<tr>
<td></td>
<td>1 + 5 + 2 = 8</td>
</tr>
</tbody>
</table>

Go Further
Student page 34 Using the grid on the student page, have each student create a Math Jumble to share with a friend.

Answers for student page 34: Answers will vary. Check students’ work.

Assessment
Student self-assessment page 34 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students add two or three numbers with sums equal to 7 or 8?
Rule Out Two

Week 7 • Activity 35

Materials
Student page 35
Blank paper

Concept and Handbook Reference
Use place value to the thousands place in a problem-solving situation. (MTK 6)

Get Started
Draw a place value chart on the board to show the number 2347.

<table>
<thead>
<tr>
<th>Thousands</th>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
</tbody>
</table>

Point out that the 7 is in the ones place, the 4 is in the tens place, the 3 is in the hundreds place, and the 2 is in the thousands place.

Student page 35 To introduce the activity, work through the first problem on student page 35. Read or ask a student to read the problem. Next explain that when you have a problem and you are given several answers to choose from, it helps if you can “rule out” some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say C ($245) is wrong because “$245 is less than $1245.” (If members of the class do not agree with the volunteer’s response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer’s choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (B). Be sure students understand why B is correct.

Today’s Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.

Then explain how points will be scored in today’s activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

Student page 35 Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.

Answers for student page 35: 1. A 2. D

When all students’ papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 35 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students identify the ones, tens, hundreds, and thousands places in 4-digit numbers?
Materials
Student page 36
Yellow and green crayons (or markers)

Concepts and Handbook References
Add 9 and 10 to two-digit numbers. (MTK 146)
Practice mental math. (MTK 105, 110)

Background
Adding nine to a number is one less than adding ten. The goal of this activity is to help the students recognize this pattern.

Get Started
Discuss adding 10 and 9 to numbers. Remind the students that when 10 is added to a number, only the tens place increases.

<table>
<thead>
<tr>
<th>+10</th>
<th>+9</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>24</td>
<td>23</td>
</tr>
<tr>
<td>34</td>
<td>32</td>
</tr>
<tr>
<td>44</td>
<td>41</td>
</tr>
<tr>
<td>54</td>
<td>50</td>
</tr>
<tr>
<td>64</td>
<td>69</td>
</tr>
</tbody>
</table>

After the game is complete, ask the students to explain any patterns they see. (They should see that the answers to +9 fall farther and farther behind the +10 answers. They might also notice that the ones digit of the +10 answers never changes, while the ones digit of the +9 answers decreases by one each time.) Encourage as many responses and rephrasings as there is time for.

Today's Challenge
Student page 36 Have students complete the activity on the student page. Allow time to discuss the patterns the students find.

Answers for student page 36: 1. All the numbers in the column below 4 should be yellow: 14, 24, 34, 44, 54, 64, 74, 84, 94. 2. The number 4 and the numbers in the diagonal 13, 22, 31, 40, 49, 58, 67, 76, 85, 94 should be green. (The number 4 will have both green and yellow.) 3. The number 7 and all the numbers in the column below 7 should be yellow: 17, 27, 37, 47, 57, 67, 77, 87, 97. 4. The number 7 and the numbers in the diagonal 16, 25, 34, 43, 52, 61, 70, 79, 88, 97 should be green. (The number 7 will have both green and yellow.)

Go Further
Student page 36 Have students answer the question on the student page.

Answer for student page 36: 5. The yellow boxes are in a vertical line because when you add 10 the ones place stays the same. The green boxes go in a diagonal, or slanted line from right to left because when you add 9 you do not get as far as when you add 10. Each time you add 9 the ones digit is one less than before.

Assessment
Student self-assessment page 36 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do the students see that adding 9 results in sums 1 less than adding 10?
Materials
Student page 37
Math Maze cards (Week 8 Activity 37)

Concepts and Handbook References
Use mental math to add a multiple of 10 to any 2-digit number. (MTK 105)
Use mental math to add two 2-digit numbers that both have 5 in the ones place. (MTK 106)

Get Started
Have students find these sums. Encourage them to try to use mental math.

65 + 20 (85)  48 + 30 (78)  67 + 30 (97)

Ask a student to describe how he or she found the sums mentally. (Since we are adding a multiple of 10, you just need to increase the tens digit of the first addend by the number of tens in the second addend.)

Have students find these sums. Again encourage them to try to use mental math.

45 + 25 (70)  45 + 15 (60)  25 + 35 (60)

Ask a student to describe how he or she found the sums mentally. (Since both addends have a 5 in the ones column, the ones add to 10. So you add all the tens and then add one more ten.)

Today’s Challenge
Distribute the 18 Math Maze cards for Week 8. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.

Instructions for playing Math Maze
Ask students to look at their cards. Ask one student to read the question that is written on his or her card. Next ask, “Who has the card with the answer to the question just read?” Ask that student to read the answer, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be read should be the answer on the first student’s card.

The correct sequence of questions and answers is shown on page 186.

Student page 37
When the group has finished playing the game, have students open their books and complete the Today’s Challenge activity on page 37 in the student book.

Answers for student page 37: 1. 98  2. 80  3. 75 4. 90  5. 79  6. 60  7. 46  8. 80  9. 97  10. 100

Go Further
Student page 37
Have students complete this section on the student page.

Answers for student page 37: 11–12. Answers will vary.

Assessment
Student self-assessment page 37
Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips
Can students use mental math to add on a multiple of 10? Can students use mental math to add two 2-digit numbers that both have 5 in the ones place?
Materials
Student page 38
Blank paper
Clock (optional)

Concepts and Handbook References
Determine elapsed time. (MTK 338)
Review A.M. and P.M. (MTK 337)

Get Started
If you do not have a clock that you can manipulate, draw two clocks on the board. Demonstrate the answer to each of the following questions.
• The time is now 3:30 P.M. What time was it two hours ago? (1:30 P.M.)

![Clocks showing time](image)

• The time is now 11:00 A.M. What time will it be two hours from now? (1:00 P.M.)
• The time is now 6:30 P.M. What time was it 45 minutes ago? (5:45 P.M.)
• The time is now 2:15 A.M. What time will it be 30 minutes from now? (2:45 A.M.)

Today’s Challenge
Write the following times on separate sheets of scrap paper.
9:30 A.M. 10:30 A.M. 11:30 A.M. 1:00 P.M. 2:15 P.M.
9:45 A.M. 10:45 A.M. 11:45 A.M. 1:30 P.M. 2:20 P.M.
10:00 A.M. 11:00 A.M. 12:00 NOON 2:00 P.M. 2:25 P.M.

Have all students hold their papers and stand in a large circle. Explain that all the times represent times that occur during a school day. They are all after 9:00 A.M. and before 2:30 P.M. Explain that the object of the game is to be the “Fantastic Finalist,” the last student to remain standing.

Read each of the following challenges, one at a time.
• If your time is one quarter after the hour, sit down. (9:15 A.M., 10:15 A.M., 11:15 A.M., 12:15 P.M., 2:15 P.M.)
• If your time is earlier than noon, sit down. (9:30 A.M., 9:45 A.M., 10:00 A.M., 10:30 A.M., 10:45 A.M., 11:00 A.M., 11:30 A.M., 11:45 A.M.)
• If your time is two or more hours after noon, sit down. (2:00 P.M., 2:10 P.M., 2:20 P.M., 2:25 P.M.)
• If your time is exactly “on the hour,” sit down. (12:00 NOON, 1:00 P.M.)

At this point, only the student holding the time 1:30 P.M. should still be standing. That student is the “Fantastic Finalist.”

Go Further
Student page 38 Have students complete the activity on the student page.

Answers for student page 38: 1. 11:00 2. 7:15 3. 7:30 4–6. Answers will vary.

Assessment
Student self-assessment page 38 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Do students understand elapsed time? Do students understand how A.M. and P.M. are used?
Math Jumble

Materials
Student page 39
Math Jumble activity poster and digit cards

Concept and Handbook Reference
Add three or more addends. (MTK 103)

Background
2 + 3 + 4 = 9
addend addend addend sum

Get Started
Begin by brainstorming addition sentences with three or more addends. Have four students at a time add three numbers. One student calls out an addend. Another student calls out a second addend. A third student calls out another addend. Then a fourth student gives the sum. For example, one student calls out 4, the second student calls out 3, and the third student, 7. The fourth student then says, "3 + 4 + 7 = 14." Do this until all students have had the opportunity to participate.

Today's Challenge
Using the 0–9 digit cards, construct the 4 by 4 poster shown. Explain that the object of today's Math Jumble is to find strings of numbers that could be used to make addition equations greater than or less than 21.

Strings of numbers are made by connecting adjoining numbers (top to bottom and/or left to right) on the poster. For example, the 8 from the top of column 3 and 2 and 4 from column 4 could be used to form the string 8 + 2 + 4.

Ask for volunteers to write a few examples on the board.

Possible examples: (sums less than 21) 9 + 7 = 16
or 5 + 8 + 2 = 15; (sums greater than 21)
9 + 7 + 7 = 23 or 8 + 6 + 8 = 22

Student page 39 Have students use the Math Jumble on student page 39 to find more strings of numbers that have sums greater than or less than 21.

Possible answers for student page 39:
sums less than 21
9 + 7 = 16
6 + 4 = 10
7 + 9 + 3 = 19
6 + 8 + 4 = 18
2 + 4 + 3 = 9
7 + 7 + 6 = 20
2 + 3 + 4 + 6 = 15

sums greater than 21
9 + 5 + 8 = 22
7 + 9 + 8 = 24
8 + 6 + 8 = 22
5 + 9 + 8 + 3 = 25
7 + 7 + 6 + 4 = 24
9 + 7 + 7 + 9 = 32

Go Further
Student page 39 Have students answer the question in the student book.

Answer for student page 39: Explanations will vary. Some students may use doubles or make a fast ten to group and add numbers.

Assessment
Student self-assessment page 39 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students add three or more addends?
Materials
Student page 40
Blank paper

Concepts and Handbook References
Subtract two-digit numbers with regrouping. (MTK 161)
Estimate differences. (MTK 132–135)

Get Started
Ask a volunteer to explain how to subtract 29 from 42. Be sure it is clear that the 4 tens and 2 ones must be regrouped as 3 tens and 12 ones before the subtraction can be done.

Student page 40 To introduce the activity, work through the first problem on student page 40. Read or ask a student to read the problem. Next explain that when you have a problem and you are given several answers to choose from, it helps if you can “rule out” some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say A (270 in.) is wrong because “It is too large. Using estimation, I know that the answer should be closer to 10 since 40 – 30 = 10.” (If members of the class do not agree with the volunteer’s response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer’s choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (D). Be sure students understand why D is correct.

Then explain how points will be scored in today’s activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

Student page 40 Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.

Answers for student page 40: 1. C 2. C

When all students’ papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 40 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students subtract two-digit numbers with regrouping?

Today’s Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.
Materials
Student page 41

Concept and Handbook Reference
Subtract 10 and 9 from two-digit numbers. (MTK 112)

Background
Subtracting 10 and 9 produces patterns similar to those produced when adding 10 and 9. This activity reinforces strategies developed in Activity 36.

Get Started
Write the following problems on the board.

18 − 10 = 35 − 10 =
28 − 10 = 45 − 10 =
38 − 10 = 55 − 10 =

Ask the students to give you the answers. Write the answers. (8, 18, 28, and 25, 35, 45) Have the students identify any patterns they can find. Discuss the pattern that makes the problems easy. (When you subtract 10, the ones place stays the same and the tens place decreases by one.)

Next, write this set of problems on the board:

18 − 9 = 45 − 9 =
28 − 9 = 55 − 9 =
38 − 9 = 65 − 9 =

Again have the students give you the answers and write them on the board. (9, 19, 29 and 36, 46, 56) Ask them to identify any patterns they see, then focus on the pattern that helps make the problems easy. (The tens digit decreases by one and the ones digit increases by one.) Be sure to accept and welcome all valid explanations from students about how they subtract nine.

Today's Challenge
Student page 41 Have students complete the activity on the student page.

Make sure students understand they need to figure out the rule in exercise 2 based on the information given in the table (Rule: subtract 10)

Answers for student page 41: 1. 8, 18, 27, 17, 28
2. Rule: subtract 10; 27, 36, 45

Go Further
Student page 41 Have the students complete the charts on the student page. Allow time to discuss the patterns the students find.

Answers for student page 41: 3. 116, 126, 226, 419 4. 249, 348, 155, 153

Assessment
Student self-assessment page 41 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Is the student able to use patterns to subtract 9 and 10?
Materials
Student page 42
Math Maze cards (Week 9 Activity 42)

Concept and Handbook References
Review concepts presented in previous Math Maze activities. (MTK 102, 428, 442)

Get Started
Tell students that today’s activity will be a review of the math from the Math Maze activities done previously.

Today’s Challenge
Distribute the 18 Math Maze cards for Week 9. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.

Instructions for playing Math Maze Ask students to look at their cards. Ask one student to read the question that is written on his or her card. Next ask, “Who has the card with the answer to the question just read?” Ask that student to read the answer, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be read should be the answer on the first student’s card.

The correct sequence of questions and answers is shown on page 187.

Student page 42 When the group has finished playing the game, have students open their books and complete the Today’s Challenge activity on page 42 in the student book.

Answers for student page 42: 1. e 2. f 3. h 4. g 5. c 6. j 7. d 8. i 9. a 10. b

Go Further
Student page 42 Have students complete this section on the student page.

Answers for student page 42: Responses will vary. Possible responses: 11. I counted by fives to 45. I said 9 numbers. There are 9 nickels. 12. There are 4 quarters in a dollar. I added 4 and 4 and got 8.

Assessment
Student self-assessment page 42 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Which concepts do students need more work on?
Materials
Student book page 43
Blank paper

Concept and Handbook Reference
Round numbers to the nearest ten. (*TK 129)

Get Started
Ask students to look at the hundred chart on the inside back cover of their books. Write the following numbers on the board and ask students to round each one to the nearest ten.

3 (0)  6 (10)  5 (10)
13 (10)  22 (20)  45 (50)
28 (30)  55 (60)  72 (70)

Today's Challenge
Explain that today you will be playing a game called “Who Wants to be the Top Scorer?” Have each student take a blank sheet of paper and write any two-digit number he or she chooses. Then ask the students to number their papers from 1 to 5.

3. Does your number round up to the nearest ten? If yes, score 6 points.
4. Is your number an even number? If yes, score 8 points.
5. Does your number have a 5 in the ones place? If yes, score 15 points.

Have students find their total scores. Determine which student has the highest score. Have that student write the number on the board and explain how he or she scored the points.

Student page 43 Have the student complete the activity for Today’s Challenge.

Answers for student page 43: 1. 57 2. 46

Go Further
Student page 43 Have students fill in the blanks to create and solve the riddle, and create another riddle for a friend to solve. Have the solver sign his or her name.

Answers for student page 43: 3–4. Answers will vary. Check students’ work.

Assessment
Student self-assessment page 43 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students understand how to round numbers to the nearest ten?
Materials
Student page 44
Math Jumble activity poster and coin cards

Concept and Handbook Reference
Use pennies, nickels, dimes, and quarters to make a given amount of money. (MTK 18)

Get Started
Begin today’s lesson by holding up the coin cards. Ask students to tell you the value of each coin. For example, the quarter is worth 25 cents. Next, students will add amounts of money using mental math. Ask questions, such as the following examples, and have the students answer using mental math:

How many quarters are in one dollar? (4)
What is the value of 3 quarters? (75 cents)
What is the value of 2 dimes? (20 cents)
What is the total value of 3 dimes, 1 nickel, and 1 penny? (36 cents)
How can you make 35 cents using 3 coins? (1 quarter and 2 nickels)

Today’s Challenge
Using the coin cards, construct the 4 by 4 poster shown. Explain that the object of today’s Math Jumble is to find strings of coins that total a given amount.

Strings of coins are made by joining coins that are in boxes that share a common side. For example, point to the coins in the first row and the last coin in the second row. Then, pointing to the coins one at a time, find the total number of cents as you move from left to right and down. (1, 11, 16, 26, 27) The total is 27 cents.

Next, ask students to find a string of coins that totals 42 cents. (Possible string: first two coins in the third column plus the last three coins in the last column.) Ask a student to name an amount and have other students try to find a string of coins that totals that amount. Repeat several times.

Student page 44 Have students complete Today’s Challenge on student page 44.

Answers for student page 44: 1–5. Answers will vary. Check students’ work.

Go Further
Student page 44 Have students complete the activity in this section of the student page.

Answer for student page 44: 6. $1.34; Explanations will vary, but may include putting all pennies together, all nickels together, all dimes together, and all quarters together, then counting the amounts.

Assessment
Student self-assessment page 44 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students count combinations of pennies, nickels, dimes, and quarters?
Materials
Student page 45
Blank paper

Concept and Handbook References
Review definitions of pentagon, octagon, and trapezoid. (MTK 311, 312)

Get Started
Ask if any student can recall the word used to describe lines that never cross. Give the example of railroad tracks that never cross. (The word is parallel. Write it on the board.) Ask a volunteer to draw a pair of parallel lines on the board.

Student page 45 To introduce the activity, work through the first problem on student page 45. Read or ask a student to read the problem. Next explain that when you have a problem and you are given several answers to choose from, it helps if you can “rule out” some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say B is wrong because “It has only 3 sides.” (If members of the class do not agree with the volunteer’s response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer’s choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (C). Be sure students understand why C is correct.

Today’s Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.

Then explain how points will be scored in today’s activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

Student page 45 Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.

Answers for student page 45: 1. A 2. D

When all students’ papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 45 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students identify a pentagon, an octagon, and a trapezoid?
Materials
Student page 46

Concept and Handbook Reference
Recognize differences of ten and nine. (MTK 112)

Background
To be able to recognize a difference of ten or a difference of nine builds number sense, and sharpens mental computation skills.

Get Started
Write this sequence of numbers on the board: 66, 56, 46, 36. Ask the students what three numbers come next. (26, 16, 6) Have them explain how they know. (The tens digit goes down by one but the ones digit stays the same).

Write this sequence on the board: 15, 24, 33, 42. Ask the students to figure out what three numbers come next. They should recognize that the numbers are increasing by nine, and someone should be able to tell you that the next three numbers are 51, 60, and 69.

Now write these pairs of numbers on the board and ask the students to sort them into “counting by nines” or “counting by tens.” If the students don’t notice, point out that some pairs are counting up and some are counting down.

3, 12  4, 14  35, 45  58, 67  66, 56
84, 93  35, 26

tens  nines
4, 14   3, 12
35, 45  58, 67
66, 56  84, 93
35, 26

Counting by nines: 3, 12; 58, 67; 84, 93; 35, 26
Counting by tens: 414; 35, 45; 66, 56

Today's Challenge
Student page 46 Have students complete the activity on the student page.

Answers for student page 46: 1. Draw squares around 45, 55; 3, 13; 34, 44; 62, 72; 15, 25; 22, 12. Draw triangles around 76, 67; 41, 32; 89, 98; 64, 55; 51, 60. No shape around 45, 67.

Go Further
Student page 46 Have students complete the activity on the student page.

Answer for student page 46: 2. Answers will vary. Check to see that they are differences of 10.
3. Answers will vary. Check to see that they are differences of 9.

Assessment
Student self-assessment page 46 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do the students easily distinguish differences of nine and ten?
Materials
Student page 47
Math Maze cards (Week 10 Activity 47)

Concepts and Handbook References
Practice skip counting. (MTK 90)
Write multiplication equations. (MTK 60–65)

Get Started
Ask students to skip count by tens, fives, twos, and threes.

Today's Challenge
Distribute the 18 Math Maze cards for Week 10. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.

Instructions for playing Math Maze Ask students to look at their cards. Ask one student to read the question that is written on his or her card. Next ask, “Who has the card with the answer to the question just read?” Ask that student to read the answer, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be read should be the answer on the first student’s card.

The correct sequence of questions and answers is shown on page 188.

Student page 47 When the group has finished playing the game, have students open their books and complete the Today's Challenge activity on page 47 in the student book.

Answers for student page 47: 1. 18 2. 30 3. 28
4. 32 5. 10 6. 45 7. 4 × 10 = 40 8. 8 × 5 = 40
9. 4 × 3 = 12 10. 5 × 4 = 20

Go Further
Student page 47 Have students complete this section on the student page.

Answers for student page 47: 11. 4, 8, 16, 24, 28
12. Responses will vary. Possible response: the number of shoes in 4 pairs

Assessment
Student self-assessment page 47 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Can students skip count? Do students understand the concept of multiplication?
Materials
Student page 48
Blank paper (heavyweight if possible) or index cards

Concept and Handbook Reference
Write two-, three-, and four-digit numbers using standard form, word form, and expanded form. (MTK 4–7)

Get Started
Explain that the same number can be written in different ways. Use examples like those in the table below to demonstrate three different ways of writing numbers.

<table>
<thead>
<tr>
<th>Standard form</th>
<th>Word form</th>
<th>Expanded form</th>
</tr>
</thead>
<tbody>
<tr>
<td>65</td>
<td>sixty-five</td>
<td>$60 + 5$</td>
</tr>
<tr>
<td>143</td>
<td>one hundred forty-three</td>
<td>$100 + 40 + 3$</td>
</tr>
<tr>
<td>7001</td>
<td>seven thousand one</td>
<td>$7000 + 1$</td>
</tr>
</tbody>
</table>

Today's Challenge
Student page 48 Have students look at page 48 in the student book. Explain that the first two columns should show numbers in standard form and the same numbers in expanded form. The last two columns should show numbers in word form and the same numbers in expanded form. Have students fill in the forms that are missing.

Answers for student page 48: 1. $500 + 30$
2. $10 + 9$
3. $109$
4. $300 + 50$
5. $5000 + 30$
6. fifty-three
7. $928$
8. $9008$

Go over answers with the whole group or check students' papers individually.

Go Further
Have pairs of students make a set of cards to play the game “Concentration.” Each pair of students will need 20 small pieces of paper or 20 index cards. Have the students use one slip of paper or card to copy the information from each box on student page 48.

Instructions for playing “Concentration” Shuffle the cards and lay them facedown in equal columns. Each player turns over a card. The player with the higher value goes first. Turn the cards over so that all cards are again facedown. The first player turns over two cards. If the cards match (show different forms of the same number), the player keeps the cards and goes again. If the cards do not match, the player turns the cards back over and the other player takes a turn. Play continues until all cards have been taken. The player with more cards at the end of the game wins.

Assessment
Student self-assessment page 48 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students understand how to write numbers in word form? In expanded form?
Materials
Student page 49
Math Jumble activity poster and digit cards

Concept and Handbook References
Use mental math to add 10 or subtract 10 from a number. (MTK 105, 112)

Get Started
Practice adding 10 mentally. One student calls out an addend. Another student adds 10 to the number mentally and gives the sum. For example, one student calls out “4,” the second student calls out “4 + 10 = 14.” Do this until all students have had the opportunity to participate.

Next practice subtracting 10 mentally. One student calls out a number greater than 10. Another student subtracts 10 from the number mentally and gives the difference. For example, one student calls out “26,” the second student calls out “26 – 10 = 16.”

Today’s Challenge
Using the 0-9 digit cards, construct the 4 by 4 poster shown. Explain that the object of today’s Math Jumble is to make numbers between 30 and 80, and then add 10 and subtract 10 from the numbers.

Ask for volunteers to write a few examples on the board.

Possible examples: 52 + 10 = 62 and
52 – 10 = 42; 41 + 10 = 51 and 41 – 10 = 31

Student page 49 Have students use the Math Jumble on student page 49 to find numbers between 30 and 80.

Answers for student page 49: 1–5. Answers will vary.

Go Further
Student page 49 Have students answer the question on the student page.

Answers for student page 49: 6. Answers will vary. Students may indicate that adding or subtracting 10 from a number does not change the digit in the ones place.

Assessment
Student self-assessment page 49 Have students circle one of the three choices to describe how they feel about this activity.

Answers for student page 49: 6. Answers will vary. Students may say that the digit in the ones place does not change.

Assessment tip Can students add 10 or subtract 10 from a number mentally?
Materials
Student page 50
Blank paper

Concept and Handbook Reference
Use benchmarks for a meter and a centimeter.
(MTK 347)

Get Started
Demonstrate the length of one meter. Extend your
right arm perpendicular to your body, hand out-
stretched. Keep your left arm parallel to your body.
Inform the students that a meter is about as long as
the distance from their (left) shoulder to the tip of
their opposite (right) hand when extended. Ask all
students to stand and demonstrate their under-
standing by duplicating your position. Have stu-
dents compare this length to objects in the room.
Then explain that the length of a meter is the same
as the length of 100 centimeters. Extend the small-
est finger (pinkie) of either hand. Point out that the
width of the finger is about the length of one cen-
timeter. Compare that width to objects in the room.

Student page 50 To introduce the activity, work
through the first problem on student page 50. Read
or ask a student to read the problem. Next explain
that when you have a problem and you are given
several answers to choose from, it helps if you can
"rule out" some of the answers. Ask for a volunteer
to choose an answer that he or she knows is wrong
and tell why the answer is wrong. For example, a
student might say B (a toothpick) is wrong because
"The length of a toothpick is much less than a
meter." (If members of the class do not agree with
the volunteer's response or reason, discuss until a
consensus is reached.) Have each student cross out
the volunteer's choice and write the reason on the
line next to the incorrect answer. Ask for a second
volunteer to rule out another answer and proceed
in the same way. Then ask students to choose the
correct answer from the remaining two choices and
fill in the circle that shows the letter of the correct
answer (A). Be sure students understand why A is
correct.

Today's Challenge
Divide students into groups of 2, 3, or 4. Students
will be able to consult with members of the group,
but each student will complete the page and will
receive an individual score.

Then explain how points will be scored in today's
activity. Each student will receive 10 points for each
answer (up to 2) that was ruled out for a good rea-
son (a maximum of 20 points) and 10 points for
choosing the correct answer. So, the maximum
number of points for each question is 30 and the
maximum number of points for the day is 60.

Student page 50 Have students work through each
problem, ruling out two answers, giving reasons,
and then choosing the correct answer. When a
group has completed both problems, the members
should bring you their papers for scoring. Discuss
errors with individuals or the group if necessary.

Answers for student page 50: 1. A. 2. A

When all students' papers have been scored, deter-
mine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student
write his or her name and then create a multiple-
choice problem similar to the problems just solved.
Ask each to share the problem with another stu-
dent. The second student solves the problem and
signs his or her name.

Assessment
Student self-assessment page 50 Have students cir-
cle one of the three choices to describe how they
feel about this activity.

Assessment tips Do the students have a visual
benchmark for a meter? A centimeter?
Materials
Student page 51

Concept and Handbook Reference
Identify patterns when adding nine and ten on the hundred chart. (MTK 105)

Background
The goal of this activity is to develop a visual image of moving nine or ten on the hundred chart. Students will use directional arrows to indicate moves on the hundred chart.

Get Started
Draw a 3 by 3 set of boxes on the board. Tell the students that you will show them how to follow arrows to move around this small board. The direction of an arrow tells which way to move. Each arrow tells you to move one block. Demonstrate how to follow directional arrows to move from box to box.

```
A B C
D E F
G H I
```

Starting in Box A, → → moves you to Box C.
Starting in Box G, ↑ → → moves you to Box F.
Starting in Box A, → ← ← moves you back to Box A.
Ask the students to offer possible lists of directional arrows to move from Box C to:
Box I (↓ is the simplest, but accept anything that works)
Box E (← or ← ↓ are the simplest)
Box G (← ← ↓ or ↓ ← ←
or ↓ ← ←, etc.)

Now have the students look at their hundred chart on student page 51. Ask them practice questions such as, starting on 47, what arrows would move you to 37? (↑) 58? (↓ ←)
69? (↓ ↓ ← ←)

If the students are at ease with using the arrows, a discussion about what difference order makes might be appropriate. (Order makes no difference. In the context of the hundred chart, adding ten then adding one is the same as adding one then adding ten.)

Today’s Challenge
Student page 51 Have students complete the activity on the student page. Allow time to discuss the patterns the students find.

Answers for student page 51: 1. 33, ↓ 2. 77, ↑
3. 55, ↓ 4. 71, ← 5. 56, ↓ ←
6. 92, ↓ ←

Go Further
Student page 51 Have students answer the question on the student page.

Answer for student page 51: 7. To add ten you need one down arrow. To add nine you need one down arrow and one left arrow.

Assessment
Student self-assessment page 51 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can the students use arrows to move around the hundred chart?
Materials
Student page 52
Math Maze cards (Week 11 Activity 52)

Concept and Handbook Reference
Review the concept of weight. (MTK 358)

Get Started
Have students share their knowledge of units of weight by answering these questions. “How many ounces in a pound?” (16) “How many pounds in a ton?” (2000)

Today's Challenge
Distribute the 18 Math Maze cards for Week 11. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.

Instructions for playing Math Maze Ask students to look at their cards. Ask one student to read the question that is written on his or her card. Next ask, “Who has the card with the answer to the question just read?” Ask that student to read the answer, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be read should be the answer on the first student’s card.

The correct sequence of questions and answers is shown on page 189.

Student page 52 When the group has finished playing the game, have students open their books and complete the Today’s Challenge activity on page 52 in the student book.

Answers for student page 52: 1. c 2. d 3. e 4. b 5. a 6. f 7. g

Go Further
Student page 52 Have students complete this section on the student page.

Answers for student page 52: 8. ounce 9. pound 10. ounce 11. pound

Assessment
Student self-assessment page 52 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students understand units of weight?
Materials
Student page 53
Blank paper (heavyweight if possible) or index cards

Concept and Handbook Reference
Add 3 or 4 addends by looking for numbers that have a sum of ten. (MTK 103)

Background
Because of the Commutative (or Order) Property of Addition, you can add numbers in any order.

$$3 + 5 + 7 = 3 + 7 + 5$$

Get Started
Ask students to name pairs of numbers that add up to ten. Make a list as students name the pairs. (0 and 10, 1 and 9, 2 and 8, 3 and 7, 4 and 6, 5 and 5, 6 and 4, 7 and 3, 8 and 2, 9 and 1, 10 and 0)

Next, show how knowing sums of ten can help you add numbers quickly.

Write $3 + 5 + 7$ on the board. Ask a volunteer to circle the numbers that add to 10 (3 and 7). Ask, “What is the sum?” (10 + 5, or 15)

Today’s Challenge
Student page 53 Have students complete the page by writing the sums. They may find it helpful to first circle the two numbers that have a sum of ten.

Answers for student page 53: 1. 16  2. 13  3. 18  
4. 20  5. 17  6. 15  7. 12  8. 11  9. 14  10. 19

Go over answers with the whole group or check students’ papers individually.

Go Further
Have pairs of students make a set of cards to play the game “Concentration.” Each pair of students will need 20 small pieces of paper or 20 index cards. Have the students use one slip of paper or card to copy the information from each box on student page 53.

Instructions for playing “Concentration” Shuffle the cards and lay them facedown in equal columns. Each player turns over a card. The player with the larger value goes first. Turn the cards over so that all cards are again facedown. The first player turns over two cards. If they match (for example, 7 + 6 + 3 and 16), the player keeps the cards and goes again. If the cards do not match, the player turns the cards back over and the other player takes a turn. Play continues until all cards have been taken. The player with more cards at the end of the game wins.

Assessment
Student self-assessment page 53 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Can students add 3 or 4 addends? Can they recognize pairs of numbers that have a sum of ten?
**Materials**
Student page 54
Math Jumble activity poster and digit cards

**Concept and Handbook References**
Understand the Zero Property of Multiplication.
(MTK 67, 247)

**Background**
Begin today’s lesson by explaining that the product of any number and 0 is 0. This is sometimes called the Zero Property of Multiplication.

**Get Started**
Begin by brainstorming multiplication equations that include 0 as a factor. One student calls out any number (1-, 2-, or 3-digits). Another student calls out 0. Then a third student multiplies the first two numbers and gives the product. For example, one student calls out 42, the second student calls out 0, and the third student says, “42 times 0 is 0.” Do this until all students have had the opportunity to participate.

**Today’s Challenge**
Using the 0–9 digit cards, construct the 4 by 4 poster shown. Explain that the object of today’s Math Jumble is to find 1-, 2-, or 3-digit numbers that could be used to make multiplication equations with 0 as a factor.

Strings of numbers are made by connecting adjoining numbers (top to bottom and/or left to right) on the poster.

Ask for volunteers to write a few examples on the board.

Possible equations:
\[ 4 \times 0 = 0 \quad 56 \times 0 = 0 \quad 321 \times 0 = 0 \]

Student page 54 Have students use the Math Jumble on student page 54 to find more strings of numbers.

Possible answers for student page 54: \[ 9 \times 0 = 0; \quad 45 \times 0 = 0; \quad 52 \times 0 = 0; \quad 174 \times 0 = 0 \]

**Go Further**
Student page 54 Have students answer the question in the student book.

Answer for student page 54: When you multiply any number by 0, the product is 0.

**Assessment**
Student self-assessment page 54 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students understand the Zero Property of Multiplication?
Materials
Student page 55
Blank paper

Concept and Handbook References
Picture situations involving equal groups.
(MTK 60, 64)

Get Started
Student page 55 To introduce the activity, work through the first problem on student page 55. Read or ask a student to read the problem. Ask a volunteer to act out the situation the problem is describing. Next explain that when you have a problem and you are given several answers to choose from, it helps if you can "rule out" some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say B is wrong because "One of Al's sisters would only get 2 pieces of candy instead of 5." (If members of the class do not agree with the volunteer's response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer's choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (D). Be sure students understand why D is correct.

Today's Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.

Then explain how points will be scored in today's activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

Student page 55 Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.


When all students' papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 55 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students identify a picture that describes equal groups?
Materials
Student page 56

Concepts and Handbook References
Add onto eight and eighteen. (MTK 111)
Use the "Fast Tens" mental math strategy. (MTK 45)

Background
"Fast Tens" is a strategy to help find sums for facts greater than 10. The idea is to use part of the second addend to make a ten, then easily add on the remainder to find the total. For instance, to find $8 + 5$, think of 5 as $2 + 3$. Add the 2 onto the 8 to make 10, then add on the 3 to make 13.

Think: $5 = 2 + 3$

To find $8 + 5$
$8 + 2 = 10$
plus 3 more $= 13$

Get Started
Write these problems on the board in columns as shown.

$8 + 6 = 10 + 4 =$
$8 + 7 = 10 + 5 =$
$8 + 8 = 10 + 6 =$
$8 + 4 = 10 + 2 =$

Ask the students to help you fill in the answers. (14, 15, 16, and 12 for both columns) Ask which column of problems was easier. Why? (Adding onto ten is easy.) What is the same about the two columns? (They have the same answers.) Lead the students to understand why the answers are the same. In the first pair, two can be taken from the six, which leaves four, and added to the eight to form a ten. Likewise, in each of the other pairs, part of the second addend is used to form a ten, then the leftover part of the second addend is added to the ten.

Write two different examples on the board: $18 + 3$, and $18 + 5$. Ask the students to give you the matching $20 + □$ problems. ($20 + 1$ and $20 + 3$)

Today's Challenge
Student page 56 Have students complete the activity on the student page.
Answers for student page 56: 1. 11 2. 13 3. 6, 16 4. 3, 23 5. 4, 24 6. 1, 21

Go Further
Student page 56 Have students answer the question on the student page.
Answers for student page 56: 7. 1, 41 8. 40, 5, 45

Assessment
Student self-assessment page 56 Have students circle one of the three choices to describe how they feel about this activity.
Assessment tip Are the students able to use mental math to add onto eight and eighteen?
Materials
Student page 57
Math Maze cards (Week 12 Activity 57)

Concept and Handbook Reference
Review geometry vocabulary. (MTK 300–331)

Get Started
Explain to students that in today's activity they will be able to share with others their knowledge of vocabulary used in geometry.

Today's Challenge
Distribute the 18 Math Maze cards for Week 12. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.

Instructions for playing Math Maze Ask students to look at their cards. Ask one student to read the question that is written on his or her card. Next ask, "Who has the card with the answer to the question just read?" Ask that student to read the answer or draw the picture on the board, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be read should be the answer on the first student's card.

The correct sequence of questions and answers is shown on page 190.

Student page 57 When the group has finished playing the game, have students open their books and complete the Today's Challenge activity on page 57 in the student book.

Answers for student page 57: 1. b 2. e 3. g 4. d 5. c 6. a 7. h 8. f

Go Further
Student page 57 Have students complete this section on the student page.

Answers for student page 57: Check students' drawings. 9. 10.

Assessment
Student self-assessment page 57 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students have a good level of knowledge of vocabulary used in geometry?
Materials
Student page 58
Blank paper

Concept and Handbook Reference
Recognize and continue a number pattern.
(MTK 374)

Get Started
Review the concept of continuing a pattern. Start a pattern and call on students to continue it. For example:
- 1, 2, 3, 4, 5, 6, 7, 8, ...
- 5, 10, 15, 20, 25, ...
- 11, 21, 31, 41, ...

Today's Challenge
Explain that today the class will be playing a game called “Fantastic Finalist.” Give each student a piece of paper with one of the numbers from the table below.

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>48</td>
<td>43</td>
<td>72</td>
<td>33</td>
</tr>
<tr>
<td>23</td>
<td>34</td>
<td>52</td>
<td>29</td>
<td>55</td>
</tr>
<tr>
<td>42</td>
<td>39</td>
<td>24</td>
<td>66</td>
<td>62</td>
</tr>
</tbody>
</table>

You do not have to use all the numbers, but be sure that one student receives the number 25, since that number will be the “Fantastic Finalist.”

Have all students hold their numbers and stand in a large circle. Explain that the object of the game is to be the “Fantastic Finalist,” the last student to remain standing.

Read each of the following challenges, one at a time, writing the numbers on the board as you read them.
- If your number would be in this pattern, sit down. 2, 12, 22, 32, ... (42, 52, 62, 72)
- If your number would be in this pattern, sit down. 4, 9, 14, 19, ... (24, 29, 34, 39, 44)
- If your number would be in this pattern, sit down. 3, 8, 13, 18, ... (23, 28, 33, 43, 48)
- If your number would be in this pattern, sit down. 11, 22, 33, ... (55, 66, 77)

At this point, only the student holding the number 25 should still be standing. That student is the “Fantastic Finalist.”

Go Further
Student page 58 Have students complete the activity on the student page.

Answers for student page 58: 1. 33  2. Answers will vary. 3. Answers will vary.

Assessment
Student self-assessment page 58 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students understand how to continue a number pattern?
Materials
Student page 59
Math Jumble activity poster and digit cards

Concept and Handbook References
Multiply by one. (MTK 66, 246)

Background
When you multiply any number by one, the product is always that number. One is known as the identity element for multiplication.

Get Started
Using the 0–9 digit cards, place these cards in the first row of the Math Jumble poster.

```
7 3 5
```

Begin today’s lesson by explaining that when you multiply any number by one, you end up with that number. This is known as the identity element for multiplication. Have students practice this property by orally multiplying each number on the poster by 1. For example, $1 \times 7 = 7$, $1 \times 3 = 3$, $1 \times 5 = 5$.

Today’s Challenge
Using the 0–9 digit cards, construct the 3 by 3 poster shown. Explain that the object of today’s Math Jumble is to multiply all surrounding single-digit numbers by one.

```
7 3 5
4 1 8
9 6 0
```

Students should state the equation when multiplying and tell a story to go with the multiplication fact. Here is an example of a student response.

I see 1 and 9. $1 \times 9 = 9$. We put 9 flowers in the vase. There are 9 flowers in all.

Student page 59 Have students use the Math Jumble on student page 59 to find more multiplication facts.

Answers for student page 59: $1 \times 7 = 7$, $1 \times 3 = 3$, $1 \times 5 = 5$, $1 \times 4 = 4$, $1 \times 8 = 8$, $1 \times 9 = 9$, $1 \times 6 = 6$, $1 \times 0 = 0$

Go Further
Student page 59. Next have students combine numbers from today’s Math Jumble to form 2-digit numbers. For example, 7 may be combined with 3 horizontally, to form 73. 7 may also be combined with 4 vertically, to form 74. Remind students they may only combine numbers that are joined vertically or horizontally. Using this Math Jumble, have students write as many equations as possible for multiplying by one.

Answers for student page 59: Possible answers include: $73 \times 1 = 73$, $35 \times 1 = 35$, $74 \times 1 = 74$, $49 \times 1 = 49$, $80 \times 1 = 80$, $96 \times 1 = 96$, $60 \times 1 = 60$

Assessment
Student self-assessment page 59 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students understand the outcome when a number is multiplied by one?
Materials
Student page 60
Blank paper

Concept and Handbook Reference
Review place value in a problem-solving situation. (MTK 5–6)

Get Started
Write the number 5372 on the board. Ask, “Which digit is in the thousands place?” (5) “The ones place?” (2) “The tens place?” (7) “The hundreds place?” (3)

Student page 60 To introduce the activity, work through the first problem on student page 60. Read or ask a student to read the problem. Next explain that when you have a problem and you are given several answers to choose from, it helps if you can “rule out” some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say D (1111) is wrong because “All digits are the same.” (If members of the class do not agree with the volunteer’s response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer’s choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (A). Be sure students understand why A is correct.

Today’s Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.

Then explain how points will be scored in today’s activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

Student page 60 Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.

Answers for student page 60: 1. A 2. D

When all students’ papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 60 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students identify the ones, tens, hundreds, and thousands places in 4-digit numbers?
Materials
Student page 61

Concept and Handbook Reference
Find patterns of adding eight and eighteen on the hundred chart. (MTK 105)

Background
The goal of this activity is to develop a visual image of moves on the hundred chart that correspond to adding and subtracting eight. Students will use direction arrows to indicate moves on the hundred chart.

Get Started
Draw a 3 by 3 set of boxes on the board. Tell the students that you will show them how to follow arrows to move around this small board. The direction of an arrow shows which way to move. Each arrow tells you to move one block. Demonstrate how to follow directional arrows to move from box to box.

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>E</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>H</td>
<td>I</td>
<td></td>
</tr>
</tbody>
</table>

Starting in Box A, → → moves you to Box C.
Starting in Box G, ↑ → → moves you to Box F.
Starting in Box A, → → → moves you back to Box A.

Now ask the students to offer possible lists of direction arrows to move from Box C to:
Box I (↓ ↓ is the simplest, but accept anything that works)
Box E (← ← or ← ↓ are the simplest)
Box G (← ← ↓ or ↓ ↓ ← ← or ↓ ← ← ↓, etc.)

Have the students look at their hundred chart on student page 61. Ask them to start on 25 and tell what arrows would move them to: 15 (↑ )
36 (↓ → ) 47 (↓ ↓ → → )
If the students are at ease with using the arrows, a discussion about what difference order makes might be appropriate. (Order makes no difference.)

Today's Challenge
Student page 61 Have students complete the activity on the student page.

Answers for student page 61:
1. 23, ↓ ← ←
2. 77
3. 75, ↓ ← ←
4. ↓ ↓ ← ←
5. 55, ↓ ← ←
6. 65, ↓ ↓ ← ←

Go Further
Student page 61 Have students answer the question on the student page.

Answer for student page 61: 7. Answers will vary. Adding eight always requires a down arrow and two left arrows; adding eighteen is similar but always requires two down arrows.

Assessment
Student self-assessment page 61 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Can the students use arrows to move around the hundred chart? Do they recognize that adding eight is two less than adding ten?
Materials
Student page 62
Math Maze cards (Week 13 Activity 62)

Concept and Handbook Reference
Write multiplication sentences for situations.
(MTK 60–65)

Get Started
Have students brainstorm things that come in
groups of 2, 3, or 4. Make a list of the items they
mention. Here are some possible responses.

<table>
<thead>
<tr>
<th>Groups of 2</th>
<th>Groups of 3</th>
<th>Groups of 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>shoes</td>
<td>wheels on a tricycle</td>
<td>chair legs</td>
</tr>
<tr>
<td>ears</td>
<td>holes in a bowling ball</td>
<td>dog legs</td>
</tr>
<tr>
<td>eyes</td>
<td>lights on a traffic signal</td>
<td>car wheels</td>
</tr>
</tbody>
</table>

Today's Challenge
Distribute the 18 Math Maze cards for Week 13.
Each student should receive at least one card, but
since all cards need to be distributed, some students
may need to get more than one card. Use the cards
to play the Math Maze game.

Instructions for playing Math Maze Ask students to
look at their cards. Ask one student to read the
question that is written on his or her card. Next ask,
"Who has the card with the answer to the question
just read?" Ask that student to read the answer, and
then read the question on his or her card. Play con-
tinues until all questions have been answered. The
last answer to be read should be the answer on the
first student's card.

The correct sequence of questions and answers is
shown on page 191.

Student page 62 When the group has finished play-
ing the game, have students open their books and
complete the Today's Challenge activity on page 62
in the student book.

Answers for student page 62: 1. a. Check students’
drawings. b. 4; 2 c. 8 d. 4 × 2 = 8  2. a. Check stu-
dents’ drawings. b. 3; 2 c. 6 d. 3 × 2 = 6

Go Further
Student page 62 Have students complete this sec-
tion on the student page.

Answers for student page 62: 3. Answers will vary.
Check students’ work.

Assessment
Student self-assessment page 62 Have students cir-
cle one of the three choices to describe how they
feel about this activity.

Assessment tip Do students understand the concept
of multiplication?
Materials
Student page 63
Blank paper

Concept and Handbook Reference
Measure length using appropriate metric units.
( MT K 347)

Get Started
Review metric units of length with the students.
Write the following questions on the board.
Which of these metric units of length is the smallest—a centimeter, a decimeter, or a meter? (centimeter) Which is the longest? (meter)
How many centimeters are equal to one meter? (100 centimeters)
How many centimeters are in one decimeter? (10 centimeters)
How many decimeters are equal to one meter? (10 decimeters)

Today’s Challenge
Explain that today you will be playing a game called “Who Wants to be the Top Scorer?” Have the students use the metric ruler on the side of page 63 and select one object to measure. Have each student take a blank sheet of paper and draw the object he or she chose and write the measure. Then ask the students to number their papers from 1 to 4.

As you ask each of four questions, have the students look at their measurement and answer the question. Yes answers will score points. Here are the questions to ask:
1. Is your object less than one decimeter long? If yes, score 10 points.
2. Is your object less than five centimeters long? If yes, score 5 points.
3. Is your object greater than 15 centimeters long? If yes, score 9 points.
4. Is your object greater than two decimeters long? If yes, score 8 points.

Have students find their total scores. Determine which student has the highest score. Have that student tell which object he or she measured and what the measurement was. Ask the student to explain how he or she scored the points.

Student page 63 Have students find objects in the room to match the clues.

Answers for page 63: Answers will vary. Possible answers: 1. piece of chalk 2. pencil 3. backpack 4. door

Go Further
Student page 63 Have students fill in the blanks to solve the riddle and create another riddle for a friend to solve. Have the solver sign his or her name.

Answers for page 63: 5–6. Check students’ riddles.

Assessment
Student self-assessment page 63 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students understand how to measure length in metric units?
Materials
Student page 64
Math Jumble activity poster and digit cards

Concept and Handbook References
Multiply by 2. (MTK 68, 119)

Background
\[
\begin{array}{ccc}
2 & \times & 5 \\
\text{factor} & \times & \text{factor} \\
\hline
\text{product}
\end{array}
\]

Get Started
Have students skip-count by two, starting with 2 and stating every multiple of 2 to 24. (2, 4, 6, 8, 10, and so on) Students could skip-count together as a group, or rotate their skip-counting. As students are skip-counting, record the multiples on the board as shown.

2, 4, 6, 8, 10, 12, 14, 16...

Next, ask how many twos it takes to reach a certain number. For example, “How many twos does it take to reach 10 when we skip count by two? (5) Repeat the question with other numbers, for example, 6, 18, 26, or 32.

Today’s Challenge
Using the 0–9 digit cards, construct the 3 by 3 poster shown. Explain that the object of today’s Math Jumble is to multiply each surrounding single-digit number by 2.

Students should state the multiplication fact and tell a story to go with the multiplication fact. Here is an example of a student response.

I see 2 and 4. \(2 \times 4 = 8\). Virginia and Sarah each have 4 library books to return to the library on Saturday. The girls have 8 books in all to return to the library.

Possible equations:
\[
\begin{align*}
2 \times 4 &= 8 \\
2 \times 3 &= 6 \\
2 \times 0 &= 0
\end{align*}
\]

Student page 64 Have students use the Math Jumble on student page 64 to find more multiplication facts.

Answers for student page 64: 2 \(\times\) 7 = 14;
\[
\begin{align*}
2 \times 3 &= 6; \\
2 \times 5 &= 10; \\
2 \times 4 &= 8; \\
2 \times 1 &= 2;
\end{align*}
\]
\[
\begin{align*}
2 \times 9 &= 18; \\
2 \times 6 &= 12; \\
2 \times 0 &= 0
\end{align*}
\]

Go Further
Student page 64 Have students answer the question in the student book.

Answers for student page 64: 3. Answers will vary. Check that the story matches the equation.

Assessment
Student self-assessment page 64 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Do students have quick recall when multiplying by 2? Are students able to communicate their understanding of multiplying by 2?
Materials
Student page 65
Blank paper

Concept and Handbook Reference
Review rectangular prisms and cubes.
(MTK 327–328)

Get Started
Draw pictures of a rectangular prism and a cube.

Have students look for objects in the room which have these shapes. Be sure students understand that a cube is just a special rectangular prism in the same way as a square is a special rectangle. Then use the objects students found to show what is meant by the faces, the edges, and the vertices of each figure.

Student page 65 To introduce the activity, work through the first problem on student page 65. Read or ask a student to read the problem. Next explain that when you have a problem and you are given several answers to choose from, it helps if you can “rule out” some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say A is wrong because “A cube has 8 vertices.” (If members of the class do not agree with the volunteer’s response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer’s choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (D). Be sure students understand why D is correct.

Today’s Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.

Then explain how points will be scored in today’s activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

Student page 65 Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.

Answers for student page 65: 1. B 2. A

When all students’ papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 65 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Can students identify rectangular prisms and cubes? Do they know how to count faces, edges, and vertices?
Materials
Student page 66

Concept and Handbook Reference
Find patterns of subtracting nine and ten on the hundred chart. (MTK 112-113)

Background
The goal of this activity is to develop a visual image of moving nine or ten on the hundred chart. Students will use direction arrows to indicate moves on the hundred chart.

Get Started
Draw a 3 by 3 set of boxes on the board as shown. Tell the students that you will show them how to follow arrows to move around this small board. The direction of an arrow shows which way to move. Each arrow tells you to move one block. Demonstrate how to follow directional arrows to move from box to box.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>E</td>
<td>F</td>
</tr>
<tr>
<td>G</td>
<td>H</td>
<td>I</td>
</tr>
</tbody>
</table>

Starting in Box A, moves you to Box C.
Starting in Box G, moves you to Box F.
Starting in Box A, moves you back to Box A.

Now ask the students to offer possible lists of direction arrows to move from Box C to:

Box I (is the simplest, but accept anything that works)

Box E (or are the simplest)

Box G (or , etc)

Have the students look at their hundred chart on student page 61. Ask them to start on 16 and tell what arrows would move them to: 17? ( ) 46? ( ) 47? ( )

If the students are at ease with using the arrows, a discussion about what difference order makes might be appropriate. (Order makes no difference.)

Today's Challenge
Student page 66 Have students complete the activity on the student page.

Answers for student page 66:

1. 13,
2. 57,
3. 35,
4. 53,
5. 38,
6. 74,

Go Further
Student page 66 Have students answer the question on the student page.

Answer for student page 66: 7. To subtract 10 you use one up arrow but to subtract 9 you use one up arrow and one right arrow.

Assessment
Student self-assessment page 66 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Can the students use arrows to move around the hundred chart? Do students see the relationship between subtracting ten and subtracting nine?
Materials
Student page 67
Math Maze cards (Week 14 Activity 67)

Concepts and Handbook References
Recognize and complete a pattern. (MTK 374)
Develop algebraic thinking. (MTK 49)

Background
Most students need to use visual skills to complete a pattern. Be sure students write or draw the patterns on the board while playing this week’s Math Maze.

Get Started
Ask students to study these patterns, find the missing piece, and explain their reasoning.

A, B, B, A, B, B, ___ (A)
1, 3, 5, ___, 9 (7)

As students are doing today’s Math Maze, they will need to write the patterns on the board. When students complete a pattern, they should explain their reasoning.

Today’s Challenge
Distribute the 18 Math Maze cards for Week 14. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.

Instructions for playing Math Maze Ask students to look at their cards. Ask one student to read the question that is written on his or her card. The student will need to write or draw the pattern on the board as he or she says it. Next ask, “Who has the card with the answer to the question just read?” Ask that student to read the answer, explain the pattern, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be read should be the answer on the first student’s card.

The correct sequence of questions and answers is shown on page 192.

Student page 67 When the group has finished playing the game, have students open their books and complete the Today’s Challenge activity on page 67 in the student book.

Answers for student page 67: 1. 17 2. 13 3. 20
4. 18 5. 30 6. 14 7. 5 8. 47 9. 200 10. 210
11. 21 12. 9

You may want to spend some time discussing the pattern in exercise 11. This pattern is called a Fibonacci Sequence. Each number in the series is the sum of the two numbers before it.

Go Further
Student page 67 Have students complete this section on the student page.

Answer for student page 67: 13. Answers will vary. Check students’ work.

Assessment
Student self-assessment page 67 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Can students recognize patterns? Can they find a missing piece in a pattern?
Materials
Student page 68
Blank paper (heavyweight if possible) or index cards

Concept and Handbook References
Review adding and subtracting multiples of ten.
(MTK 104, 117)

Background
Any number with a zero in the ones place is a multiple of ten. The numbers 0, 30, and 230 are examples of multiples of ten. Knowing how to add and subtract multiples of ten is a useful skill that students will use to estimate sums and differences.

Get Started
Have students practice adding multiples of ten by using examples such as these.

\[ 30 + 50 \ (80) \quad 60 + 50 \ (110) \]

Have students practice subtracting multiples of ten by using examples such as these.

\[ 70 - 30 \ (40) \quad 80 - 60 \ (20) \]

Today's Challenge
Student page 68 Have students find the sums and differences to complete the page.

Answers for student page 68: 1. 80 2. 40 3. 90 4. 10 5. 110 6. 30 7. 60 8. 0 9. 120 10. 20

Go over answers with the whole group or check students' papers individually.

Go Further
Have pairs of students make a set of cards to play the game "Concentration." Each pair of students will need 20 small pieces of paper or 20 index cards. Have the students use one slip of paper or card to copy the information from each box on student page 68.

Instructions for playing "Concentration" Shuffle the cards and lay them facedown in equal columns. Each player turns over a card. The player with the larger value goes first. Turn the cards over so that all cards are again facedown. The first player turns over two cards. If the cards match (for example, 60 + 20 and 80), the player keeps the cards and goes again. If the cards do not match, the player turns the cards back over and the other player takes a turn. Play continues until all cards have been taken. The player with more cards at the end of the game wins.

Assessment
Student self-assessment page 68 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students use mental math to add or subtract multiples of 10?
Materials
Student page 69
Math Jumble activity poster and digit cards

Concept and Handbook Reference
Multiply by 3. (MTK 68)

Get Started
Have students skip-count by three, starting with 3 and stating every multiple of 3 to 36. (3, 6, 9, 12, and so on) Students could skip-count together as a group, or rotate their skip-counting. As students are skip-counting, record the multiples on the board as shown.
3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36

Next, ask how many threes it takes to reach a certain number. For example, “How many threes does it take to reach 15 when we skip-count by three? (5) Repeat the question with other numbers, for example, 9 (3), 21 (7), 30 (10), or 36 (12).

Today’s Challenge
Using the 0–9 digit cards, construct the 3 by 3 poster shown. Explain that the object of today’s Math Jumble is to multiply each surrounding single-digit number by 3.

Students should state the equation when multiplying and tell a story to go with the multiplication fact. Here is an example of a student response.
I see 3 and 9. $3 \times 9 = 27$. We made 3 pizzas today and put 9 pieces of pepperoni on each one. There are 27 pieces of pepperoni on the pizzas.

Possible equations:
$3 \times 7 = 21$  
$3 \times 3 = 9$  
$3 \times 5 = 15$

Student page 69 Have students use the Math Jumble on student page 69 to find more multiplication facts.

Answers for student page 69: $3 \times 7 = 21$; $3 \times 3 = 9$; $3 \times 5 = 15$; $3 \times 4 = 12$; $3 \times 1 = 3$; $3 \times 9 = 27$; $3 \times 6 = 18$; $3 \times 0 = 0$

Go Further
Student page 69 Have students answer the question in the student book.

Answers for student page 69: Answers will vary. Check that the story matches the equation.

Assessment
Student self-assessment page 69 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Do students have quick recall when multiplying by 3? Are students able to communicate their understanding of multiplying by 3?
Materials
Student page 70
Blank paper

Concept and Handbook References
Find reasonable answers in a problem-solving situation. (MTK 390, 394)

Get Started
Student page 70 To introduce the activity, work through the first problem on student page 70. Read or ask a student to read the problem.

Explain that in this problem, some numbers are given, but one number is missing. Ask, “Which number is missing?” (the number Ben spun on one of his 3 spins) The only information you have about this number is how high or low it can be. Ask, “What is the highest possible number Ben could have spun for the third number?” (30) “The lowest?” (20) Ask, “How can you use that information to find possible amounts for the total?” (The total must be between and 20 + 30 + 20 and 20 + 30 + 30, or between 70 and 80.)

Next explain that when you have a problem and you are given several answers to choose from, it helps if you can “rule out” some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say D (90) is wrong because “It is more than 80.” (If members of the class do not agree with the volunteer’s response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer’s choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (C). Be sure students understand why C is correct.

Today’s Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.

Then explain how points will be scored in today’s activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

Student page 70 Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.

Answers for student page 70: 1. D 2. B

When all students’ papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 70 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students choose a reasonable answer to a problem when some information is missing?
Pattern Puzzler

Week 15 • Activity 71

Materials
Student page 71
Student book inside back cover

Concept and Handbook Reference
Find place value patterns on the hundred chart. (MTK 374)

Get Started
Ask the students to turn to the hundred chart on the inside of the back cover of their book.

Tell the students you are going to draw three squares from the hundred chart on the board, and they will look for clues to figure out what the missing numbers are. For instance, draw three adjacent boxes and write the number 23 in the middle box. Have the students tell you that the box on the left should have a 22 and the box on the right should have a 24.

When they understand that, move to a problem that is a little more difficult. Draw three boxes vertically and write 64 in the middle box. Ask the students what numbers are missing in the empty boxes. (54, 74)

Finally draw three boxes connected diagonally (see below) and write 42 in the center box. This problem is much more difficult, but by looking at their hundred chart the students should be able to find the missing numbers. (31, 53)

Today's Challenge
Student page 71 Have students complete the activity on the student page.

Answers for student page 71:

1. 57 58 59
2. 65
   75
   85

3. 11
   22
   33

Go Further
Student page 71 Have students answer the questions on the student page.

Answers for student page 71:

4. 25 26
   36 37
   47

5. 55
   64 66
   73 77

Assessment
Student self-assessment page 71 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do the students understand the relative position of numbers in the hundred chart?
**Materials**
Student page 72
Math Maze cards (Week 15 Activity 72)
Clock that can be manipulated (optional)

**Concept and Handbook Reference**
Review elapsed time. (MTK 338)

**Get Started**
Review the concept of time by asking questions like the ones below. If possible, as you read each question, use a clock to show the time. Then have a volunteer give the answer and show that time using the clock.

- It is now 3:00 P.M. What time was it 2 hours ago? (1:00 P.M.)
- It is now 3:30 P.M. What time will it be in 15 minutes? (3:45 P.M.)
- It is now 1:15 P.M. What time was it a half hour ago? (12:45 P.M.)
- It is now 12:45 P.M. What time was it one hour ago? (11:45 A.M.)

**Today's Challenge**
Distribute the 18 Math Maze cards for Week 15. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.

**Instructions for playing Math Maze** Ask students to look at their cards. Ask one student to read the question that is written on his or her card. Next ask, “Who has the card with the answer to the question just read?” Ask that student to read the answer, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be read should be the answer on the first student's card.

The correct sequence of questions and answers is shown on page 193.

**Student page 72** When the group has finished playing the game, have students open their books and complete the Today's Challenge activity on page 72 in the student book.

**Answers for student page 72:** 1. 60 2. 30 3. 15 4. 45 5. 5 6. 8

**Go Further**
**Student page 72** Have students complete this section on the student page.

**Answers for student page 72:** 7. 3:00 8. 7:15
Check students' clocks.

**Assessment**
**Student self-assessment page 72** Have students circle one of the three choices to describe how they feel about this activity.

**Assessment tip** Do students understand the concept of elapsed time?
Materials
Student page 73
Blank paper

Concept and Handbook Reference
Add coins to amounts greater than one dollar.
(MTK 18)

Get Started
Review adding coin amounts using mental math.
Ask questions such as the following and ask students to respond orally:

- What is the value of one quarter? (25¢)
- What is the value of two quarters? (50¢)
- What is the value of one quarter and two dimes? (45¢)
- What is the value of four quarters, one dime, and one nickel? ($1.15)

Today's Challenge
Explain that today you will be playing a game called “Who Wants to Be the Top Scorer?” Have each student take a blank sheet of paper and write any amount under $3.00. Then ask students to number their papers from 1 to 5.

As you ask each of five questions, have students look at their amounts and answer the question. Yes answers will score points. Here are the questions to ask:

1. Can you make your amount with five or fewer coins? If yes, score 10 points.
2. Can you make your amount with only dimes? If yes, score 5 points.
3. Is your amount greater than one dollar? If yes, score 9 points.
4. Can you make your amount with only quarters? If yes, score 8 points.
5. Is your amount greater than 25 cents and less than 75 cents? If yes, score 15 points.

Have students find their total scores. Determine which student has the highest score. Have that student write the amount on the board and explain how he or she scored the points.

Student page 73 Have students solve the riddles in the Today's Challenge section of page 73 in their books.

Answers for student page 73: 1. 3 quarters and 1 penny 2. 3 nickels and 1 dime

Go Further
Student page 73 Have students complete and solve the riddle and then create another riddle for a friend to solve. Have the friend sign his or her name.

Answers for student page 73: 3–4. Answers will vary. Check students' riddles.

Assessment
Student self-assessment page 73 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students know how to find the value of a set of coins?
Materials
Student page 74
Math Jumble activity poster and coin cards

Concept and Handbook Reference
Use pennies, nickels, and dimes to practice counting by fives and tens. (MTK 105)

Get Started
Have students practice counting by tens, beginning with any number. (For example: 4, 14, 24, 34, . . .)
Then have them practice counting by fives, beginning with any number. (For example: 7, 12, 17, 22, 27, . . .)

Today’s Challenge
Using the coin cards, construct the 4 by 4 poster shown. Explain that the object of today’s Math Jumble is to find strings of coins that total a given amount.

Strings of coins are made by joining coins that are inside squares that share a common side. For example, point to the coins in the first row and the last coin in the second row. Then, pointing to the coins one at a time, find the total number of cents as you move from left to right and down. (1, 2, 7, 17, 27)
The total is 27 cents.

Next, ask students to find a string of coins that totals 32 cents. (Possible string: all coins in the second column plus the last penny in the third column.) Ask a student to name an amount and have other students try to find a string of coins that totals that amount. Repeat several times.
Student page 74 Have students complete Today’s Challenge on student page 74.

Answers for student page 74: Answers will vary.
Check students’ work.

Go Further
Student page 74 Have students complete the activity in this section of the student page.

Answer for student page 74: 6. 91 cents.
Explanations will vary, but may include counting by fives and tens, or putting all pennies together, all nickels together, and all dimes together.

Assessment
Student self-assessment page 74 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Can students count pennies, nickels, and dimes? Do students count by fives and tens when counting nickels and dimes?
Materials
Student page 75
Blank paper

Concepts and Handbook References
Solve word problems using addition. (MTK 388)
Estimate sums by rounding to the nearest ten. (MTK 129)

Get Started
Help students review rounding to the nearest ten. Ask questions such as “What is 42 rounded to the nearest ten?” (40) “How do you decide whether to round 42 to 40 or to 50?” (Since 2 is in the ones place and 2 is less than 5, you round down.)

Next review how you can use rounding to estimate sums. You can round each addend to the nearest ten, and then add the rounded numbers to estimate the sum. For example, to estimate $62 + 85$, add $60 + 90$. The estimate is 150.

Student page 75 To introduce the activity, work through the first problem on student page 75. Read or ask a student to read the problem. Next explain that when you have a problem and you are given several answers to choose from, it helps if you can “rule out” some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say A (20) is wrong because “Eighteen and 24 each round to 20. The sum will be about 20 + 20.” (If members of the class do not agree with the volunteer’s response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer’s choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (C). Be sure students understand why C is correct.

Today’s Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.

Then explain how points will be scored in today’s activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

Student page 75 Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.

Answers for student page 75: 1. D  2. D

When all students’ papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 75 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Can students round numbers to the nearest ten? Can students estimate sums by rounding? Can students solve problems by estimating sums?
Materials
Student page 76

Concept and Handbook Reference
Examine patterns for multiples of 2. (MTK 91)

Background
Guess My Rule is played by sorting numbers one at a time into two columns labeled Yes and No according to a “secret” rule. As more and more numbers are added to the list the rule becomes more evident. Students try to guess the secret rule. They test a guess by trying to place a number in the correct column.

Get Started
Practice counting by twos.
Start with 2. (2, 4, 6, 8, 10, . . . )
Remind students that these numbers are multiples of 2.

My rule: multiples of 2

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>24</td>
<td>25</td>
</tr>
<tr>
<td>66</td>
<td>67</td>
</tr>
</tbody>
</table>

Now count backward by twos. Start with 98 and go at least as far as 66 (98, 96, 94, 92, 90, . . . ) Moving from one decade to the next will probably be the trickiest part. Next count backward by twos starting with 122 and go at least as far as 86. (122, 120, 118, 116, . . . ) Give special attention to the move from 100 down to 98.

Play Guess My Rule. As you begin to list numbers in two columns according to the rule, (multiple of two is yes, odd is no) tell the students there is a secret rule you are using to put numbers where they belong. Ask the students to try to discover the rule. When someone thinks he or she knows, ask “Where would I put 17? Where would I put 94?” and so forth, until everyone or almost everyone is answering correctly. Then let someone state the rule.

Play again, this time using the rule multiple of two with a two in the hundreds place is yes, any other number is no.

Today’s Challenge
Student page 76 Have students complete the activity on the student page.

Answers for student page 76: 1. 42 and 542 belong in the first column; 43 and 543 belong in the second column.

Go Further
Student page 76 Have students answer the question on the student page.

Answer for student page 76: 2. Even numbers (multiples of two) belong in the first column, odd in the second.

Assessment
Student self-assessment page 76 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Do students easily recognize multiples of 2? Can students sort numbers according to odd and even?
Materials
Student page 77
Math Maze cards (Week 16 Activity 77)

Concept and Handbook References
Use multiplying by 2 to help with multiplying by 4. (MTK 69, 119)

Get Started
Help students see the relationship between multiplying by 2 and multiplying by 4.

2 groups of 6 apples
\[
\begin{array}{cccc}
\hline
& & & \\
\hline
& & & \\
\hline
& & & \\
\hline
\end{array}
\]
\[2 \times 6 = 12\]

4 groups of 6 apples
\[
\begin{array}{cccc}
\hline
& & & \\
\hline
& & & \\
\hline
& & & \\
\hline
\end{array}
\]
\[4 \times 6 = 24\]

To multiply by 4, double the answer you got when you multiplied the same number by 2.

Today’s Challenge
Distribute the 18 Math Maze cards for Week 16. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.

Instructions for playing Math Maze Ask students to look at their cards. Ask one student to read the question that is written on his or her card. Next ask, “Who has the card with the answer to the question just read?” Ask that student to read the answer, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be read should be the answer on the first student’s card.

The correct sequence of questions and answers is shown on page 193.

Student page 77 When the group has finished playing the game, have students open their books and complete the Today’s Challenge activity on page 77 in the student book.

Answers for student page 77: 1. 2; 4; 8 2. 4; 8; 16 3. 5; 10; 20 4. 7; 14; 28 5. 100; 200; 400 6. 2; 4; 8 7. 3; 6; 12 8. 3; 6; 12

Go Further
Student page 77 Have students complete this section on the student page.

Answer for student page 77: 9. Responses will vary. Possible response: Double the number of days in 4 weeks. 28 days + 28 days = 56 days

Assessment
Student self-assessment page 77 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Do students know how to multiply by 2? Do students know how to multiply by 4?
Materials
Student page 78
Blank paper (heavyweight if possible) or index cards

Concepts and Handbook References
Count money. (MTK 18)
Find combinations of coins that make $1.00. (MTK 20)

Get Started
Have students brainstorm combinations of coins that make $1.00. Some possible combinations are:
- 100 pennies
- 50 pennies, 2 quarters
- 3 quarters, 2 dimes, 1 nickel
- 90 pennies, 1 dime
- 70 pennies, 3 dimes

Today's Challenge
Student page 78 Have students complete page 78. To do this, they write the number of each type of coin that would be needed so that the total amount in the pair of boxes is $1.00.

Answers for student page 78: 1. 5 2. 3 3. 6 4. 2 5. 3

Go over answers with the whole group or check students' papers individually.

Go Further
Have pairs of students make a set of cards to play the game "Concentration." Each pair of students will need 12 small pieces of paper or 12 index cards. Have the students use one slip of paper or card to copy the information from each box on student page 78.

Instructions for playing "Concentration" Shuffle the cards and lay them facedown in equal columns. Each player turns over a card. The player with the larger value goes first. Turn the cards over so that all cards are again facedown. The first player turns over two cards. If the total amount on both cards adds up exactly to a dollar, the player keeps the cards and goes again. If the total is not exactly one dollar, the player turns the cards back over and the other player takes a turn. Play continues until all cards have been taken. The player with more cards at the end of the game wins.

Assessment
Student self-assessment page 78 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Can students count money? Can students find combinations of coins that make a dollar?
Materials
Student page 79
Math Jumble activity poster and digit cards

Concept and Handbook Reference
Multiply by 4. (MTK 69)

Get Started
Have students skip-count by four, starting with 4 and stating every multiple of 4 to 40. (4, 8, 12, 16, and so on) Students could skip-count together as a group or rotate their skip-counting. As students are skip-counting, record the multiples on the board as shown.

4, 8, 12, 16, 20, 24...

Next, ask how many fours it takes to reach a certain number. For example, “How many fours does it take to reach 20 when we skip-count by four? (5) Repeat the question with other numbers.

Today’s Challenge
Using the 0–9 digit cards, construct the 3 by 3 poster shown. Explain that the object of today’s Math Jumble is to multiply all surrounding single digit numbers by four.

Students should state the equation when multiplying and tell a story to go with the multiplication fact. Here is an example of a student response.

I see 4 and 5. $4 \times 5 = 20$. Each car in the parking lot has 4 tires. There are 5 cars. There are 20 tires in all.

Possible equations:
$4 \times 5 = 20 \quad 4 \times 3 = 12 \quad 4 \times 9 = 36$

Student page 79 Have students use the Math Jumble on student page 79 to find more multiplication facts.

Answers for student page 79: $4 \times 7 = 28$;
$4 \times 3 = 12; \ 4 \times 5 = 20; \ 4 \times 2 = 8; \ 4 \times 1 = 4$;
$4 \times 9 = 36; \ 4 \times 6 = 24; \ 4 \times 0 = 0$

Go Further
Student page 79 Have students answer the question in the student book.

Answers for student page 79: Answers will vary. Check that the story and equation correspond.

Assessment
Student self-assessment page 79 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Do students have quick recall when multiplying by 4? Are students able to communicate their understanding of multiplying by 4?
Rule Out Two

Materials
Student page 80
Blank paper

Concepts and Handbook References
Read a measurement using a centimeter ruler. (MTK 420)
Apply measurement in a problem-solving situation. (MTK 400)

Get Started
Review centimeters by asking, “How long is a centimeter?” (about the width of your pinky) “What is the short way to write centimeter or centimeters?” (cm) “How many centimeters are there in a meter?” (100)

Student page 80 To introduce the activity, work through the first problem on student page 80. Read or ask a student to read the problem. Next explain that when you have a problem and you are given several answers to choose from, it helps if you can “rule out” some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say D (15 cm) is wrong because “The ruler does not even show 15 cm.” (If members of the class do not agree with the volunteer’s response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer’s choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (B). Be sure students understand why B is correct.

Today’s Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.

Then explain how points will be scored in today’s activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

Student page 80 Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.

Answers for student page 80: 1. A 2. D

When all students’ papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 80 Have students circle one of the three choices to describe how they feel about this activity.
Assessment tip Do students have a visual benchmark for the length of a centimeter?
Materials
Student page 81

Yellow crayon (or marker)

Concept and Handbook Reference
Recognize multiples of 2. (MTK 91)

Background
Multiples of 2 are even numbers. They have 0, 2, 4, 6, or 8 in the ones place, and when counting by ones, every other number is a multiple of 2.

Get Started
Practice counting by twos. Start with 2. (2, 4, 6, 8, 10, . . . )

Remind students that these numbers are multiples of 2.

Now play the game "Beep!" Explain that in this game we will be looking for multiples of 2. Have students sit in a circle. One student starts the game by saying "one." The next student says "Beep." The third student says "three," and so on. Each time a multiple of two is said, that student must remember to say "Beep!"

This should be quite easy for the students. If so, you can have fun with variations such as counting backward, or beginning with 100, or racing the clock.

Today's Challenge
Student page 81 Have students complete the activity on the student page.

Answers for student page 81: 1. All the numbers in the columns headed by 2, 4, 6, 8, and 10 should be yellow. 2. They are all colored yellow and they are all in a line. 3. They are all colored yellow and they are all in a line. 4. Answers will vary. They may notice that the chart is striped, or that all the colored numbers have a 0, 2, 4, 6, or 8 in the ones place.

Go Further
Student page 81 Have students complete the activity on the student page.

Answer for student page 81: 5. Circle 48, 24, 104, 180, 208, 432, and 826.

Assessment
Student self-assessment page 81 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can the students identify multiples of 2?
Math Maze

Materials
Student page 82
Math Maze cards (Week 17 Activity 82)

Concept and Handbook Reference
Write a fraction for part of a whole or part of a group. (MTK 210–213)

Get Started
Review fraction of a whole by drawing a circle and dividing it into 6 equal parts. Ask a volunteer to shade in \( \frac{2}{6} \) of the circle.

Review fraction of a group by drawing 5 triangles on the board. Ask a volunteer to circle \( \frac{3}{5} \) of the triangles.

Today's Challenge
Distribute the 18 Math Maze cards for Week 17. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.

Instructions for playing Math Maze Ask students to look at their cards. Ask one student to read the question that is written on his or her card. Next ask, “Who has the card with the answer to the question just read?” Ask that student to read the answer, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be read should be the answer on the first student’s card.

The correct sequence of questions and answers is shown on page 194.

Student page 82 When the group has finished playing the game, have students open their books and complete the Today’s Challenge activity on page 82 in the student book.

Answers for student page 82: 1. c 2. e 3. a 4. d 5. b

Go Further
Student page 82 Have students complete this section on the student page.

Answers for student page 82: 6. January, February, March, April, May, June, July, August, September, October, November, December  7. \( \frac{3}{12} \) or \( \frac{1}{4} \) 8. \( \frac{1}{12} \)
9. \( \frac{7}{12} \) or \( \frac{1}{6} \) 10. \( \frac{7}{12} \) or \( \frac{1}{6} \) 11. \( \frac{1}{12} \) 12. \( \frac{1}{12} \) 13. \( \frac{1}{12} \) 14. \( \frac{1}{12} \)

Assessment
Student self-assessment page 82 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students write a fraction to show part of a whole? Part of a group?
Materials
Student page 83
Crayons

Concept and Handbook Reference
Identify a fraction of a set. (MTK 214)

Get Started
Write and label the following fraction on the board.

\[
\frac{2}{3}
\]

 numerator
denominator

Ask two girls and one boy to stand in front of the group. Tell students, “Two thirds of the students standing are girls. One third of the students standing are boys.”

Today’s Challenge
Student page 83 Explain that today you will be playing a game called “Who Wants to be the Top Scorer?” Have each student open their student books to page 83. Talk about the number of eggs in the carton. (12) Have students color one or more of the eggs and write a fraction for the number colored. As you ask each of five questions, have each student look at the fraction, answer the question, and score points if appropriate. (Students should use the lines labeled 1–5.) Yes answers will score points. Here are the questions to ask:

1. Did you color six-twelfths or one-half of the eggs? If yes, score 10 points.
2. Did you color four-twelfths, or one-third of the eggs? If yes, score 5 points.
3. Did you color three-twelfths or one-fourth of the eggs? If yes, score 9 points.
4. Did you color two-twelfths or one-sixth of the eggs? If yes, score 8 points.
5. Did you color more than half of the eggs? If yes, score 15 points.

Have students find their total scores. Determine which student has the highest score. Have that student write the fraction on the board and explain how he or she scored the points.

Go Further
Student page 83 Have students write the fractions and create two similar exercises for a friend to solve. Have the friend sign his or her name.

Answers for student page 83: 6. \(\frac{3}{12}\) or \(\frac{1}{4}\) 7. \(\frac{4}{12}\) or \(\frac{1}{3}\) 8–9. Check students’ work.

Assessment
Student self-assessment page 83 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students understand how to determine and write a fraction for part of a set?
Materials
Student page 84
Math Jumble activity poster and digit cards

Concept and Handbook Reference
Investigate the Commutative Property of Multiplication. (MTK 241)

Background
Commutative Property of Multiplication:

\[ 4 \times 5 = 5 \times 4 \]

Get Started
Explain to students that sometimes order doesn’t matter. For example, you can put on your coat before you put on your hat and it wouldn’t make any difference. Ask students to brainstorm occasions when order doesn’t matter. Possible responses include getting ready for school, completing chores, etc. Explain to students that the Commutative Property of Multiplication (also known as the Order Property) states that the factors in multiplication can be placed in any order. For example, \( 5 \times 8 \) yields the same product as \( 8 \times 5 \). The order of the factors does not change the product.

Today’s Challenge
Using the 0–9 digit cards, construct the 4 by 4 poster shown. Explain that the object of today’s Math Jumble is to find strings of numbers that could be used to make pairs of multiplication facts.

Strings of numbers are made by connecting adjoining numbers (top to bottom and/or left to right) on the poster. For example, the 3 and 4 from the top row can be used to make \( 3 \times 4 \), and 4 and 3 from the second column can be used to make \( 4 \times 3 \).

Student page 84 Have students use the Math Jumble on student page 84 to find more strings of numbers.

Answers for student page 84: 1–5. \( 5 \times 2 = 10 \) and \( 2 \times 5 = 10 \); \( 2 \times 7 = 14 \) and \( 7 \times 2 = 14 \);
\( 3 \times 2 = 6 \) and \( 2 \times 3 = 6 \); \( 5 \times 4 = 20 \) and \( 4 \times 5 = 20 \).

Go Further
Student page 84 Have students answer the question in the student book.

Answer for student page 84:

6.

\[
\begin{array}{cccc}
3 & 4 & 4 & 3 \\
2 & 6 & 6 & 2 \\
2 & 6 & 6 & 2 \\
3 & 4 & 4 & 3 \\
\end{array}
\]

\( 2 \times 6 \) and \( 6 \times 2 \), \( 3 \times 4 \) and \( 4 \times 3 \), \( 3 \times 2 \) and \( 2 \times 3 \), \( 4 \times 6 \) and \( 6 \times 4 \)

Assessment
Student self-assessment page 84 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students understand the Commutative Property of Multiplication?
Rule Out Two

Week 17 • Activity 85

Materials
Student page 85
Blank paper

Concept and Handbook Reference
Recognize and complete fact families. (MTK 54)

Background
"Fact family" is the name given to a group of facts related by the use of the same numbers and by inverse operations (for example, addition/subtraction or multiplication/division). The facts 3 + 4 = 7, 4 + 3 = 7, 7 - 3 = 4 and 7 - 4 = 3 form a fact family.

Get Started
Write these three numbers on the board: 4, 5, 9. Ask for volunteers to use the three numbers in an addition or subtraction fact. The only facts possible are 5 + 4 = 9, 4 + 5 = 9, 9 - 5 = 4, and 9 - 4 = 5. Explain that facts that are related in this way are called a fact family.

Student page 85 To introduce the activity, work through the first problem on student page 85. Read or ask a student to read the problem. Next explain that when you have a problem and you are given several answers to choose from, it helps if you can "rule out" some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say C (3 + 8 = 11) is wrong because "None of the numbers match the numbers given in the problem." (If members of the class do not agree with the volunteer's response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer's choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (A). Be sure students understand why A is correct.

Today's Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.

Then explain how points will be scored in today's activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

Student page 85 Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.

Answers for student page 85: 1. C 2. D

When all students' papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 85 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students know how to write facts for an addition/subtraction fact family?
Materials
Student page 86

Concept and Handbook Reference
Recognize multiples of 3. (MTK 90)

Get Started
Practice counting by threes. Start with 3. (3, 6, 9, 12, 15, . . .) Count as far as 36. Then begin at 36 and count backward by threes all the way to 3. Remind students that these numbers are multiples of 3.

Now play the game “Beep!” Have students sit in a circle. One student starts the game by saying “one.” The next student says “two.” The third student says “Beep!” in place of “three” and so on. Each time a multiple of three is said, that student must remember to say “Beep!”

If students find this too easy, use a watch or clock with a second hand to time the count from 3 to 36. Then repeat the count with the goal of going faster.

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Today’s Challenge
Student page 86 Have students complete the activity on the student page.

Answers for student page 86: 1. 9, 12, 18, 21, 24, 30, 33 2. 3, 6, 9, 3, 6, 9, 3, 6, 9

Go Further
Student page 86 Have students answer the question on the student page.

Answer for student page 86: 3. They should mention that the sums repeat 3, 6, 9. They might also mention that the sums are also multiples of three.

Assessment
Student self-assessment page 86 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Are the students able to count by threes up to 30?

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Beep
For multiples of 3:
1 - -
2 - -
3 Beep!
4 - -
5 - -
6 Beep!
7 - -
8 - -
9 Beep!
10 - -
11 - -
12 Beep!
And so on...
Materials
Student page 87
Math Maze cards (Week 18 Activity 87)

Concept and Handbook References
Review concepts presented in previous Math Mazes.  
(MTK 60, 210, 300, 332, 374)

Get Started
Tell students that today’s activity will be a review of the math from the Math Mazes done previously.

Today’s Challenge
Distribute the 18 Math Maze cards for Week 18. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.

Instructions for playing Math Maze Ask students to look at their cards. Ask one student to read the question that is written on his or her card. Next ask, “Who has the card with the answer to the question just read?” Ask that student to read the answer, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be read should be the answer on the first student’s card.

The correct sequence of questions and answers is shown on page 194.

Student page 87 When the group has finished playing the game, have students open their books and complete the Today’s Challenge activity on page 87 in the student book.

Answers for student page 87: 1. 8  2. 28  3. 16  
4. 2000  5. 4  6. 3  7. 30

Go Further
Student page 87 Have students complete this section on the student page.

Answers for student page 87: 8. 21; Possible explanation: Beginning with the third number, every number is the sum of the two numbers that came before it. 9. Check students’ work.

Assessment
Student self-assessment page 87 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip What concepts do students need more work on?
Materials
Student page 88
Blank paper (heavyweight if possible) or index cards
Clock (optional)

Concept and Handbook Reference
Relate time after the hour to time before the next hour. (MTK 335–336)

Background
When we write time using a colon, we write the hour and then the number of minutes after the hour, for example, 11:45. When we say time, we can say the hour followed by the number of minutes after the hour, for example, “eleven forty-five.” However, for times after the half hour, we often use another way. We tell the number of minutes before the next hour. For example, for 11:45, we might say “15 minutes before 12”, “15 minutes to 12”, or “quarter to 12”. In order to understand this concept, it helps if students can recognize pairs of numbers that have a sum of 60.

Get Started
Begin by saying each number below and asking students to tell “how many more are needed to make 60.”

50 (10)  45 (15)  20 (40)
55 (5)  35 (25)  40 (20)

Draw a clock on the board or use a real clock to show 3:45. Ask students to tell the time. Be sure students understand how to count by fives to find the minutes after the hour. Ask, “How many minutes after 3:00 is it?” (45) “How many minutes before 4:00 is it?” (15)

Explain two different ways to tell the time: three forty-five or 15 minutes to 4.

Today’s Challenge
Student page 88 Have students supply the missing numbers for times before the hour.

Answers for student page 88: 1. 5 2. 5 3. 10 4. 25; 2 5. 15; 1 6. 20; 2 7. 20; 1 8. 15; 2 9. 25; 1 10. 1:45; fifteen minutes is one-fourth or one quarter of an hour.

Go over answers with the whole group or check students’ papers individually.

Go Further
Have pairs of students make a set of cards to play the game “Concentration.” Each pair of students will need 20 small pieces of paper or 20 index cards. Have the students use one slip of paper or card to copy the information from each box on student page 88.

Instructions for playing “Concentration” Shuffle the cards and lay them facedown in equal columns. Players decide who goes first. The first player turns over two cards. If the cards match (show two ways to say the same time), the player keeps the cards and goes again. If the cards do not match, the player turns the cards back over and the other player takes a turn. Play continues until all cards have been taken. The player with more cards at the end of the game wins.

Assessment
Student self-assessment page 88 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students understand how to tell time as time after the hour and as time before the hour?
Materials
Student page 89
Math Jumble activity poster and digit cards

Concept and Handbook Reference
Multiply by 5. \( (MTK\ 70) \)

Get Started
Have students skip-count by five, starting with 5 and stating every multiple of 5 to 50. \( (5, 10, 15, 20, \text{ and so on) } \) Students could skip-count together as a group or rotate their skip-counting. As students are skip-counting, record the multiples on the board as shown.

\[ 5, 10, 15, 20, 25, \ldots \]

Next, ask how many fives it takes to reach a certain number. For example, "How many fives does it take to reach 20 when we skip-count by five? (4) Repeat the question with other numbers.

Today's Challenge
Using the 0–9 digit cards, construct the 3 by 3 poster shown. Explain that the object of today’s Math Jumble is to multiply all surrounding single digit numbers by five.

Students should state the equation when multiplying and tell a story to go with the multiplication fact. Here is an example of a student response.

I see 5 and 4. \( 5 \times 4 = 20 \). There are five fingers on each hand. I see four hands waving. That means there are 20 fingers waving.

Possible equations:
\[ 5 \times 2 = 10 \quad 5 \times 3 = 15 \quad 5 \times 4 = 20 \]

Student page 89 Have students use the Math Jumble on student page 89 to find more multiplication facts.
Answers for student page 89: \( 5 \times 4 = 20; 5 \times 7 = 35; 5 \times 3 = 15; 5 \times 2 = 10; 5 \times 8 = 40; 5 \times 9 = 45; 5 \times 6 = 30; 5 \times 0 = 0 \)

Go Further
Student page 89 Have students answer the question in the student book.

Answers for student page 89: Answers will vary. Check that the story corresponds to the equation.

Assessment
Student self-assessment page 89 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Do students have quick recall when multiplying by 5? Are students able to communicate their understanding of multiplying by 5?
Materials
Student page 90
Blank paper

Concepts and Handbook References
Relate addition and multiplication. (MTK 49)
Choose a number sentence that correctly represents
a word problem. (MTK 384)

Get Started
Student page 90 To introduce the activity, work
through the first problem on student page 90. Read
or ask a student to read the problem. Ask a volun
teeer to draw a picture to show the information in
the problem. (A student might draw three drums
each labeled 45 minutes.) Ask, “How can we use
addition to find the total?” (45 + 45 + 45) “How
can we use multiplication to find the total?”
(3 × 45)
Next explain that when you have a problem and
you are given several answers to choose from, it
helps if you can “rule out” some of the answers. Ask
for a volunteer to choose an answer that he or she
knows is wrong and tell why the answer is wrong.
For example, a student might say D (45 – 3 = ___)
is wrong because “This problem is not about sub
traction.” (If members of the class do not agree
with the volunteer’s response or reason, discuss until
a consensus is reached.) Have each student cross
out the volunteer’s choice and write the reason on
the line next to the incorrect answer. Ask for a sec
ond volunteer to rule out another answer and pro
ceed in the same way. Then ask students to choose
the correct answer from the remaining two choices
and fill in the circle that shows the letter of the cor
rect answer (C). Be sure students understand why C
is correct.

Today’s Challenge
Divide students into groups of 2, 3, or 4. Students
will be able to consult with members of the group,
but each student will complete the page and will
receive an individual score.

Then explain how points will be scored in today’s
activity. Each student will receive 10 points for each
answer (up to 2) that was ruled out for a good rea
son (a maximum of 20 points) and 10 points for
choosing the correct answer. So, the maximum
number of points for each question is 30 and the
maximum number of points for the day is 60.

Student page 90 Have students work through each
problem, ruling out two answers, giving reasons,
and then choosing the correct answer. When a
group has completed both problems, the members
should bring you their papers for scoring. Discuss
errors with individuals or the group if necessary.

Answers for student page 90: 1. B 2. D
When all students’ papers have been scored, deter
mine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student
write his or her name and then create a multiple
choice problem similar to the problems just solved.
Ask each to share the problem with another stu
dent. The second student solves the problem and
signs his or her name.

Assessment
Student self-assessment page 90 Have students cir
cle one of the three choices to describe how they
feel about this activity.

Assessment tip Do students understand how multi
plication and addition are related?
Materials
Student page 91

Concept and Handbook Reference
Recognize multiples of three. (MTK 90)

Background
The goal of this activity is to help the students recognize multiples of three greater than 30. For instance, if they see that 30 is a multiple of 3, they might also see that 33, 36, and 39 are multiples of 3. If they see that 51 is 30 + 21, they will recognize 51 as a multiple of three.

Get Started
Ask the students to tell you what it means to say 30 is a multiple of 3. (It means you can multiply 3 by something and get 30. It means you say 30 when you count by threes. It means that 30 candies could be shared evenly by 3 people, or that 30 things can be put into equal groups of 3) Encourage the students to explain the concept in as many ways as they can.

Now draw a cookie jar with three extra cookies on the board. Label the cookie jar as holding 30 cookies. Draw another with 6 extra cookies, and another with 4 extra cookies. Ask the students which sets of cookies are multiples of 3. (33 and 36) Have them give you the reasons behind their answers.

30 cookies + 3  30 cookies + 6  30 cookies + 4

Today's Challenge
Student page 91 Have students complete the activity on the student page.

Answers for student page 91: 1. 12, 18, 21, 27  2. 36, 39, 42, 45, 48, 51, 54, 57, 60  3. They may see various patterns. Useful patterns include seeing that the ones digit is the same for each row and that the numbers in the second column count by threes.

Go Further
Student page 91 Have students complete the activity on the student page.

Answer for student page 91: 4. From left to right the numbers that should be circled are 6, 33, 57, 27, 12, 15, 60.

Assessment
Student self-assessment page 91 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can the students recognize multiples of 3 above 30?
Materials
Student page 92
Math Maze cards (Week 19 Activity 92)

Concepts and Handbook References
Write multiplication sentences for situations. (MTK 60–65)
Write division sentences for situations. (MTK 74–79)

Get Started
Review the concept of division. Write this number sentence (or equation) on the board.

\[ 15 \div 5 = 3 \]

Ask students to brainstorm problems that could be solved by using this number sentence. Possible responses:

- Five children share 15 cookies. How many cookies does each child get? (3 cookies)
- How many nickels do you need to make 15 cents? (3 nickels)
- There are 15 cars. There are 5 cars in each row. How many rows are there? (3 rows)
- Fifteen pencils are divided into packages of 5. How many packages are there? (3 packages)

Today's Challenge
Distribute the 18 Math Maze cards for Week 19. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.

Instructions for playing Math Maze
Ask students to look at their cards. Ask one student to read the question that is written on his or her card. Next ask, “Who has the card with the answer to the question just read?” Ask that student to read the answer, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be read should be the answer on the first student's card.

The correct sequence of questions and answers is shown on page 195.

Student page 92
When the group has finished playing the game, have students open their books and complete the Today's Challenge activity on page 92 in the student book.

Answers for student page 92: 1. f 2. a 3. e 4. c

Go Further
Student page 92
Have students complete this section on the student page.

Answers for student page 92: 5. 12 ÷ 3 = 4; 4
6. 6 × 5 = 30; 30

Assessment
Student self-assessment page 92
Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips
Do students understand the concept of multiplication? The concept of division?
Game Time

Week 19 • Activity 93

Materials
Student page 93
Blank paper

Concept and Handbook Reference
Review names of polygons. (MTK 311–313)

Get Started
A polygon is a closed figure that is formed by line segments. To review names of polygons, copy these figures on the board. Ask students to name the figures, and then write the name of the figures.

- △ △ triangles (3 sides)
- □ ◇ quadrilaterals (4 sides)
- □ ▽ pentagons (5 sides)
- □ ◇ hexagons (6 sides)

Then copy and talk about these special quadrilaterals.

- □ □ rectangles (quadrilaterals with 4 square corners)
- □ □ squares (quadrilaterals with 4 square corners and all sides the same length)

Student page 93 Have students use the information on the board to answer the questions in the Get Started section of page 93 in their books.

Answers for student page 93: 1. a. no  b. no  c. yes  d. no
2. a. yes  b. yes  c. no  d. yes

As you ask each of five questions, have students look at their polygons and answer the question. Yes answers will score points. Here are the questions to ask:

1. Does your polygon have fewer sides than a quadrilateral? If yes, score 10 points.
2. Do all sides of your polygon have a different length? If yes, score 5 points.
3. Is your polygon a quadrilateral? If yes, score 9 points.
4. Does your polygon have any square corners? If yes, score 8 points.
5. Does your polygon have more sides than a pentagon? If yes, score 15 points.

Have students find their total scores. Determine which student has the highest score. Have that student draw the polygon on the board and explain how he or she scored the points.

Go Further
Student page 93 Have students solve the riddle and create another riddle for a friend to solve. Have the friend sign his or her name.

Answers for student page 93: 3. pentagon
4. Check students’ riddles.

Assessment
Student self-assessment page 93 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students understand how polygons are named?

Today’s Challenge
Explain that today you will be playing a game called “Who Wants to Be the Top Scorer?” Have each student take a blank sheet of paper and draw any polygon he or she chooses. Then ask students to number their papers from 1 to 5.
Materials
Student page 94
Math Jumble activity poster and digit cards

Concepts and Handbook References
Use mental math to add 10 to any number.
(MTK 105)
Think of adding 9 to a number as adding 10 – 1.
(MTK 110)
Think of adding 8 to a number as adding 10 – 2.
(MTK 45)

Get Started
Practice adding 10 mentally. One student calls out an addend. Another student adds 10 to the number mentally and gives the sum. For example, one student calls out “4,” the second student calls out “14.” Do this until all students have had the opportunity to participate.

Today’s Challenge
Using the 0–9 digit cards, construct the 4 by 4 poster shown. Explain that the object of today’s Math Jumble is to make numbers between 20 and 80, and then add 10, 9, and 8 to the numbers.

Ask for volunteers to write a few examples on the board.

Possible examples:

\[
\begin{align*}
26 & +10 & 36 \\
26 & +9 & 35 \\
26 & +8 & 34
\end{align*}
\]

Student page 94 Have students use the Math Jumble on student page 94 to find numbers between 20 and 80.

Answers for student page 94: 1–3. Answers will vary.

Go Further
Student page 94 Have students answer the question on the student page.

Answer for student page 94: 4. Answers will vary. Students may indicate that adding 8 to a number is like adding 10 then subtracting 2.

Assessment
Student self-assessment page 94 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students add 8, 9, or 10 to a number mentally?
Materials
Student page 95
Real or play money (3 pennies, 1 dime, 1 quarter)
Blank paper

Concept and Handbook Reference
Make change by counting up. (MTK 20)

Get Started
Use the coins to act out one method of counting change—counting up from the amount of the purchase until you reach the amount given to the clerk. Suppose a carton of juice costs $0.62 and the clerk is given a dollar. Here is how the clerk might count the change. She begins by saying the cost of the item ($0.62), then she hands the customer 3 pennies, one at a time, saying, "$0.63, $0.64, $0.65", then she hands the customer a dime saying, "$0.75," and a quarter saying, "$1.00."

Student page 95 To introduce the activity, work through the first problem on student page 95. Read or ask a student to read the problem. Next explain that when you have a problem and you are given several answers to choose from, it helps if you can "rule out" some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say B (a dime) is wrong because "$0.69 plus a dime is only $0.79, not $1.00." (If members of the class do not agree with the volunteer’s response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer’s choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (D). Be sure students understand why D is correct.

Today’s Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.

Then explain how points will be scored in today’s activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

Student page 95 Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.

Answers for student page 95: 1. C 2. C

When all students’ papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 95 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students count up to check change?
Materials
Student page 96
Yellow and blue crayons (or markers)

Concept and Handbook References
Recognize the relationship between multiples of 6 and multiples of 2 and 3. (MTK 95, 207)

Background
Any number that is a multiple of both 2 and 3 is also a multiple of 6. The goal of this activity is to help students recognize this pattern.

Get Started
Practice counting by twos. Start with 2. (2, 4, 6, 8, 10, . . .) Remind students that these numbers are multiples of 2.

Practice counting by threes. Start with 3. (3, 6, 9, 12, 15, . . .) Remind students that these numbers are multiples of 3.

Practice counting by sixes. Start with 6. (6, 12, 18, 24, . . .) Remind students that these numbers are multiples of 6.

Now play the game “Beep, Honk!” Explain that in this game we will be looking for multiples of 2 and multiples of 3. Have students sit in a circle. One student starts the game by saying “one.” The next student says “Beep!” The third students says “Honk!,” and so on. If a number is a multiple of 2 and a multiple of 3, say “Beep, Honk!” Each time a multiple is said, that student must decide whether to say “Beep!”, “Honk!”, or “Beep, Honk!”

If students find this too confusing, it might be helpful to write all the numbers from 1 to 30 on the board. This would help them keep track of what to say.

Students should notice that the “Beep, Honk!” numbers are multiples of 6. This concept will be reinforced in the Today’s Challenge section in the student book.

Today’s Challenge
Student page 96 Have students complete the activity on the student page.

Answers for student page 96: 1. Yellow numbers are: 2, 4, 6, 8, 10, 12, . . . 96, 98, 100. 2. Blue numbers are: 3, 6, 9, 12, 15, 18, . . . 93, 96, 99. 3. Circled numbers (all numbers that are colored both blue and yellow) are: 6, 12, 18, 24, 30, . . . 84, 90, 96.

Go Further
Student page 96 Have students answer the question on the student page.

Answer for student page 96: 4. The multiples of 6 are the numbers that are both multiples of 2 and multiples of 3.

Assessment
Student self-assessment page 96 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students see that the multiples of 6 are the numbers that are both multiples of 2 and multiples of 3?
Materials
Student page 97
Math Maze cards (Week 20 Activity 97)

Concept and Handbook Reference
Use multiplying by 2 to help with multiplying by 3.
(MTK 68)

Get Started
Help students see the relationship between multiplying by 2 and multiplying by 3.

2 groups of 4 children

3 groups of 4 children

2 x 4 = 8

3 x 4 = 12

The correct sequence of questions and answers is shown on page 196.

Student page 97 When the group has finished playing the game, have students open their books and complete the Today’s Challenge activity on page 97 in the student book.

Answers for student page 97: 1. 2; 4; 6 2. 3; 6; 9 3. 5; 10; 15 4. 7; 14; 21 5. 3; 6; 9 6. 2; 4; 6 7. 5; 10; 15 8. 0; 0; 0

Go Further
Student page 97 Have students complete this section on the student page.

Answer for student page 97: 9. Responses will vary. Possible response: Double the number of days in 3 weeks. 21 days + 21 days = 42 days

Assessment
Student self-assessment page 97 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Do students know how to multiply by 2? Do students know how to multiply by 3?

To multiply a number by 3, double the number and then add the number.

Today’s Challenge
Distribute the 18 Math Maze cards for Week 20. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.

Instructions for playing Math Maze Ask students to look at their cards. Ask one student to read the question that is written on his or her card. Next ask, “Who has the card with the answer to the question just read?” Ask that student to read the answer, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be read should be the answer on the first student’s card.
Materials
Student page 98
Blank paper

Concepts and Handbook References
Recognize multiples of 2. (MTK 68)
Recognize multiples of 5. (MTK 70)

Get Started
Have students turn to the hundred chart on the inside back cover of their student book. Ask the students to skip count by twos, beginning with 2. Write the numbers on the board. (2, 4, 6, 8, 10, 12, etc.) Explain that these numbers are multiples of 2. Ask, “What pattern do you see?” (The numbers in the ones place are 2, 4, 6, 8, 0.)

Next, have the students skip count by fives beginning with 5 and write the numbers on the board. (5, 10, 15, 20, 25, etc.) These numbers are multiples of 5. Ask, “What pattern do you see?” (The numbers in the ones place are 5 or 0.)

Today’s Challenge
Explain that today the class will be playing a game called “Fantastic Finalist.” Give each student a piece of paper with a multiple of 2 or a multiple of 5. Be sure that one student receives the number 26, since that number will be the “Fantastic Finalist.”

Have all students hold their numbers and stand in a large circle. Explain that the object of the game is to be the “Fantastic Finalist,” the last student to remain standing.

Read each of the following challenges, one at a time.

- If your number is greater than 30, sit down.
- If your number has a 4 in the ones place, sit down.
- If your number is less than 18, sit down.
- If your number has a 5 in the ones place, sit down.
- If your number has a 2 or 8 in the ones place, sit down.
- If your number has a 0 in the ones place, sit down.

At this point, only the student holding the number 26 should still be standing. That student is the “Fantastic Finalist.”

Go Further
Student page 98 Have students complete the activity on the student page.

Answers for student page 98: 1. 29 2. 10, 20, 30

Assessment
Student self-assessment page 98 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Can students name numbers that are multiples of 2? Multiples of 5?
Materials
Student page 99
Math Jumble activity poster, digit and coin cards

Concept and Handbook Reference
Use nickels to practice counting by fives. (MTK 70)

Get Started
Have students review multiples of 5 using nickels. Ask questions such as the following.
How much are 5 nickels worth? (25¢) 4 nickels? (20¢) 7 nickels? (35¢)

Today's Challenge
Using the digit cards and nickel coin cards, construct the 4 by 4 poster shown. Explain that the object of today's Math Jumble is to multiply a nickel by an adjoining number. For example, point to the first two cards in the first row. Ask, "How much are 6 nickels worth?" (30¢) If needed, have the students skip-count by five.

Student page 99 Have students complete Today's Challenge on student page 99.
Answers for student page 99: 1–5. Possible answers: (left to right) 45¢, 35¢, 40¢, 25¢, 20¢, 15¢, 10¢.

Go Further
Student page 99 Have students complete the activity in this section of the student page.
Answer for student page 99: 6. $2.20; I added all the amounts. Explanations will vary.

Assessment
Student self-assessment page 99 Have students circle one of the three choices to describe how they feel about this activity.
Assessment tip Can students count by fives to count the value of nickels?
Materials
Student page 100
Blank paper

Concept and Handbook Reference
Review finding the perimeter of a figure. (MTK 348)

Get Started
Ask students to try to recall the word that is used for the distance around a figure (perimeter). Point out the word “rim” in the word perimeter.

Student page 100 To introduce the activity, work through the first problem on student page 100. Read or ask a student to read the problem. Ask students to think about how large the answer will be. “Will the perimeter be less than 8 inches?” (no) “Greater than 10 inches?” (yes) “Greater than 30 inches?” (no)

Next explain that when you have a problem and you are given several answers to choose from, it helps if you can “rule out” some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say C (5 in.) is wrong because “Five inches is the length of one side.” (If members of the class do not agree with the volunteer’s response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer’s choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (B). Be sure students understand why B is correct.

Then explain how points will be scored in today’s activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

Student page 100 Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.

Answers for student page 100: 1. C 2. B

When all students’ papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 100 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students find the perimeter of a figure?

Today’s Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.
Pattern Ruzzler

Week 21 • Activity 101

Materials
Student page 101

Concept and Handbook Reference
Recognize the relationship between multiples of 5 and 10. (MTK 95)

Background
In the game “Beep” players count by ones from any given starting number, often beginning with the number one. The count passes around the room with each player speaking the next number, but substituting the word “Beep” or the word “Honk” for certain number words according to the rules of the day.

Get Started
Review counting by fives. Start with 5 and count at least to 100. (5, 10, 15, 20, 25, . . .) Remind students that these numbers are multiples of 5.

Review counting by tens. Start with 10 and count at least to 100. (10, 20, 30, 40, 50, . . .) Remind students that these numbers are multiples of 10.

Now play the game “Beep, Honk!” Explain that in this game they will be looking for multiples of 5 and multiples of 10. Have students sit in a circle. One student starts the game by saying “one.” The next students say “two,” “three,” and “four.” The fifth student says “Beep!,” and so on. Each time a multiple is said, that student must decide whether to say “Beep!” or “Beep, Honk!”

The count will quickly reach 100. At that point you might choose to stop and start a new count going backward from 100, or backward from 300 if the students seem ready.

Students should notice that every multiple of 10 is also a multiple of 5. This concept is reinforced in the Today’s Challenge section in the student book.

Today’s Challenge
Student page 101 Have students complete the activity on the student page.

Answers for student page 101: 1. Multiples of 5 but not 10 are 15, 25, 35, 45, 55, and 85. Multiples of 5 and 10 are 30, 40, 70, 80, 90.

Go Further
Student page 101 Have students answer the question on the student page. Allow time to share answers.

Answer for student page 101: 2. Answers will vary. They might mention that a ten is 2 fives, or that when you count by fives you say all the multiples of ten. They should show some understanding of how five fits into ten.

Assessment
Student self-assessment page 101 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Do students see that the multiples of 10 are all multiples of 5? Do they recognize that 2 fives make a ten?

Beep, Honk!
For multiples of 5 and 10:

5 Beep!
6 - -
7 - -
8 - -
9 - -
10 Beep! Honk!
11 - -
12 - -
13 - -
14 - -
15 Beep!
And so on...
**Materials**
Student page 102
Math Maze cards (Week 21 Activity 102)

**Concepts and Handbook References**
Multiply by multiples of 10. *(MTK 121)*
Multiply by multiples of 100. *(MTK 121)*

**Get Started**
Present the following exercises to the students.

3 x 2 (6)  3 x 2 tens (6 tens)  3 x 20 (60)
4 x 4 (16)  4 x 4 hundreds  4 x 400
                      (16 hundreds)  (1600)

These exercises should help them see how knowing basic multiplication facts can help them multiply multiples of 10 or multiples of 100.

**Today’s Challenge**
Distribute the 18 Math Maze cards for Week 21. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.

**Instructions for playing Math Maze** Ask students to look at their cards. Ask one student to read the question that is written on his or her card. Next ask, “Who has the card with the answer to the question just read?” Ask that student to read the answer, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be read should be the answer on the first student’s card.

The correct sequence of questions and answers is shown on page 197.

**Student page 102** When the group has finished playing the game, have students open their books and complete the Today’s Challenge activity on page 102 in the student book.

**Answers for student page 102:**
1. 8, 80, 800  
2. 27, 270, 2700  
3. 32, 320, 3200  
4. 14, 140, 1400  
5. 24, 240, 2400  
6. 36, 360, 3600

**Go Further**
**Student page 102** Have students complete this section on the student page.

**Answers for student page 102:** Answers will vary.

**Assessment**
**Student self-assessment page 102** Have students circle one of the three choices to describe how they feel about this activity.

**Assessment tips** Can students multiply multiples of 10? Multiples of 100?
Materials
Student page 103
Blank paper

Concept and Handbook Reference
Review place value to the thousands place. (MTK 6)

Get Started
Review the concept of place value. Draw the place value chart on the board to show the number 3564.

<table>
<thead>
<tr>
<th>Thousands</th>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>5</td>
<td>6</td>
<td>4</td>
</tr>
</tbody>
</table>

Point out that 4 is in the ones place, 6 is in the tens place, 5 is in the hundreds place, and 3 is in the thousands place.

Today's Challenge
Explain that today the class will be playing a game called “Fantastic Finalist.” Give each student a piece of paper with one of the following numbers.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1436</td>
<td>3578</td>
<td>4459</td>
<td>6575</td>
</tr>
<tr>
<td>9721</td>
<td>5243</td>
<td>3107</td>
<td>5389</td>
</tr>
<tr>
<td>7725</td>
<td>6641</td>
<td>7163</td>
<td>8987</td>
</tr>
<tr>
<td>2729</td>
<td>9761</td>
<td>8763</td>
<td>4387</td>
</tr>
</tbody>
</table>

You do not have to use all the numbers, but be sure that one student receives the number 7163, since that number will be the “Fantastic Finalist.”

Have all students hold their numbers and stand in a large circle. Explain that the object of the game is to be the “Fantastic Finalist,” the last student to remain standing.

Read each of the following challenges, one at a time.

- If your number has an even number in the ones place, sit down. (1436, 3578)
- If your number has a number greater than 6 in the tens place, sit down. (6575, 5389, 8987, 4387)
- If your number has a 7 in the hundreds place, sit down. (9721, 7725, 2729, 9761, 8763)
- If your number has a 0 in the tens place, sit down. (3107)
- If your number has a 5 in the thousands place, sit down. (5243)
- If your number has the same digit in the thousands place and the hundreds place, sit down. (6641, 4459)

At this point, only the student holding the number 7163 should still be standing. That student is the “Fantastic Finalist.”

Go Further
Student page 103 Have students complete the activity on the student page.

Answers for student page 103: 1. 6345
2. 6000 + 300 + 40 + 5

Assessment
Student self-assessment page 103 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students understand place value to the thousands place?
Materials
Student page 104
Math jumble activity poster and digit cards
Red and blue crayons (or markers)

Concept and Handbook Reference
Explore multiples of 2 and 3. (MTK 90)

Background
The product of a whole number and any other whole number is a multiple. For example, 6 is a multiple of 3 because $2 \times 3 = 6$.

Get Started
Have students sit in a circle on the floor. Ask students to think of numbers that can be multiplied together to make 12. Responses may be 1 and 12, 2 and 6, 3 and 4. Explain that 12 is a multiple of 1, 2, 3, 4, 6, and 12 because those numbers can be multiplied to make 12. Tell students that skip-counting by 2 names the multiples of 2. Have students skip-count by 2 around the circle. Then have them skip-count by 3.

Today's Challenge
Using the 0–9 digit cards, construct the 4 by 4 poster shown. Explain that the object of today's Math Jumble is to find multiples of 2 and 3. In today's jumble, each number may be used only once. They may be used as single digits, or combined to form two-digit numbers. Combinations of numbers are made by connecting adjoining numbers on the poster. For example, on the first row 1 and 8 may be used as single digits, or joined to form 18. Multiples of 2 will be circled in red, and multiples of 3 will be circled in blue.

Student page 104 Have students use the Math Jumble on student page 104 to find multiples of 2 and 3.

Possible answers for student page 104: 1. 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 24, 36, 48, 54, 60, 66, 84. 2. 3, 6, 9, 12, 15, 18, 21, 24, 36, 45, 48, 54, 60, 66, 84. 3. All multiples of 2 are even numbers. 4. 6, 12, 18, 24, 36, 48, 54, 60, 66, 84

Go Further
Student page 104: 5. Have students use the blank table on the student page and the numbers 0–9 to create their own Math Jumble with multiples of 2 and 3. After students fill in their table, have them ask a friend to solve their Math Jumble.

Answers for student page 104: Answers will vary. Check students' work.

Assessment
Student self-assessment page 104 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students name multiples of 2 and 3?
Materials
Student page 105
Blank paper

Concepts and Handbook References
Use rounding to estimate differences. (MTK 132)
Subtract 3-digit numbers with regrouping. (MTK 161–165)

Get Started
Write the example $343 - 192$ on the board. Ask, “How can we estimate the difference by rounding?” (Round 343 to 300. Round 192 to 200. Subtract. $300 - 200 = 100$. The estimate is 100.) Ask a volunteer to demonstrate how to find the actual difference. (151) Be sure students understand that before the subtraction can be done, 3 hundreds 4 tens must be regrouped as 2 hundreds 14 tens.

Student page 105 To introduce the activity, work through the first problem on student page 105. Read or ask a student to read the problem. Next explain that when you have a problem and you are given several answers to choose from, it helps if you can “rule out” some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say A (527 pages) is wrong because “The estimate is 100 pages.” (If members of the class do not agree with the volunteer’s response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer’s choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (D). Be sure students understand why D is correct.

Today’s Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.

Then explain how points will be scored in today's activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

Student page 105 Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.

When all students’ papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 105 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Can students use rounding to estimate differences? Can students subtract 3-digit numbers with regrouping?
Materials
Student page 106
Yellow (or light colored) and red (or dark colored) crayons or markers.

Concept and Handbook Reference
Recognize the relationship between multiples of 2 and 4. (MTK 95)

Background
There is no simple way to recognize a multiple of 4 as there is with multiples of 2 and 5. There are no tricks as there are with multiples of 3 and 9. It can be helpful, therefore, to recognize the pattern made by multiples of 4 on the hundred chart, and to understand that every other multiple of 2 is a multiple of 4.

Get Started
Practice counting by twos. Start with 2 and count at least to 24. (2, 4, 6, 8, 10, . . .) Remind students that these numbers are multiples of 2.

Practice counting by fours. Start with 4 and count at least to 40. (4, 8, 12, 16, 20, . . .) Remind students that these numbers are multiples of 4.

Now play the game “Beep, Honk!” Explain that in this game they will be looking for multiples of 2 and multiples of 4. Have students sit in a circle. One student starts the game by saying “one.” The next student says “Beep!” The third student says “three,” and so on. Each time a multiple is said, that student must decide whether to say “Beep!” or “Beep, Honk!”

Beep, Honk!
For multiples of 2 and 4:
1 - -
2 Beep!
3 - -
4 Beep, Honk!
5 - -
6 Beep!
7 - -
8 Beep, Honk!
9 - -
10 Beep!
11 - -
12 Beep, Honk!
And so on . . .

Students should notice that every multiple of four is also a multiple of two.

If students find this too confusing, move on to Today’s Challenge. When the students have completed that activity, you can return to “Beep Honk!” Students can then use their color coded hundred charts as visual aids.

Today’s Challenge
Student page 106 Have students complete the activity on the student page.

Answers for student page 106: 1. Yellow numbers are: 2, 4, 6, 8, 10, 12, . . . 96, 98, 100. 2. Red numbers are: 4, 8, 12, 16, 20, . . . 92, 96, 100.

Go Further
Student page 106 Have students answer the questions on the student page. Allow time to share answers.

Answers for student page 106: 3. Answers will vary. They might say the pattern looks like stripes, or weaving, or a checkerboard. They should refer in some way to the vertical columns and to the alternating pattern of red and yellow. 4. Answers will vary. They should mention that all the multiples of 4 are in the same columns as the multiples of 2. They might see that every other multiple of 2 is colored red. Some may see that the multiples of 4 also form diagonal lines, or even that they are spaced the way knights move on a chess board.

Assessment
Student self-assessment page 106 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Do students see that the multiples of 4 are all multiples of 2? Do they see that only every other multiple of 2 is a multiple of 4? Are they able to describe the patterns they find on the hundred chart?
Materials
Student page 107
Math Maze cards (Week 22 Activity 107)

Concept and Handbook Reference
Review three-dimensional shapes (solids).  
(MTK 326–331)

Get Started
Have students brainstorm names of three-dimensional shapes and objects from real life that have these shapes. Possible responses are listed.
• rectangular prism (tissue box)
• cylinder (oatmeal container)
• pyramid (Egyptian pyramids)
• cone (ice cream cone)
• sphere (basketball)
• cube (dice)

Today's Challenge
Distribute the 18 Math Maze cards for Week 22. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.

Instructions for playing Math Maze Ask students to look at their cards. Ask one student to read the question that is written on his or her card. Next ask, "Who has the card with the answer to the question just read?" Ask that student to read the answer, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be read should be the answer on the first student's card.

The correct sequence of questions and answers is shown on page 198.

Student page 107 When the group has finished playing the game, have students open their books and complete the Today's Challenge activity on page 107 in the student book.

Answers for student page 107: 1. a 2. b 3. d 4. c

Go Further
Student page 107 Have students complete this section on the student page.

Answers for student page 107: 5–6. Answers will vary.

Assessment
Student self-assessment page 107 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Do students know the names of solids? Can students describe solids?
Materials
Student book page 108
Blank paper

Concept and Handbook Reference
Understand line of symmetry. (MTK 322)

Background
A polygon is a closed figure that is formed by line segments. A line of symmetry is a line that divides a figure into two halves that are mirror images of each other.

Get Started
Draw these figures on the board and draw the lines of symmetry.

- 2 lines of symmetry
- 1 line of symmetry
- 4 lines of symmetry
- no lines of symmetry
- 6 lines of symmetry
- many lines of symmetry

As you ask each of the four questions, have students look at their polygons and answer the question. Yes answers will score points. Here are the questions to ask:

1. Does your polygon have more than three sides? If yes, score 10 points.
2. Does your polygon have no lines of symmetry? If yes, score 5 points.
3. Does your polygon have more than 3 lines of symmetry? If yes, score 9 points.
4. Does your polygon have a square corner? If yes, score 15 points.

Have students find their total scores. Determine which student has the highest score. Have that student draw the polygon on the board and explain how he or she scored the points.

Student page 108 Have students solve the riddles.

Answers for student page 108: 1. square
2. hexagon

Go Further
Student page 108 Have students fill in the blanks to create and solve the riddle, and then create another riddle for a friend to solve. Have the friend sign his or her name.

Answers for student page 108: 3–4. Check students’ work.

Assessment
Student self-assessment page 108 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Do students understand what a line of symmetry is? Can students find lines of symmetry in polygons and circles?
Materials
Student page 109
Math Jumble activity poster and digit cards

Concept and Handbook Reference
Compare multiples of 2 and 4. (MTK 68–69)

Get Started
Have students skip-count by two, starting with 2 and stating every multiple of 2 up to 20. (2, 4, 6, 8, 10, and so on) Students could skip-count together as a group, or rotate their skip-counting. As students are skip-counting, record the multiples on the board as shown.
2 4 6 8 10 . . .

Next, have students skip count by four, starting with 4 and stating every multiple of 4 on up to 40. (4, 8, 12, 16, 20, and so on) As students are skip-counting, record the multiples on the board under the multiples of two.
2, 4, 6, 8, 10 . . .
4, 8, 12, 16, 20 . . .

Today's Challenge
Using the 0–9 digit cards, construct the first 3 by 3 poster shown. Explain that the object of this Math Jumble is to multiply all surrounding one-digit numbers by two.

Next, replace the center digit card with 4.

Ask students to multiply again and record those facts beside the other list. Ask students what they notice about the multiples of two and the multiples of four. (The multiples of four are doubles of the multiples of two; the multiples of two are half of the multiples of four.)
2 × 1 = 2 4 × 1 = 4
2 × 2 = 4 4 × 2 = 8
2 × 3 = 6 4 × 3 = 12

Student page 109 Have students use the Math Jumbles on student page 109 to find more multiplication facts.

Answers for student page 109:
1. 2 × 1 = 2 2. 4 × 1 = 4
   2 × 2 = 4 4 × 2 = 8
   2 × 3 = 6 4 × 3 = 12
   2 × 4 = 8 4 × 4 = 16
   2 × 5 = 10 4 × 5 = 20
   2 × 6 = 12 4 × 6 = 24
   2 × 7 = 14 4 × 7 = 28
   2 × 8 = 16 4 × 8 = 32

Go Further
Student page 109 Have students answer the question in the student book.

Answer for student page 109: 3. Explanations will vary. Possible answer: I can double the answer for facts for 2 to find the answer for facts for 4.

Assessment
Student self-assessment page 109 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students see a relationship between the multiples of 2 and the multiples of 4?
Materials
Student page 110
Blank paper

Concepts and Handbook References
Read measurement using an inch ruler. (MTK 420)
Apply measurement in a problem-solving situation. (MTK 400)

Get Started
Ask each student to take a blank sheet of paper and draw a line segment that is an inch long. When they finish have them look at the inch ruler on page 110 of the student book to see how close they came. Then ask them to close their books and try again to see how close they can come the second time.

Student page 110
To introduce the activity, work through the first problem on student page 110. Read or ask a student to read the problem. Next explain that when you have a problem and you are given several answers to choose from, it helps if you can “rule out” some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say D (10 in.) is wrong because “The ruler is not even 10 in. long.” (If members of the class do not agree with the volunteer’s response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer’s choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (B). Be sure students understand why B is correct.

Then explain how points will be scored in today’s activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

Student page 110
Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.

Answers for student page 110: 1. A 2. D

When all students’ papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 110
Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip
Do students have a good understanding of the length of an inch?

Today’s Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.
Materials
Student page 111
Two colors of crayons (or markers)

Concepts and Handbook References
Explore tessellation patterns. (MTK 324)
Review definitions of square and hexagon.
(MTK 311, 313)

Background
A tessellation is a repeating pattern made by shapes that completely cover a plane (flat surface) with no "holes" or "gaps."

Get Started
Review the math vocabulary students will need for today's activity. Draw these figures on the board.

![Figures](image)

Ask, "What do these figures have in common?" (They all have 6 sides) "Does anyone know the name we use for these figures?" (hexagons)

Draw these figures on the board.

![Figures](image)

Ask, "What do we call these figures?" (squares) "What is special about these figures?" (They have four equal sides and four square corners.)

Today's Challenge
Student page 111 Have students open their books to page 111. Ask if anyone knows what this type of repeating pattern is called. (a tessellation) Point out that there are no gaps between the figures. Mention that a tessellation is sometimes called a tiling because it looks like a pattern that might be made by tiles on a floor. Have students follow the directions to color the tessellation.

Answers for student page 111: 1. Check students' work. 2. Check students' work.

Go Further
Student page 111 Have students answer the questions on the student page.

Answers for student page 111: 3. 20 4. Answers will vary. Possible answers: Since there are 5 squares in each column, I counted by fives. Or I multiplied 5 by 4.

Assessment
Student self-assessment page 111 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do the students recognize squares and hexagons?
Materials
Student page 112
Math Maze cards (Week 23 Activity 112)

Concepts and Handbook References
Solve problems using multiplication. (MTK 60–61)
Solve problems using division. (MTK 74–75)

Get Started
Ask students to tell whether they would multiply or
divide to solve each problem.
• Each child has a pair of shoes. There are 5 chil-
dren. How many shoes are there? (multiply)
• Each sandwich needs two pieces of bread. How
many sandwiches can you make using 12 pieces
of bread? (divide)

Today's Challenge
Distribute the 18 Math Maze cards for Week 23.
Each student should receive at least one card, but
since all cards need to be distributed, some students
may need to get more than one card. Use the cards
to play the Math Maze game.

Instructions for playing Math Maze Ask students to
look at their cards. Ask one student to read the
question that is written on his or her card. Next ask,
"Who has the card with the answer to the question
just read?" Ask that student to read the answer, and
then read the question on his or her card. Play con-
tinues until all questions have been answered. The
last answer to be read should be the answer on the
first student's card.

The correct sequence of questions and answers is
shown on page 199.

Student page 112 When the group has finished
playing the game, have students open their books
and complete the Today's Challenge activity on
page 112 in the student book.

Answers for student page 112: 1. a. Check stu-
dents' pictures. b. 6 bunches c. 18 ÷ 3 = 6
2. a. Check students' pictures. b. 7 beads
c. 21 ÷ 3 = 7

Go Further
Student page 112 Have students complete this sec-
tion on the student page.

Answers for student page 112: 3. Check students' work.

Assessment
Student self-assessment page 112 Have students
circle one of the three choices to describe how they
feel about this activity.

Assessment tips Can students use multiplication to
solve a problem? Can students use division to solve
a problem? Do students know multiplication facts?
Do students know division facts?
Materials
Student page 113
Blank paper (heavyweight if possible) or index cards
Empty gallon, quart, pint, cup containers (optional)

Concept and Handbook Reference
Review units of liquid measure—cup, pint, quart, and gallon. (MTK 356)

Get Started
Student page 113 Have students look at the diagram on page 113 to see the relationships among gallons, quarts, pints, and cups. Explain that each row shows an amount equal to one gallon. Use empty beverage containers (if available) to help explain the relationships. (1 gallon = 4 quarts; 1 quart = 2 pints; 1 pint = 2 cups)

Students will use this information to complete Today’s Challenge.

Today’s Challenge
Student page 113 Have students look at page 113 in the student book. Have students fill in the missing numbers to create pairs of equivalent measures.

Answers for student page 113: 1. 1  2. 3  3. 2  4. 3  5. 2  6. 8

Go over answers with the whole group or check students’ papers individually.

Go Further
Have pairs of students make a set of cards to play the game “Concentration.” Each pair of students will need 16 small pieces of paper or 16 index cards. Have the students use one slip of paper or card to copy the information from each box on student page 113.

Instructions for playing “Concentration” Shuffle the cards and lay them facedown in equal columns. Each player turns over a card. The player with the largest amount goes first. Turn the cards over so that all cards are again facedown. The first player turns over two cards. If the cards match (show equivalent units of measure), the player keeps the cards and goes again. If the cards do not match, the player turns the cards back over and the other player takes a turn. Play continues until all cards have been taken. The player with more cards at the end of the game wins.

Assessment
Student self-assessment page 113 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students understand the relationship between cups, pints, quarts, and gallons?
Materials
Student page 114
Math Jumble activity poster and digit cards
Red and blue crayons

Concept and Handbook Reference
Explore multiples of 3 and 5. (MTK 95)

Background
The product of a whole number and any other whole number is a multiple. For example, 6 is a multiple of 3 because $2 \times 3 = 6$.

Get Started
Have students sit in a circle on the floor. Ask students to think of numbers that can be multiplied together to make 15. (1 and 15, 3 and 5) Explain that 15 is a multiple of 1, 3, 5, and 15 because those numbers can be multiplied to make 15. Tell students that skip-counting by 3 names the multiples of 3. Have students skip-count by 3 around the circle and then by 5.

Today’s Challenge
Using the 0–9 digit cards, construct the 4 by 4 poster shown. Explain that the object of today’s Math Jumble is to find multiples of 3 and 5. In today’s Math Jumble, numbers may be used as single digits, or combined to form two-digit numbers. For example, on the third row 2 and 1 may be used as single digits, or joined to form 21. Multiples of 3 will be circled in red, and multiples of 5 will be circled in blue.

Student page 114 Have students use the Math Jumble on student page 114 to find multiples of 3 and 5.

Possible Answers for student page 114: 1. 3, 6, 9, 12, 15, 18, 21, 24, 36, 42, 45, 48, 51, 54, 60, 63, 81, 84, 90. 2. 5, 10, 15, 20, 25, 45, 60, 65, 80, 90. 3. All multiples of 5 have 0 or 5 in the ones place. 4. 15, 45, 60, or 90

Go Further
Student page 114 Using the blank grid on the student page, have each student create a Math Jumble to share with a friend.

Answers for student page 114: 5. Answers will vary. Check students’ work.

Assessment
Student self-assessment page 114 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students name multiples of 3 and 5?
Rule Out Two

Week 23 • Activity 115

Materials
Student page 115
Blank paper

Concept and Handbook Reference
Review odd and even numbers. (MTK 91)

Get Started
Draw the following on the board.

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1 2 3 4 5 6
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Ask, “Which of these numbers are odd numbers?” (1, 3, 5) “Which are even numbers?” (2, 4, 6) “How are the pictures for the odd numbers different from the pictures for the even numbers?” (The even numbers have pairs of dots. The odd numbers have pairs of dots and then an extra dot.)

Explain that if you have an even number of objects, two people can share the objects equally. If you have an odd number of objects, there will be one object left over. Demonstrate by having two students come to the front. Show what happens when 4 pencils are shared. Repeat with other numbers of pencils.

**Student page 115** To introduce the activity, work through the first problem on student page 115. Read or ask a student to read the problem. Next explain that when you have a problem and you are given several answers to choose from, it helps if you can “rule out” some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say A is wrong because “72 is an even number.” (If members of the class do not agree with the volunteer’s response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer’s choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (C). Be sure students understand why C is correct.

**Today’s Challenge**
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.

Then explain how points will be scored in today’s activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

**Student page 115** Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.

**Answers for student page 115:** 1. A 2. C

When all students’ papers have been scored, determine the high scorer(s) for the day.

**Go Further**
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

**Assessment**
**Student self-assessment page 115** Have students circle one of the three choices to describe how they feel about this activity.

**Assessment tip** Can students tell whether a number is even or odd?
Materials
Student page 116

Concept and Handbook Reference
Make predictions using increasing patterns. (MTK 374)

Get Started
Draw this pattern on the board.

Ask the students to describe the patterns they see. In particular, ask them to compare the numbers of black and white squares. (When the white squares increase by one, the black squares increase by two; or, there are twice as many black squares as white squares.) Then ask the students to make predictions. How many black squares would there be if there were five white squares? (ten) How many black squares would there be if there were 8 white squares? (16)

Today's Challenge
Student page 116 Have the students complete the activity on the student page.

Answers for student page 116: 1. 4 triangles, 5 stars, 2 circles, 3 hearts 2. 8 triangles, 10 stars, 4 circles, 6 hearts

Go Further
Student page 116 Have students answer the question on the student page.

Answers for student page 116: 3. 2 squares, 8 triangles, 10 stars, 6 hearts 4. 5 squares, 20 triangles, 10 circles, 15 hearts

Assessment
Student self-assessment page 116 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Are the students able to make predictions about increasing patterns?
Math Maze

Materials
Student page 117
Math Maze cards (Week 24 Activity 117)

Concepts and Handbook References
Count coins and bills. (MTK 18)
Write amounts of money using a dollar sign and decimal point. (MTK 19)

Get Started
Ask volunteers to write the following amounts using a dollar sign and a decimal point.
- Three hundred dollars and nine cents ($300.09)
- Three hundred dollars and ninety cents ($300.90)
- Three hundred nine dollars ($309.00)

Today's Challenge
Distribute the 18 Math Maze cards for Week 24. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.

Instructions for playing Math Maze Ask students to look at their cards. Ask one student to read the question that is written on his or her card. Next ask, "Who has the card with the answer to the question just read?" Ask that student to read the answer, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be read should be the answer on the first student's card.

The correct sequence of questions and answers is shown on page 200.

Student page 117 When the group has finished playing the game, have students open their books and complete the Today's Challenge activity on page 117 in the student book.

Answers for student page 117: 1. $35.08
2. $500.08 3. $508.00

Go Further
Student page 117 Have students complete this section on the student page.

Answers for student page 117: 4. 4; 1 quarter, 1 dime, and 2 pennies 5. 7; 3 quarters, 1 dime, 1 nickel and 2 pennies 6. 8; 5 quarters, 3 pennies 7. 3 bills and 6 coins; 3 one-dollar bills, 2 quarters, 1 dime and 3 pennies

Assessment
Student self-assessment page 117 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Can students count coins and bills? Can students write an amount of money using a dollar sign and decimal point?
Materials
Student page 118
Blank paper

Concept and Handbook Reference
Explore multiples of three. (MTK 90)

Get Started
Have students look at the hundred chart on the inside back cover of their student book.

Ask students to use the chart to count by threes, beginning with 3. (3, 6, 9, 12, 15, . . .) Point out that these numbers are called multiples of 3.

Have students take out a sheet of paper, fold it in half vertically, open and trace a line on the fold.
Have students label the columns tens and ones.
Using the hundred chart, have students make a table of all multiples of three that are on the chart.
Ask students what patterns they see. What would happen if they added the digits of each number on their list? (The sum of the digits is divisible by three.)

Today’s Challenge
Explain that today you will be playing a game called “Who Wants to Be the Top Scorer?” Have each student take a blank sheet of paper and write a number that is a multiple of 3.
Then ask students to number their papers from 1 to 5.

As you ask each of five questions, have students look at their numbers and answer the question. Yes answers will score points. Here are the questions to ask:

1. Is your number greater than the number of inches in one foot and less than the number of weeks in one year? If yes, score 10 points.
2. Is the digit in the tens place greater than the digit in the ones place? If yes, score 5 points.
3. Is your number greater than 27 and less than 72? If yes, score 9 points.
4. Is the difference between the digit in the tens place and the digit in the ones place less than four? If yes, score 8 points.
5. Is your number less than the number of days in January? If yes, score 15 points.

Have students find their total scores. Determine which student has the highest score. Have that student write the number on the board and explain how he or she scored the points.

Go Further
Student page 118 Have students solve the riddle and create another riddle for a friend to solve. Have the friend sign his or her name.

Answers for student page 118: 1. 27 2. 15
3. Check students’ riddles. 4. Riddles and answers will vary.

Assessment
Student self-assessment page 118 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students understand how to find multiples of three?
Materials
Student page 119
Math Jumble poster and digit cards

Concept and Handbook Reference
Divide by 1. (MTK 84)

Get Started
Using the 0-9 digit cards, place these cards in the first row.

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9 6 3
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The rule for this poster will be to divide each one-digit number by 1. Ask students to state an equation and tell a story to go with each example. Here is an example of a student response. "6 ÷ 1 = 6. I picked 6 flowers. I put one flower in each vase. I needed 6 vases."

Today's Challenge
Using the 0-9 digit cards, construct the 3 by 3 poster shown. Explain that the object of today's Math Jumble is to divide all surrounding single-digit numbers by one.

Ask for a volunteer to state an equation and tell a story to go with the division fact.

Possible examples: 9 ÷ 1 = 9, 5 ÷ 1 = 5

Answers for student page 119: 96 ÷ 1 = 96; 63 ÷ 1 = 63; 94 ÷ 1 = 94; 38 ÷ 1 = 38; 47 ÷ 1 = 47; 82 ÷ 1 = 82; 75 ÷ 1 = 75; 52 ÷ 1 = 52

Student page 119 Have students use the Math Jumble on student page 119 to find more division facts.

Answers for student page 119: 9 ÷ 1 = 9; 6 ÷ 1 = 6; 3 ÷ 1 = 3; 4 ÷ 1 = 4; 8 ÷ 1 = 8; 7 ÷ 1 = 7; 5 ÷ 1 = 5; 2 ÷ 1 = 2

Go Further
Student page 119 Next have students combine numbers from today's Math Jumble to form two-digit numbers. For example, 7 may be combined with 5, horizontally, to form 75; 9 may be combined with 4 vertically, to form 94. Remind students they may only combine numbers that are joined vertically or horizontally. Using this Math Jumble, have students write as many equations as possible for dividing by one.

Assessment
Student self-assessment page 119 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students understand the outcome when a number is divided by one?
Rule Out Two

Week 24 Activity 120

Materials
Student page 120
Blank paper

Concept and Handbook Reference
Use a picture to show division. (MTK 78)

Get Started
Student page 120 To introduce the activity, work through the first problem on student page 120. Read or ask a student to read the problem. Ask a volunteer to act out the situation the problem is describing.

Next explain that when you have a problem and you are given several answers to choose from, it helps if you can “rule out” some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say D is wrong because “Only 6 cherries are shown.” (If members of the class do not agree with the volunteer’s response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer’s choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (A). Be sure students understand why A is correct.

Today’s Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.

Then explain how points will be scored in today’s activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

Student page 120 Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.

Answers for student page 120: 1. C 2. A
When all students’ papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 120 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students understand pictures that show division?
Materials
Student page 121

Concept and Handbook References
Explore triangular numbers and square numbers. (MTK 99, 467)

Background
The first five triangular numbers are 1, 3, 6, 10, and 15. They are called triangular numbers because they are the numbers of dots that can be arranged in equilateral triangles. The first five square numbers are 1, 4, 9, 16, and 25. They are called square numbers because they are the number of dots that can be arranged in a square.

Get Started
Draw these triangular arrays on the board.

Below each triangle write the number of circles. Ask the students to look carefully at the triangles you have drawn. Ask them to describe any patterns they see. (Each triangle is bigger than the one before; each triangle has one more row; the number of circles on the bottom row increases by one each time.) Then ask if anyone can describe the next triangle in the pattern. (It will have 10 circles, with four on the bottom row.) Draw the triangular array and write 10 below it. Explain that the numbers 1, 3, 6, and 10 are the first four triangular numbers.

Then ask the students to think about what square numbers might be. Have them share their thoughts aloud as you draw these square arrays on the board. Someone should be able to guess that 1, 4, and 9 are the first three square numbers. Then ask if they can guess what the next square number would be. (16)

Today’s Challenge
Student page 121 Have students complete the activity on the student page.

Answers for student page 121: 1. 10 dots, 15 dots 2. 16 dots, 25 dots

Go Further
Student page 121 Have students answer the question on the student page.

Answer for student page 121: 3. The square number pattern grows faster.

Assessment
Student self-assessment page 121 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do the students understand how to find triangular and square numbers?
**Materials**
Student page 122
Math Maze cards (Week 25 Activity 122)

**Concepts and Handbook References**
Round numbers to the nearest ten. (MTK 129)
Round numbers to the nearest hundred. (MTK 130)

**Background**
Many students will need to see (not just hear) a number in order to round it. When the class is doing the Math Maze, have students write the number to be rounded on the board.

**Get Started**
Have students practice rounding numbers to the nearest ten.

<table>
<thead>
<tr>
<th>Number</th>
<th>Ten</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>38</td>
<td>40</td>
<td>0</td>
</tr>
<tr>
<td>11</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>54</td>
<td>50</td>
<td>4</td>
</tr>
<tr>
<td>67</td>
<td>70</td>
<td>7</td>
</tr>
<tr>
<td>98</td>
<td>100</td>
<td>8</td>
</tr>
</tbody>
</table>

Be sure students understand that they need to look at the digit in the ones place when rounding to the nearest ten. If the ones digit is 5 or more, they round up. If the ones digit is less than 5, they round down.

Have students practice rounding numbers to the nearest hundred.

<table>
<thead>
<tr>
<th>Number</th>
<th>Hundred</th>
<th>Ten</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>897</td>
<td>900</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>532</td>
<td>500</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>1632</td>
<td>1600</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>6589</td>
<td>6600</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>98</td>
<td>100</td>
<td>9</td>
<td>8</td>
</tr>
</tbody>
</table>

Be sure students understand that they need to look at the digit in the tens place when rounding to the nearest hundred. If the tens digit is 5 or more, they round up. If the tens digit is less than 5, they round down.

**Instructions for playing Math Maze**
Ask students to look at their cards. Ask one student to read the question that is written on his or her card. Have the student write the number to be rounded on the board. Next ask, "Who has the card with the answer to the question just read?" Ask that student to read the answer, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be read should be the answer on the first student's card.

The correct sequence of questions and answers is shown on page 201.

**Student page 122**
When the group has finished playing the game, have students open their books and complete the Today's Challenge activity on page 122 in the student book.

**Answers for student page 122:**
1. ones, 80
2. tens, 100, 200
3. tens, 900, 1000
4. 880, 900
5. 230, 200
6. 540, 500

**Go Further**

**Student page 122**
Have students complete this section on the student page.

**Answers for student page 122:**
7. 555, 556, 557, 558, 559, 560, 561, 562, 563, 564

**Assessment**

**Student self-assessment page 122**
Have students circle one of the three choices to describe how they feel about this activity.

**Assessment tips**
Can students round a number to the nearest ten? To the nearest hundred?

**Today's Challenge**
Distribute the 18 Math Maze cards for Week 25. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.
Materials
Student page 123
Blank paper

Concept and Handbook Reference
Given a description, name the geometric solid. (MTK 327–329)

Get Started
Remind students that a solid figure is a geometric figure with three dimensions. It differs from a plane figure which is flat. Review names of solid figures. Draw these figures on the board, ask students to name the figures, and then write the name of each figure.

![cone](image)
![rectangular prism](image)
![cylinder](image)
![pyramid](image)
![cube](image)
![sphere](image)

Have all students hold their papers and stand in a large circle. Explain that the object of the game is to be the “Fantastic Finalist,” the last student to remain standing.

Read each of the following challenges, one at a time.
- Sit down if your solid has 6 faces that are all the same shape and size. (cube)
- Sit down if your solid has only one face that is a circle. (cone)
- Sit down if your solid has no corners. (cylinder, sphere)
- Sit down if your solid has no triangular faces. (rectangular prism)

At this point, only the student holding the pyramid should still be standing. That student is the “Fantastic Finalist.”

Go Further
Student page 123 Have students complete the activity on the student page.

Answers for student page 123: 1. a. yes b. no c. no d. no, sphere 2. a. no b. no c. yes d. no, cube

Assessment
Student self-assessment page 123 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students understand the different characteristics of geometric figures?
Materials
Student page 124
Math Jumble activity poster and digit cards

Concept and Handbook Reference
Divide a whole number by 2. (MTK 85)

Get Started
Begin by discussing the concept of division. For example, have 8 students stand and divide themselves into 2 equal groups. Ask the other students to tell a division story about the situation. (Eight students are in my dance class. There are 2 groups of students. There are 4 students in each group.) Repeat the process with other even numbers of students.

Today's Challenge
Using the 0-9 digit cards, construct the 4 by 4 poster shown. Explain that the object of today's Math Jumble is to find numbers that can be divided into 2 equal groups. 

Ask for volunteers to write a few examples on the board.

Possible examples: 6 ÷ 2 = 3, 4 ÷ 2 = 2

Student page 124 Have students use the Math Jumble on student page 124 to find 3 more numbers that can be divided into 2 equal groups.

Answers for student page 124: 8 ÷ 2 = 4; 4 ÷ 2 = 2; 2 ÷ 2 = 1

Go Further
Student page 124 Have students complete the activity in the student book. Two-digit numbers are made by connecting adjoining numbers on the Go Further grid. For example, the 1 and 4 from the first column could be used to represent 14, or 1 and 0 from the first row could be used to represent 10.

Answers for student page 124: Possible answers include: 14 ÷ 2 = 7; 20 ÷ 2 = 10; 10 ÷ 2 = 5; 16 ÷ 2 = 8. Stories will vary.

Assessment
Student self-assessment page 124 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students divide by 2?
Materials
Student page 125
Blank paper
Clock

Concept and Handbook Reference
Review finding elapsed time in hours. (MTK 338)

Get Started
Ask a volunteer to look at the clock and tell what time it is. Ask, “What time will it be one hour from now? Two hours from now? Four hours from now? Are those times A.M. or P.M.? When does the time change from P.M. to A.M.? (after midnight). Do we eat lunch at 12:30 A.M. or 12:30 P.M.?" (12:30 P.M.)

Student page 125 To introduce the activity, work through the first problem on student page 125. Read or ask a student to read the problem. Next explain that when you have a problem and you are given several answers to choose from, it helps if you can “rule out” some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say D (24 h) is wrong because “That is a whole day.” (If members of the class do not agree with the volunteer’s response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer’s choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (B). Be sure students understand why B is correct.

Today's Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score. Then explain how points will be scored in today’s activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

Student page 125 Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.


When all students’ papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 125 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Can students determine elapsed time in hours? Do they understand what A.M. and P.M. mean?
Materials
Student page 126
Yellow and blue crayons (or markers)

Concept and Handbook References
Recognize patterns of multiples of nine and ten. (MTK 70, 120)

Get Started
Practice counting by nines. Start with 9. (9, 18, 27, 36, . . .) When the count gets to 99, continue around the room in the same direction but count back down to 9. Remind students that these numbers are called multiples of 9.

Count by tens from 10 to 100, and remind students that these are the multiples of 10.

Now play the game “Beep, Honk!” Explain that in this game they will be looking for multiples of 9 and multiples of 10. Have students sit in a circle. One student starts the game by saying “one.” The next student says “two.” The third students says “three,” and so on. Each time a multiple is said, that student must decide whether to say “Beep!” for multiples of 9, “Honk!” for multiples of 10, or “Beep, Honk!” for a multiple of both.

Beep, Honk!
For multiples of 9 and 10:

... 7 -- 8 -- 9 Beep! 10 Honk! 11 -- ...
... 17 -- 18 Beep! 19 -- 20 Honk! And so on...

Students might notice that at first the “Honk” comes right after the “Beep,” but the interval becomes longer and longer as the count goes higher. This concept will be reinforced in the Today’s Challenge section in the student book.

Today’s Challenge
Student page 126 Have students complete the activity on the student page.

Answers for student page 126: 1. Yellow numbers are 9, 18, 27, 36, 45, 54, 63, 72, 81, 90, 99. 2. Blue numbers are 10, 20, 30, 40, 50, 60, 70, 80, 90, 100.

Go Further
Student page 126 Have students answer the question on the student page.

Answers for student page 126: 3. The yellow boxes make a diagonal line. 4. The blue boxes are in a straight column. 5. The two paths meet at 90.

Assessment
Student self-assessment page 126 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can the students recognize multiples of nine and ten?
Math Maze

Week 26 Activity 127

Materials
Student page 127
Math Maze cards (Week 26 Activity 127)

Concepts and Handbook References
Review place value. (MTK 5–6)
Practice using number sense. (MTK 104, 117)

Get Started
Explain to students that today they will have an opportunity to show how much they know about numbers and place value.

Write 7683 on the board. Ask these questions:
Which digit is in the hundreds place? (6)
What number is 200 more than 7683? (7883)
What number is 1000 more than 7683? (8683)

Today's Challenge
Distribute the 18 Math Maze cards for Week 26. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.

Instructions for playing Math Maze Ask students to look at their cards. Ask one student to read the question that is written on his or her card. Next ask, “Who has the card with the answer to the question just read?” Ask that student to read the answer, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be read should be the answer on the first student’s card.

The correct sequence of questions and answers is shown on page 202.

Student page 127 When the group has finished playing the game, have students open their books and complete the Today's Challenge activity on page 127 in the student book.

Answers for student page 127: 1. 67 2. 467
3. 6467 4. 83 5. 583 6. 8583 7. 339 8. 3008
14. 3223 15. 889 16. 156

Go Further
Student page 127 Have students complete this section on the student page.

Answer for student page 127: 8999

Assessment
Student self-assessment page 127 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Do students understand place value? Do students have a good understanding of numbers?
Materials
Student page 128
Blank paper (heavyweight if possible) or index cards

Concept and Handbook Reference
Learn benchmarks to help understand temperatures given in degrees Fahrenheit. (MTK 360)

Get Started
Allow students to share their knowledge about temperatures in degrees Fahrenheit. Ask these questions.
• Can anyone remember the temperature at which water freezes? (32°F)
• How cold does it need to be to snow? (32°F)
• What is a person's normal body temperature? (98.6°F or about 99°F)
• At what temperature does water boil? (212°F)
• "Room temperature" is the temperature at which most people are comfortable indoors. What do you think is an example of room temperature? (68°F–72°F)

Today's Challenge
Student page 128 Have students complete the section under Today’s Challenge.

Answers for student page 128: 1. 32 2. 212
3. 98.6 4. 101 5. 70 6. 50

Go over answers with the whole group or check students’ papers individually.

Go Further
Have pairs of students make a set of cards to play the game “Concentration.” Each pair of students will need 12 small pieces of paper or 12 index cards. Have the students use one slip of paper or card to copy the information from each of the small boxes on student page 128.

Instructions for playing “Concentration” Shuffle the cards and lay them facedown in equal columns. Each player turns over a card. The player with the higher temperature goes first. Turn the cards over so that all cards are again facedown. The first player turns over two cards. If the cards match (show a temperature and description that match), the player keeps the cards and goes again. If the cards do not match, the player turns the cards back over and the other player takes a turn. Play continues until all cards have been taken. The player with more cards at the end of the game wins.

Assessment
Student self-assessment page 128 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students have some benchmarks to understand temperatures given in degrees Fahrenheit?
Materials
Student page 129
Math Jumble activity poster and digit cards

Concept and Handbook References
Practice division facts with threes. (MTK 68, 82)

Get Started
Begin by discussing the concept of division. For example, have six students stand and divide themselves into three equal groups with two students in each group. Ask the other students to tell a division story about the situation. (Six students stayed inside during recess to work on three projects. Two students will work on each project.) Repeat the process with other numbers of students.

Today's Challenge
Using the 0–9 digit cards, construct the 4 by 4 poster shown. Explain that the object of today’s Math Jumble is to find numbers that could be divided into three equal groups.

Ask for volunteers to write a few examples on the board.

Possible examples: $6 \div 3 = 2$, $12 \div 3 = 4$

Multi-digit numbers are made by connecting adjoining numbers (top to bottom and/or left to right) on the poster. For example, the 1 and 5 from the first row could be used to represent 15, or 1 and 2 from the last column could be used to represent 12.

Student page 129 Have students use the Math Jumble on student page 129 to find four more numbers that could be divided into three equal groups.

Answers for student page 129: Possible answers are:

$3 \div 3 = 1$; $6 \div 3 = 2$; $9 \div 3 = 3$; $12 \div 3 = 4$;

$15 \div 3 = 5$; $18 \div 3 = 6$; $21 \div 3 = 7$; $24 \div 3 = 8$;

$30 \div 3 = 10$; $33 \div 3 = 11$; $45 \div 3 = 15$;

$69 \div 3 = 23$; $72 \div 3 = 24$

Go Further
Student page 129 Using the grid on the student page, have each student create a Math Jumble to share with a friend.

Answers for student page 129: Grids and equations will vary.

Assessment
Student self-assessment page 129 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students write division facts with threes?
Rule Out Two

Week 26 • Activity 130

Materials
Student page 130
Blank paper

Concept and Handbook Reference
Interpret remainders in division. (MTK 194)

Get Started
Student page 130 To introduce the activity, work through the first problem on student page 130. Read or ask a student to read the problem. Ask a volunteer to use slips of paper to act out the situation described in the problem.

Next explain that when you have a problem and you are given several answers to choose from, it helps if you can "rule out" some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say D (8 muffins) is wrong because "No box can have more than 6 muffins." (If members of the class do not agree with the volunteer's response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer's choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (B). Be sure students understand why B is correct.

Today's Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.

Then explain how points will be scored in today's activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

Student page 130 Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.

Answers for student page 130: 1. C 2. A
When all students’ papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 130 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students understand how to interpret remainders in division?
Materials
Student page 131

Concept and Handbook Reference
Recognize the relationship between multiples of four and multiples of eight. (MTK 119)

Background
Recognizing that multiples of eight are also multiples of four can help recall of the eights multiplication facts. This also helps to develop the concept of factorization.

Get Started
Write these two rows of numbers on the board, spaced approximately as shown so that matching numbers are not exactly aligned.

<table>
<thead>
<tr>
<th>4</th>
<th>8</th>
<th>12</th>
<th>16</th>
<th>20</th>
<th>24</th>
<th>28</th>
<th>32</th>
<th>36</th>
<th>40</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>16</td>
<td>24</td>
<td>32</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Ask the students to describe what patterns they see. Encourage and discuss any valid pattern. They should see that the numbers are all even numbers. Someone may offer that the top row has multiples of four, and that the bottom row has multiples of eight. Someone should also see that the numbers in the bottom row are all in the top row, but every other number from the top row is left out.

When you have discussed the patterns, ask them to tell you the next two numbers in the top row. (44 and 48) When those are written, ask them to tell you the next number in the bottom row. (48)

Today's Challenge
Student page 131 Have students complete the activity on the student page.

Answers for student page 131: 1. Multiples of 4 but not 8 are 44, 12, 20, 28, and 4. Multiples of both 4 and 8 are 32, 8, 16, 80, and 40.

Go Further
Student page 131 Have students answer the question on the student page.

Answer for student page 131: 2. Answer should show an understanding of the fact that eight is made up of 2 fours.

Assessment
Student self-assessment page 131 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students see that the multiples of 8 are also multiples of 4?
Materials
Student page 132
Math Maze cards (Week 27 Activity 132)

Concept and Handbook References
Review concepts presented in previous Math Mazes.
(MTK 18, 60, 74, 100, 326)

Get Started
Tell students that today's activity will be a review from the Math Mazes done previously.

Today's Challenge
Distribute the 18 Math Maze cards for Week 27. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.

Instructions for playing Math Maze Ask students to look at their cards. Ask one student to read the question that is written on his or her card. Next ask, "Who has the card with the answer to the question just read?" Ask that student to read the answer, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be read should be the answer on the first student's card.

The correct sequence of questions and answers is shown on page 203.

Student page 132 When the group has finished playing the game, have students open their books and complete the Today's Challenge activity on page 132 in the student book.

Answers for student page 132: 1. 300  2. 2000 3. 3 4. 12 5. 1089 6. 18 7. 3750

Go Further
Student page 132 Have students complete this section on the student page.

Answer for student page 132: 8. 26

Assessment
Student self-assessment page 132 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Which concepts do students need more work on?
Materials
Student page 133

Concept and Handbook References
Find the area and perimeter of rectangular figures. (MTK 348–353)

Background
Area is the measure of the inside of a closed figure using square units. Perimeter is the measure of the distance around a figure.

Get Started
Review the terms perimeter, area, and square units with students.

The perimeter is 10 units.
The area is 6 square units.

Today's Challenge
Student page 133 Explain that today you will be playing a game called "Who Wants to be the Top Scorer?" Have each student open to page 133 of their student books and draw a rectangle on the grid. As you ask each of four questions, have the students look at their rectangles and answer the question. Yes answers will score points. (Students should use the lines labeled 1–4.) Here are the questions to ask:

1. Does your rectangle have a perimeter less than 10 units? If yes, score 10 points.
2. Does your rectangle have all sides the same length? If yes, score 5 points.
3. Does your rectangle have an area greater than 12 square units? If yes, score 9 points.
4. Does your rectangle have a length or width of 1 unit? If yes, score 8 points.

Go Further
Student page 133 Have students solve the riddle and create another riddle for a friend to solve. Have the friend sign his or her name.

Answers for student page 133:

5. 8 units
6. Check students’ riddles.

Assessment
Student self-assessment page 133 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students understand area and perimeter?
Materials
Student page 134
Math Jumble activity poster and digit cards

Concept and Handbook Reference
Divide with remainders. (MTK 185)

Background
\[9 \div 4 = 2 \text{ R}1\]
dividend divisor quotient remainder

Get Started
Begin by discussing the concept of division. For example, have 7 students stand and divide themselves into 3 groups, with 1 student left. Ask the other students to tell a division story about the situation. (Seven students want to play chess. They can make three pairs, but one student is left out.) Ask the class what the leftover part is called. (remainder) Repeat the process with other numbers of students.

Today’s Challenge
Using the 0–9 digit cards, construct the 4 by 4 poster shown. Explain that the object of today’s Math Jumble is to use a string of numbers to create division problems with different remainders.

Student page 134 Have students use the Math Jumble on student page 134. Find strings of numbers to create division problems with different remainders.

Answers for student page 134: Possible answers are shown:

<table>
<thead>
<tr>
<th>no remainder</th>
<th>remainder of 1</th>
<th>remainder of 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 ÷ 2 = 12</td>
<td>28 ÷ 3 = 9 R1</td>
<td>26 ÷ 8 = 3 R2</td>
</tr>
<tr>
<td>32 ÷ 4 = 8</td>
<td>5 ÷ 4 = 1 R1</td>
<td></td>
</tr>
<tr>
<td>35 ÷ 7 = 5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Go Further
Student page 134 Have the students complete the exercise on the student page.

Answer for student page 134: Check to see that the picture and equation match the story.

Assessment
Student self-assessment page 134 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students recognize when a division problem will have a remainder?

For example, 1, 3, and 5 from the first row may be used to create 13 ÷ 5. Have students draw a picture to go with each equation.

###
Rule Out Two

Week 27•Activity 135

Materials
Student page 135
Blank paper

Concept and Handbook Reference
Use definitions for special quadrilaterals. (MTK 312)

Get Started
Ask a volunteer to draw two parallel lines on the board. (Parallel lines never cross.)

parallel lines

Ask other volunteers to draw quadrilaterals (4-sided figures) and tell whether the figures have or do not have one or two pairs of parallel sides.

figures with one pair of parallel sides
figures with two pairs of parallel sides

Student page 135 To introduce the activity, work through the first problem on student page 135. Read or ask a student to read the problem. Next explain that when you have a problem and you are given several answers to choose from, it helps if you can “rule out” some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say A is wrong because “It does not have square corners.” (if members of the class do not agree with the volunteer’s response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer’s choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (D). Be sure students understand why D is correct.

Today’s Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.

Then explain how points will be scored in today’s activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

Student page 135 Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.

Answers for student page 135: 1. D 2. B

When all students’ papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 135 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students identify which figure matches a given definition?
Materials
Student page 136

Concept and Handbook Reference
Recognize the relationship between multiples of eight and multiples of four and two. (MTK 119)

Background
Recognizing that multiples of eight are also multiples of four can help recall of the eights multiplication facts. This also helps develop the underlying concept of factorization.

Get Started
Write the first row of the table below on the board. Tell the students you want to mark each number that is a multiple of 2 by drawing a box below it. Ask them which numbers should be marked with a box. (all of them) Draw one box below each number. Next ask them to guide you in drawing a circle inside the box for each number that is a multiple of 4. (4, 8, 12, 16, 20, 24, 28) Finally, ask them to mark the multiples of 8 by adding a star to each box that marks a multiple of 8. (8, 16, 24)

2 4 6 8 10 12 14 16 18 20 22 24 26 28 30

Ask the students to describe whatever patterns they see. Encourage and discuss any valid pattern. They should see that every other box is empty, or that every other box has a circle. They should see that every other circle also has a star. Ask the students if the pattern of boxes, circles and stars looks like an ABAB pattern, (no) an ABCABC pattern (no) or some other pattern. (yes). See if they can identify it as ABACABAC. Write those letters below each symbol to clarify the pattern for them.

When you have discussed the patterns, ask them to predict the next four symbols. Then write in the numbers 32, 34, 36, and 38 with the appropriate symbols (box with circle and star, box, box with circle, and box) below them to verify the prediction.

Today's Challenge
Student page 136 Have students complete the activity on the student page.

Answers for student page 136: 1. The missing numbers are 6, 8, 10, 12, 16, 18, 20, 22, 24, 28, 30, 32, 34, 36, 38, 42, 44, 46, and 48. 2. 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44 3. 8, 16, 24, 32, 40

Go Further
Student page 136 Have students answer the questions on the student page.

Answers for student page 136: 4. The box with the multiples of 8 has the fewest numbers. 5. The box with the multiples of 2 has the most. 6. Answers will vary. They may simply say that 8 is bigger than 2, or that counting by eights goes faster. Some may be able to say that all the multiples of 8 are also multiples of 2 but some multiples of 2 are not multiples of 8. Any answer that shows some thought should be accepted.

Assessment
Student self-assessment page 136 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students see that all multiples of eight are also multiples of four, but only some multiples of four are multiples of eight?
**Materials**
Student page 137
Math Maze cards (Week 28 Activity 137)

**Concepts and Handbook References**
Add fractions with like denominators. (MTK 228)
Subtract fractions with like denominators. (MTK 232)

**Get Started**
Use a picture to demonstrate adding fractions with the same denominator.

\[
\frac{1}{6} + \frac{4}{6} = \frac{5}{6}
\]

Ask for a volunteer to draw a picture to show how to add \(\frac{1}{4} + \frac{2}{4}\). (\(\frac{3}{4}\)) Ask, “Can anyone tell a rule for adding fractions?” (When fractions have the same denominator, the bottom number, you just add the numerators, the top numbers, and keep the denominator the same.)

Use a picture to demonstrate subtracting fractions with the same denominator.

\[
\frac{5}{8} - \frac{2}{8} = \frac{3}{8}
\]

Ask for a volunteer to draw a picture to show how to subtract \(\frac{3}{4} - \frac{1}{4}\). (\(\frac{1}{2}\)) Ask, “Can anyone tell a rule for subtracting fractions?” (When fractions have the same denominator, the bottom number, you just subtract the numerators, the top numbers, and keep the denominator the same.)

**Today’s Challenge**
Distribute the 18 Math Maze cards for Week 28. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.

**Instructions for playing Math Maze** Ask students to look at their cards. Ask one student to read the question that is written on his or her card. Next ask, “Who has the card with the answer to the question just read?” Ask that student to read the answer, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be read should be the answer on the first student’s card.

The correct sequence of questions and answers is shown on page 204.

**Student page 137** When the group has finished playing the game, have students open their books and complete the Today’s Challenge activity on page 137 in the student book.

**Answers for student page 137:**
1. \(\frac{2}{3}\)
2. \(\frac{5}{9}\)
3. \(\frac{1}{3}\)
4. \(\frac{0}{5}\)
5. \(\frac{2}{6}\)
6. \(\frac{7}{10}\)
7. \(\frac{3}{5}\) or 0
8. \(\frac{7}{12}\)
9. \(\frac{2}{3}\) or 1
10. \(\frac{5}{4}\)

**Go Further**
**Student page 137** Have students complete this section on the student page.

**Answers for student page 137:**
11. \(\frac{3}{6}\) and \(\frac{2}{6}\)
12. \(\frac{2}{4}\)
and \(\frac{1}{4}\)
13. \(\frac{6}{9}\) and \(\frac{2}{6}\)
14. \(\frac{5}{1}\) and \(\frac{1}{2}\)

**Assessment**
**Student self-assessment page 137** Have students circle one of the three choices to describe how they feel about this activity.

**Assessment tips** Can students add fractions that have the same denominator? Can students subtract fractions that have the same denominator?
Materials
Student page 138
Blank paper

Concept and Handbook Reference
Use skip counting to identify the multiples of a number. (MTK 90)

Get Started
Student page 138 Have students look at the number line in the Get Started section of student page 138. Starting at zero each time, have the students count orally by twos while you record the numbers on the board. Point out that these numbers are called multiples of 2. Repeat by counting by threes, fours, and fives.

Today's Challenge
Explain that today the class will be playing a game called “Fantastic Finalist.” Write the numbers 1 through 30 on separate sheets of scrap paper. You do not have to use all the numbers, but be sure that one student receives the number 29, since that number will be the “Fantastic Finalist.”

Have all students hold their numbers and stand in a large circle. Explain that the object of the game is to be the “Fantastic Finalist,” the last student to remain standing.

Read each of the following challenges, one at a time.
• If your number is a multiple of 4, sit down. (4, 8, 12, 16, 20, 24, 28)
• If your number is a multiple of 3, sit down. (3, 6, 9, 15, 18, 21, 27, 30)

• If your number is a multiple of 5, sit down. (5, 10, 25)
• If your number is a multiple of 2, sit down. (2, 14, 22, 26)
• If your number is less than 24, sit down. (1, 7, 11, 13, 17, 19, 23)

At this point, only the student holding the number 29 should still be standing. That student is the “Fantastic Finalist.”

Go Further
Student page 138 Have students complete the activity on the student page.

Answers for student page 138: 1, 7, 2, 30

Assessment
Student self-assessment page 138 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students know how to use skip counting to determine the multiples of a number?
Materials
Student page 139
Math Jumble activity poster and digit cards

Concept and Handbook References
Divide even and odd numbers by two.
(MTK 91, 185)

Background
9 ÷ 4 = 2 R1
dividend divisor quotient remainder

Get Started
Begin by discussing the concept of division. For example, have five students stand and divide themselves into two groups, with one student left. Ask the other students to tell a division story about the situation. (Five students want to play games. There are two groups of students. There are two students in each group. One student is left over.) Ask the class what the leftover part is called. (remainder) Repeat the process with other numbers of students.

Today's Challenge
Using the 0-9 digit cards, construct the 3 by 3 poster shown. Explain that the object of today's Math Jumble is to find numbers that could be divided into two equal groups.

Have students tell stories about dividing any number on the poster by 2. An example might be, “I have 6 crayons. I divided them equally into 2 boxes. I have 3 crayons in each box.” Ask students, “Are there any numbers that cannot be divided by 2 evenly?” (1, 3, 5, and 7) “What happens when we try to divide these numbers by 2?” (There are remainders.) Model how to write equations involving remainders. For example, 5 ÷ 2 = 2 R1. Draw a picture to accompany the equation.

Student page 139 Have students use the Math Jumble on student page 139 to divide each surrounding number by 2.

Answers for student page 139: 1–7. 2 ÷ 2 = 1, 3 ÷ 2 = 1 R1, 5 ÷ 2 = 2 R1, 6 ÷ 2 = 3, 7 ÷ 2 = 3 R1, 8 ÷ 2 = 4, 9 ÷ 2 = 4 R1

Go Further
Student page 139 Have students answer the questions in the student book.

Answers for student page 139: 8. Even numbers have no remainder when divided by two. 9. Odd numbers have a remainder of 1 when divided by 2.

Assessment
Student self-assessment page 139 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students divide by two?
Materials
Student page 140
Blank paper

Concept and Handbook Reference
Review reading 4-digit numbers. (MTK 5–6)

Get Started
Demonstrate how to read a 4-digit number. Write 3603 on the board. The first digit is the thousands digit. Read that first. (three thousand). Then read the number represented by the last three digits (six hundred three). The word name for 3603 is three thousand six-hundred three. Ask for a volunteer to read 4580. (four thousand five hundred eighty) Point out that the word “and” is not used in reading whole numbers.

Student page 140 To introduce the activity, work through the first problem on student page 140. Read or ask a student to read the problem. Next explain that when you have a problem and you are given several answers to choose from, it helps if you can “rule out” some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say C (564) is wrong because “It shows five hundred sixty-four.” (If members of the class do not agree with the volunteer’s response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer’s choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (D). Be sure students understand why D is correct.

Today’s Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.

Then explain how points will be scored in today’s activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

Student page 140 Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.

Answers for student page 140: 1. C 2. A

When all students’ papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 140 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students read 4-digit numbers?
Materials
Student page 141

Concept and Handbook References
Explore patterns of remainders when dividing by 2. (MTK 85, 185)

Background
Dealing 6 cards to two people: \(6 \div 2 = 3\)

Get Started
Write the headings for the table below on the board.

<table>
<thead>
<tr>
<th>Number of cards</th>
<th>Player 1</th>
<th>Player 2</th>
<th>Cards leftover</th>
<th>Division problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>//</td>
<td>//</td>
<td>0</td>
<td>(4 \div 2 = 2)</td>
</tr>
<tr>
<td>5</td>
<td>//</td>
<td>//</td>
<td>1</td>
<td>(5 \div 2 = 2 \text{ R1})</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Continue to fill in the table, dealing tally marks, finding the leftover amount, and recording the equation.

As you work, allow the students to predict the number of leftover cards. Encourage them to describe all the patterns they see on the chart, including any patterns that help them make a prediction. (The number of leftover cards alternates between 1 and 0, and even numbers always have no cards leftover.)

Today’s Challenge
Student page 141 Have students complete the activity on the student page.

Answers for student page 141: 1. 10 R1, 10, 9 R1, 8 R1, 16, 15

Go Further
Student page 141 Have students answer the question on the student page.

Answers for student page 141: 2. The remainders alternate between one and zero. The numbers in the first column count backward. 3. 29, 47, 69, 43, 85.

Assessment
Student self-assessment page 141 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Do the students understand the term remainder? Do they see that odd numbers divided by two will always leave a remainder of one?

Ask the students to think about dealing cards for a card game. Usually it is important for each player to get the same number of cards. Ask the students to help you make a chart to show how many cards each player will get when there are only two players. Write a 4 in the first row, then alternate drawing tally marks one at a time below Player 1, Player 2, Player 1 again, counting as you go, until you have “dealt” 4 tally marks. When you “discover” that there are no cards left, write a 0 in the leftover column. Explain that leftovers are called remainders. Then write the corresponding equation in the table: \(4 \div 2 = 2\).
Materials
Student page 142
Math Maze cards (Week 29 Activity 142)

Concept and Handbook References
Review 2-dimensional and 3-dimensional shapes.
(MTK 310, 326)

Get Started
Have students brainstorm the names of 2-dimensional (2-D) and 3-dimensional (3-D) figures. Some possible responses are shown below.

2-D figures  3-D figures
square      sphere
circle      cube
pentagon    cone

Be sure students understand that 2-D figures are flat and 3-D figures are not.

Today's Challenge
Distribute the 18 Math Maze cards for Week 29. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.

Instructions for playing Math Maze
Ask students to look at their cards. Ask one student to read the question that is written on his or her card. Next ask, “Who has the card with the answer to the question just read?” Ask that student to read the answer, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be read should be the answer on the first student’s card.

The correct sequence of questions and answers is shown on page 205.

Student page 142 When the group has finished playing the game, have students open their books and complete the Today’s Challenge activity on page 142 in the student book.

Answers for student page 142: 1. pentagon 2. rectangular prism 3. hexagon 4. perimeter 5. sphere 6. octagon 7. area 8. cylinder

Go Further
Student page 142 Have students complete this section on the student page.

Answers for student page 142: 9. Responses will vary. Possible response: A square is a 2-D figure. A cube is a 3-D figure. Check students’ drawings.

Assessment
Student self-assessment page 142 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Do students know the names of 2-D figures? Do students know the names of 3-D figures?
Materials
Student page 143
Blank paper

Concept and Handbook Reference
Determine characteristics of three-dimensional solids. (MTK 327)

Background
Three-dimensional solids are figures that have length, width, and depth.

Get Started
Write the names of these solids on the board: pyramid, cylinder, cube, rectangular prism, cone, sphere. Have students brainstorm real objects that have these shapes. Some possible responses are shown below.

- pyramid: tombs in Egypt
- cylinder: soup can
- rectangular prism: shoe box
- cone: ice cream cone
- cube: dice
- sphere: basketball, globe

Next, point to the name of each solid, one at a time, and ask each of the three questions below.

<table>
<thead>
<tr>
<th></th>
<th>Does it roll?</th>
<th>Does it slide? (without rolling)</th>
<th>Does it stack?</th>
</tr>
</thead>
<tbody>
<tr>
<td>pyramid</td>
<td>no</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>cylinder</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>cube</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>rectangular prism</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>cone</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>sphere</td>
<td>yes</td>
<td>no</td>
<td>no</td>
</tr>
</tbody>
</table>

Have students then answer the questions in the Get Started section of page 143 in their books.

Answers for student page 143: 1. a. yes b. yes c. yes d. no; cylinder 2. a. yes b. no c. yes d. no; cube

Today's Challenge
Explain that today you will be playing a game called "Who Wants to Be the Top Scorer?" Have each student take a blank sheet of paper and draw or write the name of any three-dimensional solid he or she chooses. Then ask the students to number their papers from 1 to 5.

As you ask each of five questions, have the students look at their solids and answer the question. Yes answers will score points. Here are the questions to ask:

1. Does your solid roll? If yes, score 10 points.
2. Does your solid slide? If yes, score 5 points.
3. Can your solid be stacked? If yes, score 9 points.
4. Does your solid have any face that is a circle? If yes, score 8 points.
5. Does your solid have more than 3 faces? If yes, score 15 points.

Have students find their total scores. Determine which student has the highest score. Have that student tell the name of the solid and explain how he or she scored the points.

Go Further
Student page 143 Have students solve the riddle and create another riddle for a friend to solve. Have the friend sign his or her name.

Answers for student page 143: 3. pyramid 4. Check students’ riddles

Assessment
Student self-assessment page 143 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students decide whether or not a solid can be stacked, slid, or rolled?
Materials
Student page 144
Math Jumble activity poster and digit cards

Concept and Handbook References
Add or subtract to get a desired number.
(MTK 103, 112)

Get Started
Students will practice mental math strategies for addition and subtraction. Have students sit next to one another in a circle. The first student in the circle will begin by calling out an expression, such as 6 + 5. The next student in the circle must find the value of the expression and create a new expression. For example, the student will respond 11, then create a new expression by saying 11 + 6. The next student will start with 17 and create a new expression, such as 17 - 8. The game continues until all students in the circle have had an opportunity to participate. Ask students to explain any mental math strategies they may have used during the game.

Today’s Challenge
Using the 0–9 digit cards, construct the 4 by 4 poster shown. Explain that the object of today’s Math Jumble is to use addition and/or subtraction to reach the target number of 15.

Students may add or subtract any combination of numbers in order to reach 15. Numbers may be joined vertically, horizontally or a combination of both. For example, students may start on the first row and add 4 and 7, next move down (vertically) and add in the 2, then move horizontally to subtract the 3, and lastly move down (vertically) again to add the 5 for a total of 15. The complete equation would be 4 + 7 + 2 - 3 + 5 = 15. Record a few equations on the board and have students record them in their student books.

Student page 144 Have students use the Math Jumble on student page 144 to find more strings of numbers. Students score 1 point for each digit used correctly in an equation. Determine which student scored the most points.

Possible answers for student page 144:
6 + 7 + 2 = 15; 1 + 9 + 5 = 15;
8 + 6 + 5 - 4 = 15; 9 + 5 + 4 - 3 = 15;
2 + 6 + 7 = 15; 3 + 5 + 4 + 3 = 15;
8 + 6 + 7 - 6 = 15; 6 + 5 + 4 = 15;
6 + 8 - 6 + 5 + 2 = 15; 7 + 2 + 6 = 15

Go Further
Student page 144 Have students use the blank table on the student page and the numbers 0–9 to create their own Math Jumble. Students may choose any number as their target. After students fill in their table, have them ask a friend to solve their Math Jumble.

Answers for student page 144: Grids and equations will vary.

Assessment
Student self-assessment page 144 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Can students perform multiple operations in sequence? Do they have a sense of how large or small the answer will be?
Materials
Student page 145
Blank paper

Concept and Handbook Reference
Compare fractions. (MTK 224)

Get Started
Ask for volunteers to go to the board and draw a model that shows \( \frac{2}{3} \) of a pizza. Some possible models are shown here.

\[ \frac{2}{3} \]

Look at students’ models. Be sure each pizza has been divided into three \textit{equal} parts and that two of those parts are highlighted in some way.

Explain that drawing models for fractions may help students solve today’s problems.

Student page 145 To introduce the activity, work through the first problem on student page 145. Read or ask a student to read the problem. Next explain that when you have a problem and you are given several answers to choose from, it helps if you can “rule out” some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say C is wrong because “One third and one half are not the same.” (If members of the class do not agree with the volunteer’s response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer’s choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (B). Be sure students understand why B is correct.

Today's Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.

Then explain how points will be scored in today’s activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

Student page 145 Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.


When all students’ papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 145 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students use pictures to compare fractions?
Materials
Student page 146

Concept and Handbook Reference
Explore patterns of remainders when dividing by 3. (MTK 185)

Background
Dealing 9 cards to three people: $9 \div 3 = 3$

Get Started
Write the headings for the table below on the board.

<table>
<thead>
<tr>
<th>Number of cards</th>
<th>Player 1</th>
<th>Player 2</th>
<th>Player 3</th>
<th>Cards leftover</th>
<th>Division problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>//</td>
<td>//</td>
<td>//</td>
<td>0</td>
<td>$6 \div 3 = 2$</td>
</tr>
<tr>
<td>7</td>
<td>//</td>
<td>//</td>
<td>//</td>
<td>1</td>
<td>$7 \div 3 = 2 \text{ R}1$</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Ask the students to think about dealing cards for a card game. Usually each player gets the same number of cards. Ask the students to help you make a chart to show how many cards each player will get when there are three players. Write a 6 in the first row, then alternate drawing tally marks one at a time below Player 1, Player 2, Player 3, Player 1 again, counting as you go, until you have “dealt” 6 tally marks. When you “discover” that there are no cards left, write a 0 in the leftover column. Explain that leftovers are called remainders. Then write the corresponding equation in the table: $6 \div 3 = 2$.

Continue to fill in the table, dealing tally marks, finding the leftover amount, and recording the equation.

As you work, allow the students to predict the number of leftover cards. Encourage them to describe all the patterns they see on the chart, including any patterns that help them make a prediction. (The number of leftover cards follows the pattern 0, 1, 2, and multiples of three always have no cards leftover.)

Today’s Challenge
Student page 146 Have students complete the activity on the student page.

Answers for student page 146: 1. 8, 7 R2, 7 R1, 7, 6 R2, 19, 18

Go Further
Student page 146 Have students answer the questions on the student page.

Answers for student page 146: 2. 12, 15, 18, and 21. 3. 13, 16, and 19. 4. 14, 17, and 20.

Assessment
Student self-assessment page 146 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Do the students understand the term remainder? Can they find the remainder when dividing by 3?
Materials
Student page 147
Math Maze cards (Week 30 Activity 147)

Concepts and Handbook References
Review coins. (MTK 17–18)
Review multiplication and division. (MTK 60, 74)

Get Started
Present the following problems. Ask students to tell how they could use either multiplication or division to solve each.

How many cents is 7 nickels?

\[ 7 \times 5 = 35 \]
Seven nickels is 35 cents.

Eighty cents is how many dimes?

\[ 80 \div 10 = 8 \]
Eighty cents is 8 dimes.

Today’s Challenge
Distribute the 18 Math Maze cards for Week 30. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.

Instructions for playing Math Maze
Ask students to look at their cards. Ask one student to read the question that is written on his or her card. Next ask, “Who has the card with the answer to the question just read?” Ask that student to read the answer, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be read should be the answer on the first student’s card.

The correct sequence of questions and answers is shown on page 206.

Student page 147
When the group has finished playing the game, have students open their books and complete the Today’s Challenge activity on page 147 in the student book.

Answers for student page 147:
1. c
2. b
3. a
4. d

Go Further
Student page 147
Have students complete this section on the student page.

Answers for student page 147:
In any order:

<table>
<thead>
<tr>
<th>Dimes</th>
<th>Nickels</th>
<th>Pennies</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>6.</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>7.</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>8.</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Assessment
Student self-assessment page 147
Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips
Do students know the value of coins? Do students understand the concept of multiplication? Do students understand the concept of division?
Materials
Student page 148
Blank paper (heavyweight if possible) or index cards
Yardstick (optional)

Concept and Handbook Reference
Review customary units of linear measurement—inch, foot, yard. (MTK 346)

Get Started
If a yardstick is available, use it to show the length of an inch, a foot, and a yard. Then call out a measure and ask for a volunteer to call out an equivalent measure. For example, 1 yard (3 feet or 36 inches), 2 feet (24 inches), 36 inches (1 yard or 3 feet).

Today’s Challenge
Student page 148 Have students look at page 148 in the student book. Have students fill in the missing numbers to create pairs of equivalent measures.

Answers for student page 148: 1. 9  2. 36  3. 48  
   4. 24  5. 6  6. 2

Go over answers with the whole group or check students’ papers individually.

Go Further
Have pairs of students make a set of cards to play the game “Concentration.” Each pair of students will need 16 small pieces of paper or 16 index cards. Have the students use one slip of paper or card to copy the information from each box on student page 148.

Instructions for playing “Concentration” Shuffle the cards and lay them face down in equal columns. Each player turns over a card. The player with the larger measure goes first. Turn the cards over so that all cards are again face down. The first player turns over two cards. If the cards match (show equivalent measures), the player keeps the cards and goes again. If the cards do not match, the player turns the cards back over and the other player takes a turn. Play continues until all cards have been taken. The player with more cards at the end of the game wins.

Assessment
Student self-assessment page 148 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students understand customary units of linear measurement?
**Materials**
Student page 149
Math Jumble activity poster and digit cards

**Concept and Handbook References**
Multiply to get a desired number. (MTK 66, 91)

**Get Started**
Review the concept of odd and even numbers. Read aloud the following expressions and ask the students to tell you whether the answer is even or odd.

- $3 \times 6$ (even)
- $2 \times 9$ (even)
- $3 \times 5$ (odd)
- $7 \times 3$ (odd)
- $2 \times 4$ (even)
- $1 \times 7$ (odd)

**Today's Challenge**
Using the 0–9 digit cards, construct the 4 by 4 poster shown. Explain that the object of today's Math Jumble is to find strings of numbers that could be multiplied to make even-number products.

![Poster with numbers](image)

**Possible equations:**
- $5 \times 4 = 20$
- $1 \times 8 = 8$
- $1 \times 6 = 6$

**Student page 149** Have students use the Math Jumble on student page 149 to find more strings of numbers. Students score 1 point for each digit used correctly in an expression. Determine which student scored the most points.

**Possible answers for student page 149:**
- $3 \times 2 = 6$
- $4 \times 8 = 32$
- $3 \times 6 = 18$
- $2 \times 5 = 10$
- $9 \times 4 = 36$
- $6 \times 7 = 42$
- $5 \times 4 = 20$
- $1 \times 8 = 8$
- $1 \times 6 = 6$
- $6 \times 9 = 54$
- $6 \times 3 = 18$
- $3 \times 4 = 12$
- $9 \times 6 = 54$
- $2 \times 9 = 18$
- $4 \times 1 = 4$

**Go Further**
**Student page 149** Have students use the blank table on the student page and the numbers 0–9 to create their own Math Jumble. Students will need to find multiplication expressions that equal odd numbers. After students fill in their table, have them ask a friend to solve their Math Jumble.

**Answer for student page 149:** Grids and equations will vary.

**Assessment**
**Student self-assessment page 149** Have students circle one of the three choices to describe how they feel about this activity.

**Assessment tip** Do students understand how to create even or odd products?
Materials
Student page 150
Blank paper

Concept and Handbook Reference
Review adding fractions with like denominators. (MTK 228)

Get Started
Use a picture to demonstrate adding fractions with the same denominator.

\[
\frac{1}{5} + \frac{2}{5}
\]

\[
\frac{1}{5} + \frac{2}{5} = \frac{3}{5}
\]

Ask for a volunteer to draw a picture to show how to add \(\frac{1}{4} + \frac{1}{4}\). (2) Ask "Can anyone tell a rule for adding fractions?" (When fractions have the same denominator, the bottom numbers, you just add the numerators, the top numbers, and keep the denominator the same.)

Student page 150 To introduce the activity, work through the first problem on student page 150. Read or ask a student to read the problem. Next explain that when you have a problem and you are given several answers to choose from, it helps if you can "rule out" some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say D (\(\frac{1}{4}\) cup) is wrong because "That is just the amount of one fruit." (If members of the class do not agree with the volunteer's response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer's choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (B). Be sure students understand why B is correct.

Today's Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.

Then explain how points will be scored in today's activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

Student page 150 Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.

Answers for student page 150: 1. A 2. C

When all students' papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 150 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students add fractions with like denominators?
**Materials**
Student page 151

**Concept and Handbook Reference**
Explore patterns of remainders when dividing by 5.
*(MTK 146)*

**Background**

Dealing 15 cards to five people: $15 \div 5 = 3$

**Get Started**
Write the headings for the table below on the board.

<table>
<thead>
<tr>
<th>Number of cards</th>
<th>Player 1</th>
<th>Player 2</th>
<th>Player 3</th>
<th>Player 4</th>
<th>Player 5</th>
<th>Cards leftover</th>
<th>Division problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>//</td>
<td>//</td>
<td>//</td>
<td>//</td>
<td>//</td>
<td>0</td>
<td>10 ÷ 5 = 2</td>
</tr>
<tr>
<td>11</td>
<td>//</td>
<td>//</td>
<td>//</td>
<td>//</td>
<td>//</td>
<td>1</td>
<td>11 ÷ 5 = 2 R1</td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Ask the students to think about dealing cards for a card game. Usually each player gets the same number of cards. Ask the students to help you make a chart to show how many cards each player will get when there are five players. Write a 10 in the first row, then alternate drawing tally marks one at a time below Player 1, Player 2, Player 3, Player 4, Player 5, and Player 1 again, counting as you go, until you have “dealt” 10 tally marks. When you “discover” that there are no cards left, write a 0 in the leftover column. Explain that leftovers are called remainders. Then write the corresponding equation in the table: $10 \div 5 = 2$.

Continue to fill in the table, dealing tally marks, finding the leftover amount, and recording the equation.

As you work, allow the students to predict the number of leftover cards. Encourage them to describe all the patterns they see on the chart, including any patterns that help them make a prediction. (The number of leftover cards follows the pattern 0, 1, 2, 3, 4, 0 and multiples of five always have no cards leftover.)

**Today’s Challenge**
*Student page 151* Have students complete the activity on the student page.

**Answers for student page 151**: 1. 5 R2, 5 R1, 5, 4 R4, 4 R3, 22, 21

**Go Further**
*Student page 151* Have students answer the questions on the student page.

**Answers for student page 151**: 2. Draw circles around 31 and 36. 3. Draw triangles around 27, 32, and 37. 4. Draw squares around 28 and 33. 5. Underline 29 and 34.

**Assessment**
*Student self-assessment page 151* Have students circle one of the three choices to describe how they feel about this activity.

**Assessment tips** Do the students understand the term remainder? Can they find remainders correctly when dividing by five?
Materials
Student page 152
Math Maze cards (Week 31 Activity 152)

Concept and Handbook References
Review concepts presented in previous Math Mazes. (MTK 17, 32, 102, 300, 332, 374)

Get Started
Tell students that today’s activity will be a review from the Math Mazes done previously.

Today’s Challenge
Distribute the 18 Math Maze cards for Week 31. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.

Instructions for playing Math Maze Ask students to look at their cards. Ask one student to read the question that is written on his or her card. Next ask, “Who has the card with the answer to the question just read?” Ask that student to read the answer, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be read should be the answer on the first student’s card.

The correct sequence of questions and answers is shown on page 207.

Student page 152 When the group has finished playing the game, have students open their books and complete the Today’s Challenge activity on page 152 in the student book.

Answers for student page 152: 1. 70 2. 40 3. pentagon 4. 6:15 P.M.

Go Further
Student page 152 Have students complete this section on the student page.

Answer for student page 152: 5–8. Questions will vary.

Assessment
Student self-assessment page 152 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Which concepts do students need more work on?
**Materials**
Student page 153
Blank paper

**Concept and Handbook Reference**
Find and predict patterns in multiples of 9.  
(MTK 70)

**Get Started**
Have students look at the hundred chart on the inside back covers of their student books.

Ask: If we were counting by 9s on the chart, on what number would we stop for 1 group of nine?  
(9) Two groups of nine? (18) Three groups of nine?  
(27) These numbers are multiples of 9.

Have students take out a sheet of paper, fold it in half vertically, open and trace a line on the fold.  
Have students label the columns tens and ones.  
Using the hundred chart, have students make a table of all multiples of 9 less than 100.

As you ask each of five questions, have students look at their numbers and answer the question. Yes answers will score points. Here are the questions to ask:

1. Is your number greater than the number of inches in one foot and less than the number of weeks in one year? If yes, score 10 points.
2. Is the digit in the tens place greater than the digit in the ones place? If yes, score 5 points.
3. Is your number greater than 27 and less than 72? If yes, score 9 points.
4. Is the difference between the digit in the tens place and the digit in the ones place less than four? If yes, score 8 points.
5. Is your number less than the number of days in January? If yes, score 15 points.

Have students find their total scores. Determine which student has the highest score. Have that student write the number on the board and explain how he or she scored the points.

**Go Further**

**Student page 153** Have students use their lists of multiples of 9 to answer the questions in the Go Further section of page 153 in their books. Then have them create and solve a riddle and then create another riddle for a friend to solve. Have the friend sign his or her name.

**Answers for student page 153:** 1. 72  2. 36  3–4. Check students’ riddles.

**Assessment**

**Student self-assessment page 153** Have students circle one of the three choices to describe how they feel about this activity.

**Assessment tip** Do students understand how to find multiples of 9?
Materials
Student page 154
Math Jumble activity poster and digit cards

Concepts and Handbook References
Use addition, subtraction, multiplication, or division to find a desired number. (MTK 32)
Use mental math. (MTK 102)

Background
Remind students how parentheses can be used to group numbers. If a problem has parentheses, the step inside the parentheses is always done first. For instance,

\[ 5 - 3 + 2 = 4 \]

but

\[ 5 - (3 + 2) = 0 \]

This convention is referred to as “order of operations.”

Get Started
Have students sit next to one another in a circle. Students will practice mental math strategies for all operations. The first student in the circle will begin by calling out an expression, such as \( 8 + 5 \). The next student in the circle must evaluate the expression and create a new equation. For example, the student will respond 13, then create a new expression by saying \( 13 \times 2 \). The next student will start with 26 and create another new expression, such as \( 26 - 5 \). The next student will respond with 21 and may divide by 7. The game continues until all students in the circle have had an opportunity to participate. Ask students to explain any mental math strategies they may have used during the game.

Strings of numbers are made by connecting adjoining numbers (top to bottom and/or left to right) on the poster. Up to four numbers may be joined vertically or horizontally. An example for addition would be \( 3 + 6 + 2 + 7 = 18 \). An example for multiplication would be \( 2 \times 9 = 18 \). Have students work together to find as many expressions equaling 18 as possible. Record a few of the equations on the board.

Possible equations:
\[ 3 + 7 + 8 = 18 \quad 6 \times 3 = 18 \quad (8 \times 3) - 6 = 18 \]

Student page 154 Have students use the Math Jumble on student page 154 to find more strings of numbers. Students score 1 point for each digit used correctly in an expression. Determine which student scored the most points.

Answers for student page 154: Some equations are:
\[ 8 + 2 + 5 + 3 = 18; \quad 9 + 9 = 18, \quad 6 + 3 + 9 = 18; \]
\[ 9 + 4 + 5 = 18; \quad (3 \times 9) - (4 + 5) = 18; \]
\[ 3 + 7 + 8 = 18; \quad 6 \times 3 = 18; \quad (8 \times 3) - 6 = 18; \]
\[ (3 + 6) + (2 + 7) = 18; \quad (2 + 3) + (5 + 8) = 18; \]
\[ (8 + 3) - 2 + 9 = 18; \quad (6 + 3) \times 9 = 18 \]

Go Further
Student page 154 Have students use the blank table on the student page and the numbers 0–9 to create their own Math Jumble. Students may choose any number as their target. After students fill in their table, have them ask a friend to solve their Math Jumble.

Answer for student page 154: Answers will vary. Check students’ work.

Assessment
Student self-assessment page 154 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Can students create equations equal to a given number? Do students understand order of operations?
Rule Out Two

Week 31 • Activity 155

Materials
Student page 155
Blank paper

Concepts and Handbook References
Review the relationship between meters and centimeters. (MTK 347)
Solve problems about measurement. (MTK 363)

Get Started
Ask students questions like these: “How many centimeters are there in a meter?” (100 cm) “In 2 meters?” (200 cm) “How can you write 150 centimeters using both meters and centimeters?” (1 meter 50 centimeters)

Student page 155 To introduce the activity, work through the first problem on student page 155. Read or ask a student to read the problem. Next explain that when you have a problem and you are given several answers to choose from, it helps if you can “rule out” some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say C (40 cm) is wrong because “That is the length of the bow’s ribbon.” (If members of the class do not agree with the volunteer’s response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer’s choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (A). Be sure students understand why A is correct.

Today’s Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.

Then explain how points will be scored in today’s activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

Student page 155 Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.

When all students’ papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 155 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Do students understand how centimeters and meters are related? Can they solve problems about measurement?
Materials
Student page 156

Concepts and Handbook References
Explore perimeter. (MTK 348)
Use a pattern to make a prediction. (MTK 374–376)

Background
Perimeter is the distance around a figure. In addition to developing an understanding of the meaning of perimeter, students may develop an intuitive feel for the connection between the size of a figure and its perimeter.

Get Started
Draw a square on the board, and tell the students you have drawn a square table. Tell them that there is room for one chair on each side of the table. Ask them how many people can be seated at this table.
(4 people) Now add a second square adjacent to the first and ask how many people can be seated.
(6 people)

Make a T-chart to record the information so far.
Then add a third square as shown.

<table>
<thead>
<tr>
<th>tables</th>
<th>chairs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>10</td>
</tr>
</tbody>
</table>

Record the number of tables and the number of people who can be seated. Then ask for a prediction about how many people could be seated if you added a fourth table. Draw the fourth square and then count the chair spaces together to test the prediction.

Encourage the students to try to see the connection between the drawings and the number of spaces for chairs. Why does the number of spaces, or sides, increase by two every time? Students may have different ways of seeing or expressing the relationship between the growing number pattern and the growing geometric pattern. (You are adding a table with four sides, but you are blocking, or subtracting, one side of the old table with the new one, and you are blocking one side of the new table as well. The result is that the new table adds only two new chair spaces.)

Today's Challenge
Student page 156 Have students complete the activity on the student page.

Answers for student page 156: 1. 3 2. 4 3. 5 4. 6 5. The left column should read 1, 2, 3, 4; the right column should read 3, 4, 5, 6.

Go Further
Student page 156 Have students answer the question on the student page.

Answer for student page 156:
6. Seven people could be seated at 5 tables.

Assessment
Student self-assessment page 156 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Do students see that a larger figure has a larger perimeter? Do the students use the pattern to make a prediction?
Materials
Student page 157
Math Maze cards (Week 32 Activity 157)

Concept and Handbook References
Review concepts presented in previous Math Mazes.
(MTK 18, 60, 74, 121, 210, 326)

Get Started
Tell students that today's activity will be a review
from the Math Mazes done previously.

Today's Challenge
Distribute the 18 Math Maze cards for Week 32.
Each student should receive at least one card, but
since all cards need to be distributed, some students
may need to get more than one card. Use the cards
to play the Math Maze game.

Instructions for playing Math Maze Ask students to
look at their cards. Ask one student to read the
question that is written on his or her card. Next ask,
"Who has the card with the answer to the question
just read?" Ask that student to read the answer, and
then read the question on his or her card. Play con-
tinues until all questions have been answered. The
last answer to be read should be the answer on the
first student’s card.

The correct sequence of questions and answers is
shown on page 208.

Student page 157 When the group has finished
playing the game, have students open their books
and complete the Today's Challenge activity on
page 157 in the student book.

Answers for student page 157: 1. 9  2. 4000  3. 1
4. $\frac{3}{4}$

Go Further
Student page 157 Have students complete this sec-
tion on the student page.

Answer for student page 157: 5–8. Questions will
vary.

Assessment
Student self-assessment page 157 Have students
circle one of the three choices to describe how they
feel about this activity.

Assessment tip Which concepts do students need
more work on?
Materials
Student page 158
Blank paper

Concept and Handbook Reference
Round numbers to the nearest 100. (MTK 130)

Get Started
Have students practice rounding numbers to the nearest hundred.

897 (900) 532 (500) 1632 (1600)
6589 (6600) 98 (100)

Be sure students understand that they need to look at the digit in the tens place when rounding to the hundreds place. If the tens digit is 5 or more, they round up. If the tens digit is less than 5, they round down.

Today's Challenge
Write the following numbers on separate sheets of scrap paper. Explain that today the class will be playing a game called “Fantastic Finalist.” You do not have to use all the numbers, but be sure that one student receives the number 6785, since that number will be the “Fantastic Finalist.”

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>134</td>
<td>1511</td>
<td>149</td>
</tr>
<tr>
<td>517</td>
<td>120</td>
<td>838</td>
</tr>
<tr>
<td>947</td>
<td>75</td>
<td>756</td>
</tr>
<tr>
<td>1499</td>
<td>98</td>
<td>6785</td>
</tr>
<tr>
<td>499</td>
<td>578</td>
<td>1520</td>
</tr>
<tr>
<td>579</td>
<td>666</td>
<td>67</td>
</tr>
</tbody>
</table>

Have all students hold their numbers and stand in a large circle. Explain that the object of the game is to be the “Fantastic Finalist,” the last student to remain standing.

Read each of the following challenges, one at a time.
- If your number rounds to 100, sit down. (134, 120, 75, 98, 149, 67)
- If your number rounds to 600, sit down. (579, 578)
- If your number rounds to 500 sit down. (517, 499)
- If your number rounds to 900, sit down. (947)
- If your number is even, sit down. (666, 838, 756, 1520)
- If your number rounds to 1500, sit down. (1499, 1511)

At this point, only the student holding the number 6785 should still be standing. That student is the “Fantastic Finalist.”

Go Further
Student page 158 Have students complete the activity on the student page.

Answers for student page 158: 1. 241 2. 200 3. 450 4. 500

Assessment
Student self-assessment page 158 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students understand how to round a number to the nearest hundred?
Materials
Student page 159
Math Jumble activity poster and digit cards

Concept and Handbook References
Divide a whole number by 5. (*MTK 70, 82*)

Get Started
Begin by discussing the concept of division. For example, have 10 students stand and divide themselves into 5 equal groups. Ask the other students to tell a division story about the situation. (Ten students are working on an art project. There are 5 groups of students. There are 2 students in each group.) Repeat the process with other numbers of students.

Today’s Challenge
Using the 0–9 digit cards, construct the 4 by 4 poster shown. Explain that the object of today’s Math Jumble is to find numbers that could be divided into 5 equal groups.

```
9 1 8 1
2 5 3 0
6 4 5 7
2 0 5 0
```

Multi-digit numbers are made by connecting adjoining numbers (top to bottom and/or left to right) on the poster. For example, the 2 and 5 from the second row could be used to represent 25, or 1 and 0 from the last column could be used to represent 10.

Student page 159 Have students use the Math Jumble on student page 159 to find 4 more numbers that could be divided into 5 equal groups.

Answers for student page 159: Possible answers include: 5 ÷ 5 = 1, 10 ÷ 5 = 2, 15 ÷ 5 = 3, 20 ÷ 5 = 4, 25 ÷ 5 = 5, 30 ÷ 5 = 6, 35 ÷ 5 = 7, 40 ÷ 5 = 8, 45 ÷ 5 = 9, 50 ÷ 5 = 10, 55 ÷ 5 = 11, 70 ÷ 5 = 14

Go Further
Student page 159 Using the grid on the student page, have each student create a Math Jumble to share with a friend.

Answer for student page 159: Answers will vary. Check students’ work.

Assessment
Student self-assessment page 159 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students divide by 5?
Materials
Student page 160
Blank paper
Empty beverage containers (1 gallon container and 6 quart containers)

Concept and Handbook Reference
Review the relationship between quarts and gallons. (MTK 356)

Get Started
Show students the gallon container (covering up any label that shows the word gallon). Ask, “What amount of liquid will this container hold?” (a gallon) Show students one of the quart containers (covering up any label that shows the word quart). Ask, “What amount of liquid will this container hold?” (a quart) Next fill the gallon container with water. Have the students guess how many quart containers you could fill using the water from the gallon container. Record students’ guesses on the board. Pour the water into 4 of the quart containers. Ask, “How many of you guessed correctly?”

Student page 160 To introduce the activity, work through the first problem on student page 160. Read or ask a student to read the problem. Next explain that when you have a problem and you are given several answers to choose from, it helps if you can “rule out” some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say A (a bathtub) is wrong because “A bathtub holds much more than a gallon.” (If members of the class do not agree with the volunteer’s response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer’s choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (B). Be sure students understand why B is correct.

Today’s Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.

Then explain how points will be scored in today’s activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

Student page 160 Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.

Answers for student page 160: 1. A 2. B
When all students’ papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 160 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Can students recognize a gallon container? A quart container? Do they understand that 4 quarts and 1 gallon are the same amount?
Materials
Student page 161

Concepts and Handbook References
Explore the concept of area. (MTK 350)
Use a pattern to make a prediction. (MTK 374)

Background
Area is the measure in square units of the inside of a plane figure. In addition to developing an understanding of the meaning of area, students may develop an intuitive feel for the connection between the dimensions of a figure and its area.

Get Started
Draw a square on the board, and tell the students you have drawn a floor tile. Tell them that you need to patch an area of the floor, and draw two adjacent squares. Tell them that two square tiles will patch this space perfectly. Explain that the size of an space can be measured by the number of tiles it would take to fill it. Then draw a 2 by 2 array of squares and ask the students how many tiles you would need to patch this space. Since the space can be filled with 4 tiles we say the size of the space or the area is 4 square tiles. Then draw a 3 by 2 set of squares.

1 tile

Area will be filled by:  2 tiles  4 tiles  6 tiles

Ask the students to find patterns in the drawings and the number of tiles. (even numbers or counting by twos) Ask them to describe the next floor area in the pattern and to predict the number of tiles needed to fill the area. (2 by 4; 8 tiles) Then draw the floor area they suggest (even if they are wrong) and discuss whether it fits the pattern. Count the number of tiles needed and see if that number fits the pattern. If it doesn’t fit, continue to seek suggestions until they describe a 2 by 4 area.

Today’s Challenge
Student page 161 Have students complete the activity on the student page.

Answers for student page 161: 1. 3 tiles  2. 6 tiles 3. 9 tiles  4. 12 tiles  5. Answers will vary. Look for the idea that the numbers are increasing by three.

Go Further
Student page 161 Have students complete the activity on the student page.

Answers for student page 161: 6. 2 tiles  7. 4 1/2 tiles

Assessment
Student self-assessment page 161 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Do students understand the concept of area? Do the students see the area increase in equal increments as one dimension increases?
Materials
Student page 162
Math Maze cards (Week 33 Activity 162)

Concept and Handbook References
Review concepts presented in previous Math Mazes. (MTK 18, 128, 228, 311, 349)

Get Started
Tell students that today’s activity will be a review from the Math Mazes done previously:

Today’s Challenge
Distribute the 18 Math Maze cards for Week 33. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.

Instructions for playing Math Maze Ask students to look at their cards. Ask one student to read the question that is written on his or her card. Next ask, “Who has the card with the answer to the question just read?” Ask that student to read the answer, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be read should be the answer on the first student’s card.

The correct sequence of questions and answers is shown on page 209.

Student page 162 When the group has finished playing the game, have students open their books and complete the Today’s Challenge activity on page 162 in the student book.

Answers for student page 162: 1. 7 and 5 2. 100 3. 730 4. 1

Go Further
Student page 162 Have students complete this section on the student page.

Answers for student page 162: 5–8. Questions will vary.

Assessment
Student self-assessment page 162 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Which concepts do students need more work on?
Materials
Student page 163
Blank paper

Concept and Handbook Reference
Explore division with remainders. (MTK 185)

Get Started
Explain to students that sometimes when you try to make equal groups, you can’t do it without having some left over. The number left over is called a remainder. Demonstrate division with remainders by dividing students into groups with some students being left over. Call 11 students forward and divide them into two equal groups. One student will be left over. Write the division problem on the board. 

$11 \div 2 = 5$ remainder 1) Repeat the process several times with different numbers. Ask the students: “Why do we have leftovers?” (Sometimes equal groups are not possible.) “Are there always remainders in a division problem?” (no)

Today’s Challenge
Explain that today you will be playing a game called “Who Wants to Be the Top Scorer?” Have each student take a blank sheet of paper and write a number greater than 20 and less than 30. Then ask them to number their papers from 1 to 5.

27
1
2
3
4
5

As you ask each of the five questions, have the students divide their number to answer the question. Drawing a picture will help. The remainder is the number of points scored. Here are the questions to ask:

1. Divide your number by 2. Do you have a remainder? If yes, the remainder is the number of points you score.
2. Divide your number by 3. Do you have a remainder? If yes, the remainder is the number of points you score.
3. Divide your number by 4. Do you have a remainder? If yes, the remainder is the number of points you score.
4. Divide your number by 5. Do you have a remainder? If yes, the remainder is the number of points you score.
5. Divide your number by 6. Do you have a remainder? If yes, the remainder is the number of points you score.

Have students find their total scores. Determine which student has the highest score. Have that student show the division on the board and explain how he or she scored the points.

Student page 163 Have students solve the riddles.

Answers for student page 163: 1. 25 2. 17

Go Further
Student page 163 Have students choose numbers to fill in the blanks and then solve their own riddles. Then have them create another riddle for a friend to solve. Have the friend sign his or her name.


Assessment
Student self-assessment page 163 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students understand the concept of a remainder in division?
Materials
Student page 164
Math Jumble activity poster and digit cards

Concepts and Handbook References
Use addition, subtraction, multiplication, or division to find a desired number. (MTK 32)
Use mental math. (MTK 102)

Background
Remind students how parentheses can be used to group numbers. If a problem has parentheses, the step inside the parentheses is always done first.

\[ 5 + (3 \times 4) = \]
\[ 5 + 12 = 17 \]

This convention is referred to as “order of operations.”

Get Started
Have students sit next to one another in a circle. Students will practice mental math strategies for all operations. The first student in the circle will begin by calling out an expression such as 6 + 5. The next student in the circle must find the value of the expression and create a new expression. For example, the student will respond 11, then create a new expression by saying 11 \times 3. The next student will start with 33 and create another new expression, such as 33 – 9. The next student will respond with 24 and may divide by 6. The game continues until all students in the circle have had an opportunity to participate. Ask students to explain any mental math strategies they may have used during the game.

Today’s Challenge
Using the 0–9 digit cards, construct the 4 by 4 poster shown.

Explain that the object of today’s Math Jumble is to find strings of numbers that could be used to make equations equal to 25.

Strings of numbers are made by connecting adjoining numbers (top to bottom and/or left to right) on the poster. Up to four numbers may be joined vertically or horizontally. Explain that more than one operation may be used in an expression. For example, \( (3 \times 6) + 2 + 5 = 25 \). Have students work together to find expressions equal to 25. Record a few of the equations on the board.

Possible equations:
\[ (9 \times 3) - 2 = 25 \]
\[ (8 \times 2) + (5 + 4) = 25 \]
\[ (8 \times 3) + 1 = 25 \]

Student page 164 Have students use the Math Jumble on student page 164 to find more strings of numbers. Students score 1 point for each digit used correctly in an expression. Determine which student scored the most points.

Answers for student page 164: Some equations are:
\[ 5 \times (3 + 2) = 25; \ (5 \times 2) + (5 \times 3) = 25; \]
\[ (4 \times 5) + (3 + 2) = 25; \ (9 \times 3) - 2 = 25; \]
\[ (8 \times 2) + (5 + 4) = 25; \ (8 \times 3) + 1 = 25; \]
\[ (1 \times 9) \times 3 - 2 = 25; \ (1 + 9) + (5 \times 3) = 25; \]
\[ (3 \times 6) + 2 + 5 = 25 \]

Go Further
Student page 164 Have students use the blank table on the student page and the numbers 0–9 to create their own Math Jumble. Students may choose any number as their target. After students fill in their table, have them ask a friend to solve their Math Jumble.

Assessment
Student self-assessment page 164 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students create equations equal to a given number?
Materials
Student page 165
Blank paper

Concept and Handbook Reference
Review using ordered pairs to locate points on a grid. (MTK 258)

Get Started
Student page 165 Have students open their books and look at the grid on page 165. Ask students to place a pencil on the corner where 0 is located. Then ask them to move the pencil across 4 spaces and then up 1 space. Ask, “What point is your pencil on?” (f) Explain that the ordered pair (4, 1) can be used to describe the location of point F. Write (4, 1) on the board, saying “four, one.” Explain that the first number always tells the number of spaces you move across and the second number tells the number of spaces you move up.

To introduce the activity, work through the first problem on student page 165. Read or ask a student to read the problem. Next explain that when you have a problem and you are given several answers to choose from, it helps if you can “rule out” some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say B (B) is wrong because “There is no point B on the grid.” (If members of the class do not agree with the volunteer’s response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer’s choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (A). Be sure students understand why A is correct.

Today’s Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.

Then explain how points will be scored in today’s activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

Student page 165 Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.

Answers for student page 165: 1. D 2. D
When all students’ papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 165 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students use ordered pairs to locate points on a grid?
Materials
Student page 166

Concept and Handbook Reference
Explore the doubling relationship between cups, pints, quarts, half gallons and gallons. (MTK 356)

Background
In order to convert easily between the different standard units of capacity, students need to be able to double and halve easily.

Get Started
Write the following sequence of numbers on the board: 1, 2, 4, 8, . . .

Ask the students what number comes next. (16) Ask them to explain any answer, right or wrong, by describing the pattern. (Each number is twice as large as the one before.)

Then write this sequence on the board: 32, 16, 8, . . .

Ask the students what number comes next. (4) Ask them to explain any answer, right or wrong, by describing the pattern. (Each number is half of the one before.) Ask for the next two numbers. (2 and 1)

Now ask the students to compare the two patterns. What is the same and what is different? (The numbers are the same, but in the first pattern they are getting larger and in the second pattern they are getting smaller.)

Explain that these are the numbers to know for comparing cups, pints, quarts, half gallons and gallons.

Have the students look at the chart on student page 166. Together count the number of cups marked in the bottom row and write that number (16) in the blank on the right. Do the same for pints (8), quarts (4), half gallons (2), and finally gallon (1).

Today’s Challenge
Student page 166 Have students complete the activity on the student page.

Answers for student page 166: 1. 2, 4, 8, 16
2. 2, 4, 8 3. 2, 4

Go Further
Student page 166 Have students answer the question on the student page.

Answer for student page 166: 4. One gallon would serve 32 people. Some students may have doubled the number of cups in one gallon.

Assessment
Student self-assessment page 166 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students see the doubling relationship between the different units of capacity?
Materials
Student page 167
Math Maze cards (Week 34 Activity 167)

Concept and Handbook References
Review concepts presented in previous Math Mazes. (MTK 18, 102, 332)

Get Started
Tell students that today’s activity will be a review from the Math Mazes done previously.

Today’s Challenge
Distribute the 18 Math Maze cards for Week 34. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.

Instructions for playing Math Maze Ask students to look at their cards. Ask one student to read the question that is written on his or her card. Next ask, “Who has the card with the answer to the question just read?” Ask that student to read the answer, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be read should be the answer on the first student’s card.

The correct sequence of questions and answers is shown on page 210.

Student page 167 When the group has finished playing the game, have students open their books and complete the Today’s Challenge activity on page 167 in the student book.

Answers for student page 167: 1. estimate 2. sum 3. 23 4. 3 × 8 = 24

Go Further
Student page 167 Have students complete this section on the student page.


Assessment
Student self-assessment page 167 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Which concepts do students need more work on?
Materials
Student page 168
Blank paper
Play money (optional)

Concepts and Handbook References
Find the fewest number of bills and coins needed to make a given amount. (MTK 18)
Calculate change. (MTK 20)

Get Started
Review the names and values of coins. Then write an amount less than one dollar on the board, for example, $0.47. Ask students to determine the fewest number of coins that can be used to make that amount. (1 quarter, 2 dimes, 2 pennies) Next ask students to tell you the amount of change they would receive if they purchased a $0.47 item with a $1.00 bill. ($0.53) Repeat with two or three other amounts.

Today’s Challenge
Explain that today you will be playing a game called “Who Wants to Be the Top Scorer?” Have each student take a blank sheet of paper and write an amount less than $5.00. Then ask the students to number their papers from 1 to 5.

As you ask each of five questions, have students look at their amounts and answer the question. Yes answers will score points. Here are the questions to ask:

1. Is your amount less than one dollar? If yes, score 10 points.
2. Is your amount greater than $3.00? If yes, score 5 points.
3. Can your amount be made with fewer than four coins and no bills? If yes, score 9 points.
4. Can your amount be made by using only quarters? If yes, score 8 points.
5. Can you buy a school lunch with your amount? If yes, score 15 points.

Have students find their total scores. Determine which student has the highest score. Have that student write the amount on the board and explain how he or she scored the points.

Go Further
Student page 168 Students will solve a problem involving counting money and making change. Have students follow along as you read aloud the problem on student page 168. Then work through the example together. Students can then complete the rest of the table independently.

Answers for student page 168:

<table>
<thead>
<tr>
<th>Item</th>
<th>Dollar Bills Needed</th>
<th>Quarters Needed</th>
<th>Dimes Needed</th>
<th>Nickels Needed</th>
<th>Pennies Needed</th>
<th>Change from $5.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example:</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>$2.52</td>
</tr>
<tr>
<td>1.</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>$0.58</td>
</tr>
<tr>
<td>2.</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>$1.31</td>
</tr>
<tr>
<td>3.</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>$3.83</td>
</tr>
<tr>
<td>4.</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>4</td>
<td>$0.26</td>
</tr>
<tr>
<td>5. $16.50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Assessment
Student self-assessment page 168 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Can students identify the fewest bills and coins needed to make a given amount? Can students calculate change correctly?
Materials
Student page 169
Math Jumble activity poster, digit cards, and coin cards

Concept and Handbook Reference
Use dimes to practice counting by tens. (MTK 118)

Get Started
Have students review multiples of 10 using dimes. Ask questions such as the following.

How much are 5 dimes worth? (50¢) 4 dimes? (40¢) 7 dimes? (70¢)

Today’s Challenge
Using the coin cards, construct the 4 by 4 poster shown. Explain that the object of today’s Math Jumble is to multiply a dime by an adjoining number. For example, point to the first two cards in the first row. Ask, “How much are 6 dimes worth?” If needed, have the students skip count by ten.

Student page 169 Have students complete Today’s Challenge on student page 169.

Answers for student page 169: 1-7. 90¢, 70¢, 80¢, 50¢, 40¢, 30¢, 20¢

Go Further
Student page 169 Have students complete the activity in this section of the student page.

Answer for student page 169: 8. $4.40.
Explanations will vary.

Assessment
Student self-assessment page 169 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students count dimes?
Materials
Student page 170
Blank paper

Concepts and Handbook References
Review multiplying a 2-digit number by a
1-digit number. (MTK 174)
Use multiplication in a problem-solving situation.
(MTK 60)

Get Started
Ask a volunteer to show on the board how to multiply 34 by 8.

\[
\begin{array}{c}
34 \\
\times 8 \\
\hline
272
\end{array}
\]

Have students decide whether the work has been done correctly. Have students make corrections as needed.

Student page 170 To introduce the activity, work through the first problem on student page 170. Read or ask a student to read the problem. Next explain that when you have a problem and you are given several answers to choose from, it helps if you can “rule out” some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say C (8 plates) is wrong because “Each pack has 8 plates.” (If members of the class do not agree with the volunteer’s response or reason, discuss until a consensus is reached.)

Have each student cross out the volunteer’s choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (B). Be sure students understand why B is correct.

Today’s Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.

Then explain how points will be scored in today’s activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

Student page 170 Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.

Answers for student page 170: 1. D 2. D

When all students’ papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 170 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can the students multiply a 2-digit number by a 1-digit number?
Pattern Puzzler

Week 35 • Activity 171

Materials
Student page 171

Concepts and Handbook References
Multiply by tens. (MTK 120, 121)
Relate repeated addition to multiplication. (MTK 60)

Background
The goal of this activity is to help the students learn how easy it is to multiply by tens, but also to help them understand the number theory involved.

Get Started
Write the following addition problems on the board.

\[
\begin{array}{ccc}
10 & +10 & +10 \\
10 & 10 & 10 \\
\hline
20 & 20 & 20 \\
\end{array}
\]

Next put these problems on the board, and have the students help you find the answers, still going through the steps of adding all the zeros in the ones column and then adding all the two in the tens column. Again write the corresponding multiplication problems below each sum.

\[
\begin{array}{ccc}
20 & +20 & 20 \\
\hline
+20 & +20 & 20 \\
\hline
+20 & +20 & 20 \\
\end{array}
\]

\[
2 \times 20 = 40 \\
3 \times 20 = 60 \\
4 \times 20 = 80
\]

Discuss patterns. Emphasize that the zeros in the ones column always add up to zero, and that the tens column is a simple multiplication fact.

Today's Challenge
Student page 171 Have students complete the activity on the student page.

Answers for student page 171: 1. 80 2. 120 3. 120 4. 180

Go Further
Student page 171 Have students complete the activity on the student page.

Answers for student page 171: 5. 1000 6. 1500

Assessment
Student self-assessment page 171 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students multiply by tens easily?
Materials
Student page 172
Math Maze cards (Week 35 Activity 172)

Concept and Handbook References
Review concepts presented in previous Math Mazes.
(MTK 18, 60–62, 332)

Get Started
Tell students that today's activity will be a review from the Math Mazes done previously.

Today's Challenge
Distribute the 18 Math Maze cards for Week 35. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.

Instructions for playing Math Maze Ask students to look at their cards. Ask one student to read the question that is written on his or her card. Next ask, "Who has the card with the answer to the question just read?" Ask that student to read the answer, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be read should be the answer on the first student's card.

The correct sequence of questions and answers is shown on page 211.

Student page 172 When the group has finished playing the game, have students open their books and complete the Today’s Challenge activity on page 172 in the student book.

Answers for student page 172: 1. \( \frac{1}{10} \)
2. \( 40 \div 10 = 4 \) 3. 30 4. 3

Go Further
Student page 172 Have students complete this section on the student page.

Answers for student page 172: 5–8. Questions will vary.

Assessment
Student self-assessment page 172 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Which concepts do students need more work on?
Materials
Student page 173
Blank paper (heavyweight if possible) or index cards

Concepts and Handbook References
Practice multiplication facts. (MTK 66)
Use a model to find a product. (MTK 64)

Get Started
Demonstrate a way to find a product if you are not able to recall a multiplication fact.

\[ 4 \times 3 = 12 \]

Draw 4 lines across. Draw 3 lines down. Count the points where the lines cross.

\[ \begin{array}{ccc}
  \ & \ & \\
  \ & \ & \\
  \ & \ &
\end{array} \]

There are 12 points.

4 \times 3 = 12

Go Further
Have pairs of students make a set of cards to play the game “Concentration.” Each pair of students will need 20 small pieces of paper or 20 index cards. Have the students use one slip of paper or card to copy the information from each box on student page 173.

Instructions for playing “Concentration” Shuffle the cards and lay them facedown in equal columns. Each player turns over a card. The player with the larger value goes first. Turn the cards over so that all cards are again facedown. The first player turns over two cards. If the cards match (for example, 3 \times 4 and 12), the player keeps the cards and goes again. If the cards do not match, the player turns the cards back over and the other player takes a turn. Play continues until all cards have been taken. The player with more cards at the end of the game wins.

Assessment
Student self-assessment page 173 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Can students recall multiplication facts? Can they use a model to find a product?

Today's Challenge
Student page 173 Have students complete student page 173.


Go over answers with the whole group or check students’ papers individually.
Materials
Student page 174
Math Jumble activity poster and digit cards
Red and blue crayons

Concept and Handbook Reference
Explore multiples of 7 and 8. (MTK 66)

Background
The product of a whole number and any other whole number is a multiple. For example 28 is a multiple of 7 because $7 \times 4 = 28$.

Get Started
Have students sit in a circle on the floor. Ask students to think of numbers that can be multiplied together to make 14. Responses may be 2 and 7. Explain that 14 is a multiple of 2 and 7 because those numbers can be multiplied to make 14. Tell students that skip-counting by 7 names the multiples of 7. Have students skip-count by 7 around the circle to 70. Then have students skip-count by 8 around the circle to 80.

Today's Challenge
Using the 0–9 digit cards, construct the 4 by 4 poster shown. Explain that the object of today's Math Jumble is to find multiples of 7 and 8. In today's Number Jumble, numbers may be used as single digits, or may be combined to form double digits. For example, on the first row 1 and 4 may be used as single digits, or may be joined to form 14. Have students open their books to page 174.
Multiples of 7 will be circled in red, and multiples of 8 will be circled in blue.

Student page 174 Have students use the Math Jumble on student page 174 to circle multiples of 7 and 8.

Answers for student page 174: 1. 7, 14, 21, 28, 35, 42, 49, 56, 63, 70, 91 2. 8, 16, 24, 32, 48, 56, 72, 80 3. 56

Go Further
Student page 174 Using the grid on the student page, have each student create a Math Jumble to share with a friend.

Answer for student page 174: Answers will vary. Check students' work.

Assessment
Student self-assessment page 174 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students name multiples of 7 and 8?
Materials
Student page 175
Blank paper

Concept and Handbook References
Solve word problems by drawing a picture or by using division facts. (MTK 78, 81)

Get Started
Review how drawing a picture can help when you can’t recall a division fact. Write this example on the board.

\[12 + 3\]

\[12 + 3 = 4\]

Ask a volunteer to draw a picture for \(24 + 8\).

\[24 + 8 = 3\]

Student page 175 To introduce the activity, work through the first problem on student page 175. Next explain that when you have a problem and you are given several answers to choose from, it helps if you can “rule out” some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say D (384 slices) is wrong because “It seems like too many.” (If members of the class do not agree with the volunteer’s response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer’s choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (B). Be sure students understand why B is correct.

Today’s Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.

Then explain how points will be scored in today’s activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

Student page 175 Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.

Answers for student page 175: 1. C 2. D

When all students’ papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 175 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Can students solve problems involving division?
Materials
Student page 176
Two or three different colors of crayons (or markers)

Concept and Handbook Reference
Explore geometric patterns. (MTK 324)

Background
Providing only two or three colors means the students need to rely on repetition to produce an interesting design.

Get Started
Have the students turn to page 176 in the student book. Ask them to tell you what simple geometric figures they can make by combining the triangles. They should be able to come up with a hexagon made from six of those triangles, a rhombus made from two triangles, a trapezoid from three triangles, a larger equilateral triangle made up of 4 smaller ones, as well as variations of those shapes and combinations of those shapes.

Then give a simple example of how a pattern could be created by shading every other triangle:

Today's Challenge
Student page 176 Have students complete the activity on the student page. Encourage the students to work neatly. Remind them that patterns repeat.

Answers for student page 176: 1. Encourage the students to experiment with various shapes as well as various coloring schemes.

Go Further
Student page 176 Have the students answer the question on the student page.

Answer for student page 176: 2. Answers will vary. Encourage the students to talk about their patterns.

Assessment
Student self-assessment page 176 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Are the students able to create a variety of patterns?
Materials
Student page 177
Math Maze cards (Week 36 Activity 177)

Concept and Handbook References
Review concepts presented in previous Math Mazes.
(MTK 2–6, 18, 60–62, 128, 327, 332)

Get Started
Tell students that today’s activity will be a review from the Math Mazes done previously.

Today’s Challenge
Distribute the 18 Math Maze cards for Week 36. Each student should receive at least one card, but since all cards need to be distributed, some students may need to get more than one card. Use the cards to play the Math Maze game.

Instructions for playing Math Maze Ask students to look at their cards. Ask one student to read the question that is written on his or her card. Next ask, “Who has the card with the answer to the question just read?” Ask that student to read the answer, and then read the question on his or her card. Play continues until all questions have been answered. The last answer to be read should be the answer on the first student’s card.

The correct sequence of questions and answers is shown on page 212.

Student page 177 When the group has finished playing the game, have students open their books and complete the Today’s Challenge activity on page 177 in the student book.

Answers for student page 177: 1. 250 2. 85 3. 2100 4. \(\frac{4}{7}\)

Go Further
Student page 177 Have students complete this section on the student page.

Answers for student page 177: 5–8. Questions will vary.

Assessment
Student self-assessment page 177 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Which concepts do students need more work on?
Materials
Student page 178
Blank paper

Concept and Handbook References
Recognize characteristics of two- and three-dimensional figures. (MTK 311–313, 327–329)

Background
A two-dimensional figure has length and width, but no depth. It is flat.
A three-dimensional figure has length, width, and depth.
A polygon is a closed two-dimensional figure that is formed by line segments that do not cross.

Get Started
Remind students that a solid figure is a geometric figure with three dimensions. Review names of solid figures and two-dimensional figures. Draw these figures on the board, ask students to name the figures, and then write the name of each figure.

Today’s Challenge
Explain that today the class will be playing a game called “Fantastic Finalist.” On pieces of scrap paper, draw a picture or write the name of the different figures in the Get Started section above. You do not have to use all the figures given, but be sure that one student receives the hexagon, since that figure will be the “Fantastic Finalist.”

Have all students hold their papers and stand in a large circle. Explain that the object of the game is to be the “Fantastic Finalist,” the last student to remain standing.

Read each of the following challenges, one at a time.
• If you have a two-dimensional figure that is not a polygon, sit down. (circle)
• If you have a two-dimensional figure with less than four sides, sit down. (triangle)
• If you have a three-dimensional figure that can be stacked, sit down. (rectangular prism, cylinder, cube)
• If you have a two-dimensional figure with any square corners, sit down. (square, rectangle)
• If you have a three-dimensional figure that rolls, sit down. (cone, sphere)

At this point, only the student holding the hexagon should still be standing. That student is the “Fantastic Finalist.”

Go Further
Student page 178 Have students complete the activity on the student page.

Answers for student page 178: 1. a. yes b. yes c. no d. no, hexagon 2. a. no b. no c. no d. yes, sphere 3. cube 4. Check students’ riddles.

Assessment
Student self-assessment page 178 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tip Do students understand the different characteristics of geometric figures?
**Materials**
Student page 179
Math Jumble activity poster and digit cards

**Concept and Handbook Reference**
Multiply to get a desired number. (MTK 66)

**Get Started**
Review the concept of odd and even numbers. Read aloud the following expressions and ask the students to tell you whether the answer is even or odd.

<table>
<thead>
<tr>
<th>Expression</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>$3 \times 6$ (even)</td>
<td>$2 \times 9$ (even)</td>
</tr>
<tr>
<td>$3 \times 5$ (odd)</td>
<td>$7 \times 3$ (odd)</td>
</tr>
<tr>
<td>$2 \times 4$ (even)</td>
<td>$1 \times 7$ (odd)</td>
</tr>
</tbody>
</table>

**Today's Challenge**
Using the 0–9 digit cards, construct the 4 by 4 poster shown. Explain that the object of today's Math Jumble is to find strings of numbers that could be multiplied to make odd-number products.

Strings of numbers are made by connecting adjoining numbers (top to bottom and/or left to right) on the poster. An example for multiplication would be $3 \times 9 = 27$. Have students work together to find as many expressions equaling an odd number as possible. Record a few of the equations on the board.

**Possible equations:**

- $7 \times 3 = 21$
- $1 \times 9 = 9$
- $3 \times 3 = 9$

**Student page 179**
Have students use the Math Jumble on student page 179 to find more strings of numbers. Students score 1 point for each digit used correctly in an expression. Determine which student scored the most points.

**Answers for student page 179:** Possible answers are:

- $7 \times 3 = 21$, $9 \times 7 = 63$, $3 \times 7 = 21$, $1 \times 9 = 9$, $5 \times 1 = 5$, $7 \times 5 = 35$, $3 \times 3 = 9$, $1 \times 3 = 3$, $3 \times 9 = 27$, $7 \times 1 = 7$, $9 \times 5 = 45$

**Go Further**
**Student page 179**
Have students use the blank table on the student page and the numbers 0–9 to create their own Math Jumble. Students will need to find multiplication expressions with products less than 30. After students fill in their table, have them ask a friend to solve their Math Jumble.

**Assessment**
**Student self-assessment page 179**
Have students circle one of the three choices to describe how they feel about this activity.

**Assessment tip**
Do students understand how to create even or odd products?
Rule Out Two

Week 36·Activity 180

Materials
Student page 180
Blank paper

Concept and Handbook Reference
Review place value. (MTK 2–15)

Get Started
Student page 180 To introduce the activity, work through the first problem on student page 180. Read or ask a student to read the problem. Next explain that when you have a problem and you are given several answers to choose from, it helps if you can “rule out” some of the answers. Ask for a volunteer to choose an answer that he or she knows is wrong and tell why the answer is wrong. For example, a student might say A is wrong because “Numbers ending in 4 are even.” (If members of the class do not agree with the volunteer’s response or reason, discuss until a consensus is reached.) Have each student cross out the volunteer’s choice and write the reason on the line next to the incorrect answer. Ask for a second volunteer to rule out another answer and proceed in the same way. Then ask students to choose the correct answer from the remaining two choices and fill in the circle that shows the letter of the correct answer (B). Be sure students understand why B is correct.

Today’s Challenge
Divide students into groups of 2, 3, or 4. Students will be able to consult with members of the group, but each student will complete the page and will receive an individual score.

Then explain how points will be scored in today’s activity. Each student will receive 10 points for each answer (up to 2) that was ruled out for a good reason (a maximum of 20 points) and 10 points for choosing the correct answer. So, the maximum number of points for each question is 30 and the maximum number of points for the day is 60.

Student page 180 Have students work through each problem, ruling out two answers, giving reasons, and then choosing the correct answer. When a group has completed both problems, the members should bring you their papers for scoring. Discuss errors with individuals or the group if necessary.


When all students’ papers have been scored, determine the high scorer(s) for the day.

Go Further
On a separate sheet of paper, have each student write his or her name and then create a multiple-choice problem similar to the problems just solved. Ask each to share the problem with another student. The second student solves the problem and signs his or her name.

Assessment
Student self-assessment page 180 Have students circle one of the three choices to describe how they feel about this activity.

Assessment tips Do students understand place value? Do they know how to tell if a number is odd or even?
Questions and Answers for Math Maze Cards

The table below shows the sequence that the questions and answers should follow. Find the starting question. Look across the row for the correct answer. Then go on to the next question below and continue until you reach the end of the table. Then go to the top of the table and read down until you reach the starting question again.

| Who has two numbers that have a sum of 16 and a difference of 2? | I have 9 and 7. |
| Who has two numbers that have a sum of 18 and a difference of 0? | I have 9 and 9. |
| Who has two numbers that have a sum of 15 and a difference of 1? | I have 8 and 7. |
| Who has two numbers that have a sum of 13 and a difference of 3? | I have 8 and 5. |
| Who has two numbers that have a sum of 14 and a difference of 0? | I have 7 and 7. |
| Who has two numbers that have a sum of 5 and a difference of 3? | I have 4 and 1. |
| Who has two numbers that have a sum of 14 and a difference of 2? | I have 8 and 6. |
| Who has two numbers that have a sum of 14 and a difference of 4? | I have 9 and 5. |
| Who has two numbers that have a sum of 13 and a difference of 1? | I have 7 and 6. |
| Who has two numbers that have a sum of 11 and a difference of 3? | I have 7 and 4. |
| Who has two numbers that have a sum of 10 and a difference of 6? | I have 8 and 2. |
| Who has two numbers that have a sum of 9 and a difference of 1? | I have 5 and 4. |
| Who has two numbers that have a sum of 7 and a difference of 1? | I have 4 and 3. |
| Who has two numbers that have a sum of 11 and a difference of 1? | I have 6 and 5. |
| Who has two numbers that have a sum of 12 and a difference of 0? | I have 6 and 6. |
| Who has two numbers that have a sum of 17 and a difference of 1? | I have 9 and 8. |
| Who has two numbers that have a sum of 16 and a difference of 0? | I have 8 and 8. |
| Who has two numbers that have a sum of 12 and a difference of 2? | I have 7 and 5. |
### Questions and Answers for Math Maze Cards

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who has two numbers that have a difference of 20?</td>
<td>I have 50 and 30.</td>
</tr>
<tr>
<td>Who has two numbers that have a difference of 10?</td>
<td>I have 80 and 70.</td>
</tr>
<tr>
<td>Who has two numbers that have a difference of 800?</td>
<td>I have 900 and 100.</td>
</tr>
<tr>
<td>Who has two numbers that have a difference of 80?</td>
<td>I have 90 and 10.</td>
</tr>
<tr>
<td>Who has two numbers that have a difference of 50?</td>
<td>I have 50 and 0.</td>
</tr>
<tr>
<td>Who has two numbers that have a difference of 100?</td>
<td>I have 500 and 400.</td>
</tr>
<tr>
<td>Who has two numbers that have a difference of 200?</td>
<td>I have 600 and 400.</td>
</tr>
<tr>
<td>Who has two numbers that have a difference of 90?</td>
<td>I have 100 and 10.</td>
</tr>
<tr>
<td>Who has two numbers that have a difference of 40?</td>
<td>I have 50 and 10.</td>
</tr>
<tr>
<td>Who has two numbers that have a difference of 400?</td>
<td>I have 800 and 400.</td>
</tr>
<tr>
<td>Who has two numbers that have a difference of 300?</td>
<td>I have 900 and 600.</td>
</tr>
<tr>
<td>Who has two numbers that have a difference of 700?</td>
<td>I have 800 and 100.</td>
</tr>
<tr>
<td>Who has two numbers that have a difference of 30?</td>
<td>I have 90 and 60.</td>
</tr>
<tr>
<td>Who has two numbers that have a difference of 500?</td>
<td>I have 600 and 100.</td>
</tr>
<tr>
<td>Who has two numbers that have a difference of 70?</td>
<td>I have 80 and 10.</td>
</tr>
<tr>
<td>Who has two numbers that have a difference of 600?</td>
<td>I have 800 and 200.</td>
</tr>
<tr>
<td>Who has two numbers that have a difference of 60?</td>
<td>I have 70 and 10.</td>
</tr>
<tr>
<td>Who has two numbers that have a difference of 0?</td>
<td>I have 500 and 500.</td>
</tr>
</tbody>
</table>

### Week 3•Activity 12

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who has 5 plus 7?</td>
<td>I have 12.</td>
</tr>
<tr>
<td>Who has 15 plus 7?</td>
<td>I have 22.</td>
</tr>
<tr>
<td>Who has 25 plus 7?</td>
<td>I have 32.</td>
</tr>
<tr>
<td>Who has 35 plus 7?</td>
<td>I have 42.</td>
</tr>
<tr>
<td>Who has 17 plus 8?</td>
<td>I have 25.</td>
</tr>
<tr>
<td>Who has 27 plus 8?</td>
<td>I have 35.</td>
</tr>
<tr>
<td>Who has 37 plus 8?</td>
<td>I have 45.</td>
</tr>
<tr>
<td>Who has 35 plus 8?</td>
<td>I have 43.</td>
</tr>
<tr>
<td>Who has 25 plus 8?</td>
<td>I have 33.</td>
</tr>
<tr>
<td>Who has 15 plus 8?</td>
<td>I have 23.</td>
</tr>
<tr>
<td>Who has 57 plus 4?</td>
<td>I have 61.</td>
</tr>
<tr>
<td>Who has 87 plus 4?</td>
<td>I have 91.</td>
</tr>
<tr>
<td>Who has 77 plus 4?</td>
<td>I have 81.</td>
</tr>
<tr>
<td>Who has 46 plus 8?</td>
<td>I have 54.</td>
</tr>
<tr>
<td>Who has 56 plus 8?</td>
<td>I have 64.</td>
</tr>
<tr>
<td>Who has 66 plus 8?</td>
<td>I have 74.</td>
</tr>
<tr>
<td>Who has 59 plus 6?</td>
<td>I have 65.</td>
</tr>
<tr>
<td>Who has 69 plus 6?</td>
<td>I have 75.</td>
</tr>
<tr>
<td>Question</td>
<td>Answer</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Who has the number of inches in a foot?</td>
<td>I have 12.</td>
</tr>
<tr>
<td>Who has the measurement tool for measuring inches?</td>
<td>I have a ruler.</td>
</tr>
<tr>
<td>Who has the number of feet in a yard?</td>
<td>I have 3.</td>
</tr>
<tr>
<td>Who has the number of minutes in an hour?</td>
<td>I have 60.</td>
</tr>
<tr>
<td>Who has the number of centimeters in a meter?</td>
<td>I have 100.</td>
</tr>
<tr>
<td>Who has the number of inches in half of a foot?</td>
<td>I have 6.</td>
</tr>
<tr>
<td>Who has the measurement tool for measuring minutes?</td>
<td>I have a clock.</td>
</tr>
<tr>
<td>Who has the number of feet in 3 yards?</td>
<td>I have 9.</td>
</tr>
<tr>
<td>Who has the number of minutes in half an hour?</td>
<td>I have 30.</td>
</tr>
<tr>
<td>Who has the number of inches in 3 feet or 1 yard?</td>
<td>I have 36.</td>
</tr>
<tr>
<td>Who has the number of days in a week?</td>
<td>I have 7.</td>
</tr>
<tr>
<td>Who has the number of decimeters in 2 meters?</td>
<td>I have 20.</td>
</tr>
<tr>
<td>Who has the number of hours in a day?</td>
<td>I have 24.</td>
</tr>
<tr>
<td>Who has one less than the number of months in a year?</td>
<td>I have 11.</td>
</tr>
<tr>
<td>Who has the tool we use to keep track of the days of the month?</td>
<td>I have a calendar.</td>
</tr>
<tr>
<td>Who has the number of minutes in a quarter hour?</td>
<td>I have 15.</td>
</tr>
<tr>
<td>Who has the number of feet in a mile?</td>
<td>I have 5280.</td>
</tr>
<tr>
<td>Who has the number of days in a leap year?</td>
<td>I have 366.</td>
</tr>
</tbody>
</table>
### Math Maze

**Questions and Answers for Math Maze Cards**

<p>| Who has the name for the operation used when joining groups? | I have addition. |
| Who has the name for the symbols 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9? | I have digits. |
| Who has the name for a number being added? | I have addend. |
| Who has the name for numbers ending in 0, 2, 4, 6, or 8? | I have even numbers. |
| Who has the symbol we use to show &quot;is less than&quot;? | I have &lt;. |
| Who has the word for a way to describe part of a whole? | I have fraction. |
| Who has the sign for subtraction? | I have −. |
| Who has the name for the answer in addition? | I have sum. |
| Who has the name for the operation used for comparing the number of things in two groups? | I have subtraction. |
| Who has the symbol we use to show &quot;is greater than&quot;? | I have &gt;. |
| Who has the words for a way of computing an exact answer in your head? | I have mental math. |
| Who has the word for a number close to an exact amount? | I have estimate. |
| Who has the name for the answer in subtraction? | I have difference. |
| Who has the sign for addition? | I have +. |
| Who has the symbol used to show dollars? | I have $. |
| Who has the sign for &quot;is equal to&quot;? | I have =. |
| Who has the symbol used to show cents? | I have ¢. |
| Who has the name for numbers ending in 1, 3, 5, 7, or 9? | I have odd numbers. |</p>
<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who has a rectangle with an area of 4 square inches?</td>
<td>I have</td>
</tr>
<tr>
<td>Who has a figure with a perimeter of 9 inches?</td>
<td>I have</td>
</tr>
<tr>
<td>Who has a rectangle with an area of 12 square inches?</td>
<td>I have</td>
</tr>
<tr>
<td>Who has a figure with a perimeter of 18 inches?</td>
<td>I have</td>
</tr>
<tr>
<td>Who has a figure with a perimeter of 8 feet?</td>
<td>I have</td>
</tr>
<tr>
<td>Who has a figure with a perimeter of 10 feet?</td>
<td>I have</td>
</tr>
<tr>
<td>Who has a rectangle with an area of 25 square feet?</td>
<td>I have</td>
</tr>
<tr>
<td>Who has a figure with a perimeter of 11 feet?</td>
<td>I have</td>
</tr>
<tr>
<td>Who has a figure with a perimeter of 13 inches?</td>
<td>I have</td>
</tr>
<tr>
<td>Who has a figure with a perimeter of 16 inches?</td>
<td>I have</td>
</tr>
<tr>
<td>Who has a rectangle with an area of 15 square feet?</td>
<td>I have</td>
</tr>
<tr>
<td>Who has a figure with a perimeter of 14 square feet?</td>
<td>I have</td>
</tr>
<tr>
<td>Who has a rectangle with an area of 8 square inches?</td>
<td>I have</td>
</tr>
<tr>
<td>Who has a figure with a perimeter of 12 feet?</td>
<td>I have</td>
</tr>
<tr>
<td>Who has a rectangle with an area of 6 square inches?</td>
<td>I have</td>
</tr>
<tr>
<td>Who has a rectangle with an area of 36 square feet?</td>
<td>I have</td>
</tr>
<tr>
<td>Who has a figure with a perimeter of 18 feet?</td>
<td>I have</td>
</tr>
<tr>
<td>Who has a figure with a perimeter of 9 feet?</td>
<td>I have</td>
</tr>
<tr>
<td>Question</td>
<td>Answer</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Who has the number of nickels that make a dollar?</td>
<td>I have 20.</td>
</tr>
<tr>
<td>Who has the number of nickels that make 35 cents?</td>
<td>I have 7.</td>
</tr>
<tr>
<td>Who has the number of nickels that make 2 dollars?</td>
<td>I have 40.</td>
</tr>
<tr>
<td>Who has the number of cents in 8 dimes?</td>
<td>I have 80.</td>
</tr>
<tr>
<td>Who has the number of nickels in 30 cents?</td>
<td>I have 6.</td>
</tr>
<tr>
<td>Who has the number of nickels that make 3 dollars?</td>
<td>I have 60.</td>
</tr>
<tr>
<td>Who has the number of quarters that make 50 cents?</td>
<td>I have 2.</td>
</tr>
<tr>
<td>Who has the number of nickels in 70 cents?</td>
<td>I have 14.</td>
</tr>
<tr>
<td>Who has the number of nickels that equal a quarter?</td>
<td>I have 5.</td>
</tr>
<tr>
<td>Who has the number of pennies that make 3 dollars?</td>
<td>I have 300.</td>
</tr>
<tr>
<td>Who has the number of quarters that make a dollar?</td>
<td>I have 4.</td>
</tr>
<tr>
<td>Who has the number of quarters that make the same amount as 5 nickels?</td>
<td>I have 1.</td>
</tr>
<tr>
<td>Who has the number of quarters that make 75 cents?</td>
<td>I have 3.</td>
</tr>
<tr>
<td>Who has the number of cents in 2 dimes and a nickel?</td>
<td>I have 25.</td>
</tr>
<tr>
<td>Who has the number of dimes that make 3 dollars?</td>
<td>I have 30.</td>
</tr>
<tr>
<td>Who has the number of dimes that make a dollar?</td>
<td>I have 10.</td>
</tr>
<tr>
<td>Who has the number of quarters that make 3 dollars?</td>
<td>I have 12.</td>
</tr>
<tr>
<td>Who has the number of cents in 2 quarters?</td>
<td>I have 50.</td>
</tr>
<tr>
<td>Who has the sum of 15 and 25?</td>
<td>I have 40.</td>
</tr>
<tr>
<td>Who has the sum of 23 and 30?</td>
<td>I have 53.</td>
</tr>
<tr>
<td>Who has the sum of 25 and 65?</td>
<td>I have 90.</td>
</tr>
<tr>
<td>Who has the sum of 45 and 30?</td>
<td>I have 75.</td>
</tr>
<tr>
<td>Who has the sum of 48 and 30?</td>
<td>I have 78.</td>
</tr>
<tr>
<td>Who has the sum of 47 and 20?</td>
<td>I have 67.</td>
</tr>
<tr>
<td>Who has the sum of 15 and 15?</td>
<td>I have 30.</td>
</tr>
<tr>
<td>Who has the sum of 12 and 30?</td>
<td>I have 42.</td>
</tr>
<tr>
<td>Who has the sum of 15 and 5?</td>
<td>I have 20.</td>
</tr>
<tr>
<td>Who has the sum of 33 and 10?</td>
<td>I have 43.</td>
</tr>
<tr>
<td>Who has the sum of 35 and 15?</td>
<td>I have 50.</td>
</tr>
<tr>
<td>Who has the sum of 78 and 20?</td>
<td>I have 98.</td>
</tr>
<tr>
<td>Who has the sum of 45 and 15?</td>
<td>I have 60.</td>
</tr>
<tr>
<td>Who has the sum of 72 and 20?</td>
<td>I have 92.</td>
</tr>
<tr>
<td>Who has the sum of 25 and 45?</td>
<td>I have 70.</td>
</tr>
<tr>
<td>Who has the sum of 14 and 80?</td>
<td>I have 94.</td>
</tr>
<tr>
<td>Who has the sum of 35 and 45?</td>
<td>I have 80.</td>
</tr>
<tr>
<td>Who has the sum of 53 and 20?</td>
<td>I have 73.</td>
</tr>
<tr>
<td>Question</td>
<td>Answer</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Who has two numbers that have a sum of 12 and a difference of 2?</td>
<td>I have 5 and 7.</td>
</tr>
<tr>
<td>Who has two numbers that have a sum of 11 and a difference of 1?</td>
<td>I have 5 and 6.</td>
</tr>
<tr>
<td>Who has two numbers that have a sum of 14 and a difference of 4?</td>
<td>I have 9 and 5.</td>
</tr>
<tr>
<td>Who has two numbers that have a difference of 30?</td>
<td>I have 90 and 60.</td>
</tr>
<tr>
<td>Who has two numbers that have a difference of 70?</td>
<td>I have 80 and 10.</td>
</tr>
<tr>
<td>Who has two numbers that have a difference of 300?</td>
<td>I have 500 and 200.</td>
</tr>
<tr>
<td>Who has 56 plus 8?</td>
<td>I have 64.</td>
</tr>
<tr>
<td>Who has 79 plus 6?</td>
<td>I have 85.</td>
</tr>
<tr>
<td>Who has the number of minutes in an hour?</td>
<td>I have 60.</td>
</tr>
<tr>
<td>Who has the number of feet in a mile?</td>
<td>I have 5280.</td>
</tr>
<tr>
<td>Who has the number of hours in a day?</td>
<td>I have 24.</td>
</tr>
<tr>
<td>Who has the name for numbers ending in 0, 2, 4, 6, or 8?</td>
<td>I have even numbers.</td>
</tr>
<tr>
<td>Who has the name for the answer in subtraction?</td>
<td>I have difference.</td>
</tr>
<tr>
<td>Who has the word for the distance around a figure?</td>
<td>I have perimeter.</td>
</tr>
<tr>
<td>Who has the number of quarters that make the same amount as 10 nickels?</td>
<td>I have 2.</td>
</tr>
<tr>
<td>Who has the sum of 45 and 25?</td>
<td>I have 70.</td>
</tr>
<tr>
<td>Who has the sum of 46 and 20?</td>
<td>I have 66.</td>
</tr>
<tr>
<td>Who has the sum of 35 and 55?</td>
<td>I have 90.</td>
</tr>
</tbody>
</table>
### Questions and Answers for Math Maze Cards

| Who has the number that comes next: 2, 4, 6, 8, 10, 12, ____ | I have 14. |
| Who has the number that comes next: 5, 10, 15, 20, 25, ____ | I have 30. |
| Who has the equation to show the number of bunnies in 3 groups of 2 bunnies? | I have 3 \times 2 = 6. |
| Who has the number that comes next: 3, 6, 9, ____ | I have 12. |
| Who has the number that comes next: 7, 14, 21, ____ | I have 28. |
| Who has the equation to show the number of people in 4 houses with 3 people in each? | I have 4 \times 3 = 12. |
| Who has the number that comes next: 9, 12, 15, ____ | I have 18. |
| Who has the equation to show the number of toes on 4 people? | I have 4 \times 10 = 40. |
| Who has the equation to show the number of cents in 7 nickels? | I have 7 \times 5 = 35. |
| Who has the number that comes next: 6, 12, 18, ____ | I have 24. |
| Who has the equation to show the number of sides on 2 pentagons? | I have 2 \times 5 = 10. |
| Who has the number that comes next: 10, 20, 30, 40, ____ | I have 50. |
| Who has the equation to show the number of eyes on seven people? | I have 7 \times 2 = 14. |
| Who has the number that comes next: 7, 14, 21, 28, ____ | I have 35. |
| Who has the equation to show the number balloons when 12 children have 2 balloons each? | I have 12 \times 2 = 24. |
| Who has the number that comes next: 35, 40, 45, 50, ____ | I have 55. |
| Who has the equation to show the number of wheels on 8 tricycles? | I have 8 \times 3 = 24. |
| Who has the equation to show the number of sides on 6 triangles? | I have 6 \times 3 = 18. |
### Questions and Answers for Math Maze Cards

<table>
<thead>
<tr>
<th>Who has</th>
<th>the definition of weight?</th>
<th>I have the measure of how heavy something is.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who has</td>
<td>a weight equal to one pound?</td>
<td>I have 16 ounces.</td>
</tr>
<tr>
<td>Who has</td>
<td>a weight equal to 2000 pounds?</td>
<td>I have a ton.</td>
</tr>
<tr>
<td>Who has</td>
<td>the number of ounces in a pound?</td>
<td>I have 16.</td>
</tr>
<tr>
<td>Who has</td>
<td>the number of pounds in a ton?</td>
<td>I have 2000.</td>
</tr>
<tr>
<td>Who has</td>
<td>the number of sticks of butter in a pound?</td>
<td>I have 4.</td>
</tr>
<tr>
<td>Who has</td>
<td>the number of ounces in two pounds?</td>
<td>I have 32.</td>
</tr>
<tr>
<td>Who has</td>
<td>the number of pounds in two tons?</td>
<td>I have 4000.</td>
</tr>
<tr>
<td>Who has</td>
<td>a tool used to weigh a baby?</td>
<td>I have a scale.</td>
</tr>
<tr>
<td>Who has</td>
<td>the one that weighs more — a baby or a horse?</td>
<td>I have a horse.</td>
</tr>
<tr>
<td>Who has</td>
<td>the one that weighs more — a car or a plane?</td>
<td>I have a plane.</td>
</tr>
<tr>
<td>Who has</td>
<td>the weight of a slice of cheese?</td>
<td>I have 1 ounce.</td>
</tr>
<tr>
<td>Who has</td>
<td>the bag that weighs more — a ten-ounce bag of chips or a one-pound bag of chips?</td>
<td>I have a one-pound bag of chips.</td>
</tr>
<tr>
<td>Who has</td>
<td>the heavier weight — a two-pound weight or an 18-ounce weight?</td>
<td>I have a two-pound weight.</td>
</tr>
<tr>
<td>Who has</td>
<td>the bag that weighs more — a ten-ounce bag of chips or a quarter-pound bag of chips?</td>
<td>I have a ten-ounce bag of chips.</td>
</tr>
<tr>
<td>Who has</td>
<td>the one that weighs more — a pound of feathers or a pound of birdseed?</td>
<td>I have neither. They both weigh the same.</td>
</tr>
<tr>
<td>Who has</td>
<td>the number of pounds of candy you can buy at 50 cents a pound with $1.50?</td>
<td>I have 3.</td>
</tr>
<tr>
<td>Who has</td>
<td>the average weight of an elephant?</td>
<td>I have 2 tons.</td>
</tr>
</tbody>
</table>
### Questions and Answers for Math Maze Cards

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who has the name of any closed figure made up of line segments?</td>
<td>I have polygon.</td>
</tr>
<tr>
<td>Who has the name of a 3-sided polygon?</td>
<td>I have triangle.</td>
</tr>
<tr>
<td>Who has the name of any 4-sided polygon?</td>
<td>I have quadrilateral.</td>
</tr>
<tr>
<td>Who has the name of a 5-sided polygon?</td>
<td>I have pentagon.</td>
</tr>
<tr>
<td>Who has the name of an 8-sided polygon?</td>
<td>I have octagon.</td>
</tr>
<tr>
<td>Who has a picture that shows a flip?</td>
<td><img src="image" alt="Flip" /></td>
</tr>
<tr>
<td>Who has a picture that shows a slide?</td>
<td><img src="image" alt="Slide" /></td>
</tr>
<tr>
<td>Who has a picture that shows a turn?</td>
<td><img src="image" alt="Turn" /></td>
</tr>
<tr>
<td>Who has a picture that shows a line of symmetry?</td>
<td><img src="image" alt="Symmetry" /></td>
</tr>
<tr>
<td>Who has a picture that shows a cube?</td>
<td><img src="image" alt="Cube" /></td>
</tr>
<tr>
<td>Who has a picture that shows an angle?</td>
<td><img src="image" alt="Angle" /></td>
</tr>
<tr>
<td>Who has a picture that shows a ray?</td>
<td><img src="image" alt="Ray" /></td>
</tr>
<tr>
<td>Who has a picture that shows a line?</td>
<td><img src="image" alt="Line" /></td>
</tr>
<tr>
<td>Who has a picture that shows a line segment?</td>
<td><img src="image" alt="Line Segment" /></td>
</tr>
<tr>
<td>Who has a picture that shows a hexagon?</td>
<td><img src="image" alt="Hexagon" /></td>
</tr>
<tr>
<td>Who has a picture that shows a square?</td>
<td><img src="image" alt="Square" /></td>
</tr>
<tr>
<td>Who has a picture that shows a rectangle?</td>
<td><img src="image" alt="Rectangle" /></td>
</tr>
<tr>
<td>Who has a picture that shows a circle?</td>
<td><img src="image" alt="Circle" /></td>
</tr>
</tbody>
</table>
### Questions and Answers for Math Maze Cards

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who has a multiplication sentence for finding the number of wheels on 4 bicycles?</td>
<td>I have $4 \times 2 = 8$.</td>
</tr>
<tr>
<td>Who has a multiplication sentence for finding the number of wheels on 7 wagons?</td>
<td>I have $7 \times 4 = 28$.</td>
</tr>
<tr>
<td>Who has a multiplication sentence for finding the number of ears on 8 bunnies?</td>
<td>I have $8 \times 2 = 16$.</td>
</tr>
<tr>
<td>Who has a multiplication sentence for finding the number of wheels on 3 tricycles?</td>
<td>I have $3 \times 3 = 9$.</td>
</tr>
<tr>
<td>Who has the number of shoes in a pair?</td>
<td>I have 2.</td>
</tr>
<tr>
<td>Who has a multiplication sentence for finding the number of eyes on 5 raccoons?</td>
<td>I have $5 \times 2 = 10$.</td>
</tr>
<tr>
<td>Who has a multiplication sentence for finding the number of eggs in 2 dozen?</td>
<td>I have $2 \times 12 = 24$.</td>
</tr>
<tr>
<td>Who has a multiplication sentence for finding the number of legs on 6 dogs?</td>
<td>I have $6 \times 4 = 24$.</td>
</tr>
<tr>
<td>Who has a multiplication sentence for finding the number of cents in 3 nickels?</td>
<td>I have $3 \times 5 = 15$.</td>
</tr>
<tr>
<td>Who has a multiplication sentence for finding the number of legs on 5 chairs?</td>
<td>I have $5 \times 4 = 20$.</td>
</tr>
<tr>
<td>Who has a multiplication sentence for finding the number of days in 3 weeks?</td>
<td>I have $3 \times 7 = 21$.</td>
</tr>
<tr>
<td>Who has a multiplication sentence for finding the number of wheels on 3 dogs?</td>
<td>I have $3 \times 0 = 0$.</td>
</tr>
<tr>
<td>Who has a multiplication sentence for finding the number of shoes in 9 pairs?</td>
<td>I have $9 \times 2 = 18$.</td>
</tr>
<tr>
<td>Who has a multiplication sentence for finding the number of ears on 3 dogs?</td>
<td>I have $3 \times 2 = 6$.</td>
</tr>
<tr>
<td>Who has a multiplication sentence for finding the number of days in 2 weeks?</td>
<td>I have $2 \times 7 = 14$.</td>
</tr>
<tr>
<td>Who has a multiplication sentence for finding the number of holes on 9 bowling balls?</td>
<td>I have $9 \times 3 = 27$.</td>
</tr>
<tr>
<td>Who has a multiplication sentence for finding the number of mittens on 2 children?</td>
<td>I have $2 \times 2 = 4$.</td>
</tr>
<tr>
<td>Who has the number of pigs that ran away from the wolf in &quot;The Three Little Pigs?&quot;</td>
<td>I have 3.</td>
</tr>
</tbody>
</table>
### Questions and Answers for Math Maze Cards

<table>
<thead>
<tr>
<th>Who has the next shape in this pattern?</th>
<th>I have □.</th>
</tr>
</thead>
<tbody>
<tr>
<td>△, □, ○, △, □, __</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Who has the next letter in this pattern?</th>
<th>I have T.</th>
</tr>
</thead>
<tbody>
<tr>
<td>R T Y R T Y R T __</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Who has the missing number in this pattern?</th>
<th>I have 0.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0, 5, 0, 15, __, 25, 0</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Who has the next shape in this pattern?</th>
<th>I have □.</th>
</tr>
</thead>
<tbody>
<tr>
<td>□, ○, □, □, □, ○, □, □, __</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Who has the next number in this pattern?</th>
<th>I have 17.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2, 5, 8, 11, 14, __</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Who has the next number in this pattern?</th>
<th>I have 13.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 4, 7, 10, __</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Who has the next number in this pattern?</th>
<th>I have 20.</th>
</tr>
</thead>
<tbody>
<tr>
<td>4, 8, 12, 16, __</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Who has the missing number in this pattern?</th>
<th>I have 18.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3, 6, 9, 12, 15, __, 21, 24</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Who has the missing number in this pattern?</th>
<th>I have 30.</th>
</tr>
</thead>
<tbody>
<tr>
<td>6, 12, 18, 24, __, 36</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Who has the missing number in this pattern?</th>
<th>I have 14.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2, 3, 6, 7, 10, 11, __, 15</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Who has the missing shape in this pattern?</th>
<th>I have □.</th>
</tr>
</thead>
<tbody>
<tr>
<td>♦, □, □, □, ♦, __, □, □, ♦</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Who has the missing shape in this pattern?</th>
<th>I have △.</th>
</tr>
</thead>
<tbody>
<tr>
<td>△, □, ○, ○, __, □, □</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Who has the next number in this pattern?</th>
<th>I have 5.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 1, 2, 2, 3, 3, 4, 4, __</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Who has the missing number in this pattern?</th>
<th>I have 47.</th>
</tr>
</thead>
<tbody>
<tr>
<td>35, 37, 45, __, 55, 57, 65</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Who has the next number in this pattern?</th>
<th>I have 200.</th>
</tr>
</thead>
<tbody>
<tr>
<td>175, 180, 185, 190, 195, __</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Who has the missing number in this pattern?</th>
<th>I have 210.</th>
</tr>
</thead>
<tbody>
<tr>
<td>240, 230, 220, __, 200</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Who has the missing number in this pattern?</th>
<th>I have 21.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0, 1, 1, 2, 3, 5, 8, 13, __, 34</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Who has the next number in this pattern?</th>
<th>I have 9.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 4, 3, 6, 5, 8, 7, 10, __</td>
<td></td>
</tr>
</tbody>
</table>
### Week 15 Activity 72

**Questions and Answers for Math Maze Cards**

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who has the time one hour after 5:15 P.M.?</td>
<td>I have 6:15 P.M.</td>
</tr>
<tr>
<td>Who has the number of minutes in an hour?</td>
<td>I have 60.</td>
</tr>
<tr>
<td>Who has the number of minutes in half an hour?</td>
<td>I have 30.</td>
</tr>
<tr>
<td>Who has the number of minutes in a quarter of an hour?</td>
<td>I have 15.</td>
</tr>
<tr>
<td>Who has the number of hours in a day?</td>
<td>I have 24.</td>
</tr>
<tr>
<td>Who has the time that means “quarter past 4” in the afternoon?</td>
<td>I have 4:15 P.M.</td>
</tr>
<tr>
<td>Who has the time that means “quarter to 4” in the afternoon?</td>
<td>I have 3:45 P.M.</td>
</tr>
<tr>
<td>Who has the time fifteen minutes later than 3:45 P.M.?</td>
<td>I have 4:00 P.M.</td>
</tr>
<tr>
<td>Who has the time 15 minutes after 6:00 A.M.?</td>
<td>I have 6:15 A.M.</td>
</tr>
<tr>
<td>Who has the letters used to show times after midnight and before noon?</td>
<td>I have A.M.</td>
</tr>
<tr>
<td>Who has the letters used to show times after noon and before midnight?</td>
<td>I have P.M.</td>
</tr>
<tr>
<td>Who has the time two hours later than 9:00 P.M.?</td>
<td>I have 11:00 P.M.</td>
</tr>
<tr>
<td>Who has the time two hours later than 11:00 P.M.?</td>
<td>I have 1:00 A.M.</td>
</tr>
<tr>
<td>Who has the time a half hour later than 7:30 P.M.?</td>
<td>I have 8:00 P.M.</td>
</tr>
<tr>
<td>Who has the time 45 minutes after 9:45 A.M.?</td>
<td>I have 10:30 A.M.</td>
</tr>
<tr>
<td>Who has the time an hour and a half after 4:30 P.M.?</td>
<td>I have 5:30 P.M.</td>
</tr>
<tr>
<td>Who has the time a half hour after 6:15 P.M.?</td>
<td>I have 6:45 P.M.</td>
</tr>
<tr>
<td>Who has the time 7 hours later than 10:00 P.M.?</td>
<td>I have 5:00 A.M.</td>
</tr>
</tbody>
</table>

### Week 16 Activity 77

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who has the number of legs on 1 horse?</td>
<td>I have 4.</td>
</tr>
<tr>
<td>Who has the number of legs on 2 horses?</td>
<td>I have 8.</td>
</tr>
<tr>
<td>Who has the number of legs on 4 horses?</td>
<td>I have 16.</td>
</tr>
<tr>
<td>Who has the number of days in 1 week?</td>
<td>I have 7.</td>
</tr>
<tr>
<td>Who has the number of days in 2 weeks?</td>
<td>I have 14.</td>
</tr>
<tr>
<td>Who has the number of days in 4 weeks?</td>
<td>I have 21.</td>
</tr>
<tr>
<td>Who has the number of feet in 1 yard?</td>
<td>I have 3.</td>
</tr>
<tr>
<td>Who has the number of feet in 2 yards?</td>
<td>I have 6.</td>
</tr>
<tr>
<td>Who has the number of shoes in 1 pair?</td>
<td>I have 2.</td>
</tr>
<tr>
<td>Who has the number of cents in 1 nickel?</td>
<td>I have 5.</td>
</tr>
<tr>
<td>Who has the number of cents in 2 nickels?</td>
<td>I have 10.</td>
</tr>
<tr>
<td>Who has the number of cents in 4 nickels?</td>
<td>I have 20.</td>
</tr>
<tr>
<td>Who has the number of centimeters in 1 meter?</td>
<td>I have 100.</td>
</tr>
<tr>
<td>Who has the number of centimeters in 2 meters?</td>
<td>I have 200.</td>
</tr>
<tr>
<td>Who has the number of centimeters in 4 meters?</td>
<td>I have 400.</td>
</tr>
<tr>
<td>Who has the number of eggs in 1 dozen?</td>
<td>I have 12.</td>
</tr>
<tr>
<td>Who has the number of eggs in 2 dozen?</td>
<td>I have 24.</td>
</tr>
<tr>
<td>Who has the number of eggs in 4 dozen?</td>
<td>I have 48.</td>
</tr>
</tbody>
</table>
Questions and Answers for Math Maze Cards

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who has the word used for a part of the whole?</td>
<td>I have fraction.</td>
</tr>
<tr>
<td>Who has the name given to the top number in a fraction?</td>
<td>I have numerator.</td>
</tr>
<tr>
<td>Who has the name for the number in a fraction that tells how many parts are in the whole?</td>
<td>I have denominator.</td>
</tr>
<tr>
<td>Who has ( \frac{1}{3} ) of a yard?</td>
<td>I have a foot.</td>
</tr>
<tr>
<td>Who has ( \frac{1}{2} ) of a week?</td>
<td>I have a day.</td>
</tr>
<tr>
<td>Who has 25¢?</td>
<td>I have ( \frac{1}{4} ) of a dollar.</td>
</tr>
<tr>
<td>Who has ( \frac{1}{2} ) of a dollar?</td>
<td>I have 50¢.</td>
</tr>
<tr>
<td>Who has 79¢?</td>
<td>I have ( \frac{79}{100} ) of a dollar.</td>
</tr>
<tr>
<td>Who has the fraction of months of the year that begin with A?</td>
<td>I have ( \frac{1}{12} ).</td>
</tr>
<tr>
<td>Who has the fraction of months of the year that begin with S?</td>
<td>I have ( \frac{1}{12} ).</td>
</tr>
<tr>
<td>Who has the fraction of months of the year that begin with J?</td>
<td>I have ( \frac{5}{12} ).</td>
</tr>
<tr>
<td>Who has ( \frac{2}{3} ) of a yard?</td>
<td>I have 2 feet.</td>
</tr>
<tr>
<td>Who has ( \frac{1}{2} ) or ( \frac{6}{12} ) of a foot?</td>
<td>I have 6 inches.</td>
</tr>
<tr>
<td>Who has a dime?</td>
<td>I have ( \frac{1}{10} ) of a dollar.</td>
</tr>
<tr>
<td>Who has 3 nickels?</td>
<td>I have ( \frac{3}{20} ) of a dollar.</td>
</tr>
<tr>
<td>Who has 3 dimes?</td>
<td>I have ( \frac{3}{10} ) of a dollar.</td>
</tr>
<tr>
<td>Who has 3 slices of a pizza that was cut into 8 equal slices?</td>
<td>I have ( \frac{3}{8} ).</td>
</tr>
<tr>
<td>Who has 75¢?</td>
<td>I have ( \frac{3}{4} ) of a dollar.</td>
</tr>
</tbody>
</table>

Week 18 • Activity 87

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who has the equation to show the number of bunnies in 3 groups of 2 bunnies?</td>
<td>I have ( 3 \times 2 = 6 ).</td>
</tr>
<tr>
<td>Who has the number that comes next? 3, 6, 9, 12, ___</td>
<td>I have 15.</td>
</tr>
<tr>
<td>Who has the number of ounces in a pound?</td>
<td>I have 16.</td>
</tr>
<tr>
<td>Who has the number of pounds in a ton?</td>
<td>I have 2000.</td>
</tr>
<tr>
<td>Who has the name of a 5-sided polygon?</td>
<td>I have pentagon.</td>
</tr>
<tr>
<td>Who has the name of an 8-sided polygon?</td>
<td>I have octagon.</td>
</tr>
<tr>
<td>Who has a multiplication sentence for finding the number of cents in 6 nickels?</td>
<td>I have ( 6 \times 5 =30 ).</td>
</tr>
<tr>
<td>Who has a multiplication sentence for finding the number of legs on 5 chairs?</td>
<td>I have ( 5 \times 4 = 20 ).</td>
</tr>
<tr>
<td>Who has a multiplication sentence for finding the number of days in 3 weeks?</td>
<td>I have ( 3 \times 7 = 21 ).</td>
</tr>
<tr>
<td>Who has the missing number in this pattern? 6, 12, 18, 24, ___, 36</td>
<td>I have 30.</td>
</tr>
<tr>
<td>Who has the time that means “quarter to 4” in the afternoon?</td>
<td>I have 3:45 P.M.</td>
</tr>
<tr>
<td>Who has the time fifteen minutes later than 3:45 P.M.?</td>
<td>I have 4:00 P.M.</td>
</tr>
<tr>
<td>Who has the time 15 minutes after 6:00 A.M.?</td>
<td>I have 6:15 A.M.</td>
</tr>
<tr>
<td>Who has the number of days in 2 weeks?</td>
<td>I have 14.</td>
</tr>
<tr>
<td>Who has the number of days in 4 weeks?</td>
<td>I have 28.</td>
</tr>
<tr>
<td>Who has a dime?</td>
<td>I have ( \frac{1}{10} ) of a dollar.</td>
</tr>
<tr>
<td>Who has 3 nickels?</td>
<td>I have ( \frac{3}{20} ) of a dollar.</td>
</tr>
<tr>
<td>Who has ( \frac{1}{3} ) of a yard?</td>
<td>I have 1 foot.</td>
</tr>
<tr>
<td>Question</td>
<td>Answer</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Who has a number sentence for finding the number of rows if there are 12 cars and 4 cars in each row?</td>
<td>I have $12 \div 4 = 3$.</td>
</tr>
<tr>
<td>Who has a number sentence for finding the number of eggs in 3 dozen?</td>
<td>I have $3 \times 12 = 36$.</td>
</tr>
<tr>
<td>Who has a number sentence for finding the number of days in 4 weeks?</td>
<td>I have $4 \times 7 = 28$.</td>
</tr>
<tr>
<td>Who has a number sentence for finding the number of yards in 21 feet?</td>
<td>I have $21 \div 3 = 7$.</td>
</tr>
<tr>
<td>Who has a number sentence for finding the number of cars if there are 3 rows with 4 cars in each row?</td>
<td>I have $3 \times 4 = 12$.</td>
</tr>
<tr>
<td>Who has a number sentence for finding the number of ears on 8 bunnies?</td>
<td>I have $8 \times 2 = 16$.</td>
</tr>
<tr>
<td>Who has a number sentence for finding the number of tricycles if you have 18 wheels?</td>
<td>I have $18 \div 3 = 6$.</td>
</tr>
<tr>
<td>Who has a number sentence for finding the number of wheels on 6 tricycles?</td>
<td>I have $6 \times 3 = 18$.</td>
</tr>
<tr>
<td>Who has a number sentence for finding the number of dimes in 40 cents?</td>
<td>I have $40 \div 10 = 4$.</td>
</tr>
<tr>
<td>Who has a number sentence for finding the number of quarts in 8 cups?</td>
<td>I have $8 \div 4 = 2$.</td>
</tr>
<tr>
<td>Who has a number sentence for finding the number of nickels in 45 cents?</td>
<td>I have $45 \div 5 = 9$.</td>
</tr>
<tr>
<td>Who has a number sentence for finding the number of dozen in 36 eggs?</td>
<td>I have $36 \div 12 = 3$.</td>
</tr>
<tr>
<td>Who has a number sentence for finding the number of weeks in 28 days?</td>
<td>I have $28 \div 7 = 4$.</td>
</tr>
<tr>
<td>Who has a number sentence for finding the number of ounces in 3 pounds?</td>
<td>I have $3 \times 16 = 48$.</td>
</tr>
<tr>
<td>Who has a number sentence for finding the number of equal groups of 4 in 36?</td>
<td>I have $36 \div 4 = 9$.</td>
</tr>
<tr>
<td>Who has a number sentence for finding the number of inches in 2 feet of rope?</td>
<td>I have $2 \times 12 = 24$.</td>
</tr>
<tr>
<td>Who has a number sentence for finding the number of cents in 4 dimes?</td>
<td>I have $4 \times 10 = 40$.</td>
</tr>
<tr>
<td>Who has a number sentence for finding the number of wings on 3 dogs?</td>
<td>I have $3 \times 0 = 0$.</td>
</tr>
<tr>
<td>Question</td>
<td>Answer</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Who has the number of cents in a nickel?</td>
<td>I have 5.</td>
</tr>
<tr>
<td>Who has the number of cents in 3 nickels?</td>
<td>I have 15.</td>
</tr>
<tr>
<td>Who has the number of hours in a day?</td>
<td>I have 24.</td>
</tr>
<tr>
<td>Who has the number of days in a week?</td>
<td>I have 7.</td>
</tr>
<tr>
<td>Who has the number of days in 2 weeks?</td>
<td>I have 14.</td>
</tr>
<tr>
<td>Who has the number of days in 3 weeks?</td>
<td>I have 21.</td>
</tr>
<tr>
<td>Who has the number of feet in a yard?</td>
<td>I have 3.</td>
</tr>
<tr>
<td>Who has the number of feet in 2 yards?</td>
<td>I have 6.</td>
</tr>
<tr>
<td>Who has the number of feet in 3 yards?</td>
<td>I have 9.</td>
</tr>
<tr>
<td>Who has the number of cents in a dime?</td>
<td>I have 10.</td>
</tr>
<tr>
<td>Who has the number of cents in 2 dimes?</td>
<td>I have 20.</td>
</tr>
<tr>
<td>Who has the number of cents in 3 dimes?</td>
<td>I have 30.</td>
</tr>
<tr>
<td>Who has the number of ears on a cat?</td>
<td>I have 2.</td>
</tr>
<tr>
<td>Who has the number that comes after 10?</td>
<td>I have 11.</td>
</tr>
<tr>
<td>Who has the number of wings on a dog?</td>
<td>I have 0.</td>
</tr>
<tr>
<td>Who has the number of quarters in a dollar?</td>
<td>I have 4.</td>
</tr>
<tr>
<td>Who has the number of quarters in 2 dollars?</td>
<td>I have 8.</td>
</tr>
<tr>
<td>Who has the number of quarters in 3 dollars?</td>
<td>I have 12.</td>
</tr>
</tbody>
</table>

Afterschool Achievers: Math Club
### Questions and Answers for Math Maze Cards

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who has 4 × 30?</td>
<td>I have 120.</td>
</tr>
<tr>
<td>Who has 8 × 80?</td>
<td>I have 640.</td>
</tr>
<tr>
<td>Who has 7 × 30?</td>
<td>I have 210.</td>
</tr>
<tr>
<td>Who has 5 × 800?</td>
<td>I have 4000.</td>
</tr>
<tr>
<td>Who has 3 × 30?</td>
<td>I have 90.</td>
</tr>
<tr>
<td>Who has 3 × 300?</td>
<td>I have 900.</td>
</tr>
<tr>
<td>Who has 5 × 40?</td>
<td>I have 200.</td>
</tr>
<tr>
<td>Who has 6 × 30?</td>
<td>I have 180.</td>
</tr>
<tr>
<td>Who has 7 × 20?</td>
<td>I have 140.</td>
</tr>
<tr>
<td>Who has 5 × 400?</td>
<td>I have 2000.</td>
</tr>
<tr>
<td>Who has 6 × 300?</td>
<td>I have 1800.</td>
</tr>
<tr>
<td>Who has 5 × 50?</td>
<td>I have 250.</td>
</tr>
<tr>
<td>Who has 5 × 500?</td>
<td>I have 2500.</td>
</tr>
<tr>
<td>Who has 9 × 90?</td>
<td>I have 810.</td>
</tr>
<tr>
<td>Who has 9 × 900?</td>
<td>I have 8100.</td>
</tr>
<tr>
<td>Who has 4 × 10?</td>
<td>I have 40.</td>
</tr>
<tr>
<td>Who has 4 × 100?</td>
<td>I have 400.</td>
</tr>
<tr>
<td>Who has 3 × 80?</td>
<td>I have 240.</td>
</tr>
</tbody>
</table>

---

Grade 3
## Questions and Answers for Math Maze Cards

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who has the name for any three-dimensional shape?</td>
<td>I have solid.</td>
</tr>
<tr>
<td>Who has the name for a solid with 2 congruent rectangular bases and four other faces?</td>
<td>I have rectangular prism.</td>
</tr>
<tr>
<td>Who has the name for a solid with two circular bases connected by a curved surface?</td>
<td>I have cylinder.</td>
</tr>
<tr>
<td>Who has the name for a solid with one triangular face for every side of the base?</td>
<td>I have pyramid.</td>
</tr>
<tr>
<td>Who has the name for a solid with one circular base and a curved surface?</td>
<td>I have cone.</td>
</tr>
<tr>
<td>Who has the name for a solid with one curved surface on which every point is an equal distance from the center?</td>
<td>I have sphere.</td>
</tr>
<tr>
<td>Who has the name for a prism with all faces the same?</td>
<td>I have cube.</td>
</tr>
<tr>
<td>Who has a cylinder found in the grocery store?</td>
<td>I have a can of soup.</td>
</tr>
<tr>
<td>Who has a cone that you can eat?</td>
<td>I have ice cream cone.</td>
</tr>
<tr>
<td>Who has a rectangular prism that holds shoes?</td>
<td>I have shoe box.</td>
</tr>
<tr>
<td>Who has the name of the shape of a face on a cube?</td>
<td>I have a square.</td>
</tr>
<tr>
<td>Who has an object that has the shape of a sphere?</td>
<td>I have a basketball.</td>
</tr>
<tr>
<td>Who has two cubes?</td>
<td>I have a pair of dice.</td>
</tr>
<tr>
<td>Who has a description of a cube?</td>
<td>I have a solid with 6 square faces.</td>
</tr>
<tr>
<td>Who has a description of a rectangular prism?</td>
<td>I have a solid which sometimes is a cube, but not always.</td>
</tr>
<tr>
<td>Who has a description of a cylinder?</td>
<td>I have a solid that has two faces that are circles.</td>
</tr>
<tr>
<td>Who has a description of a square pyramid?</td>
<td>I have a solid that has a square base and 4 triangular faces.</td>
</tr>
<tr>
<td>Who has the name of a two-dimensional figure that is not a polygon?</td>
<td>I have a circle.</td>
</tr>
</tbody>
</table>
### Questions and Answers for Math Maze Cards

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Who has</strong> the number of cars if there are 6 rows with 3 cars in each row?</td>
<td>I have 18.</td>
</tr>
<tr>
<td><strong>Who has</strong> the number of sandwiches you can make with 16 slices of bread?</td>
<td>I have 8.</td>
</tr>
<tr>
<td><strong>Who has</strong> the number of slices of pizza each person gets if 8 people share a 16-slice pizza equally?</td>
<td>I have 2.</td>
</tr>
<tr>
<td><strong>Who has</strong> the number of eggs in a dozen?</td>
<td>I have 12.</td>
</tr>
<tr>
<td><strong>Who has</strong> the number of boxes of cookies there are if you have 12 cookies with 4 cookies in each box?</td>
<td>I have 3.</td>
</tr>
<tr>
<td><strong>Who has</strong> the number of groups of 6 beads you can make with 6 beads?</td>
<td>I have 1.</td>
</tr>
<tr>
<td><strong>Who has</strong> the total number of muffins if there are 5 boxes with 6 in each box?</td>
<td>I have 30.</td>
</tr>
<tr>
<td><strong>Who has</strong> the number of separate squares you can make with 16 toothpicks?</td>
<td>I have 4.</td>
</tr>
<tr>
<td><strong>Who has</strong> the number of bunches of 3 balloons you can make with 18 balloons?</td>
<td>I have 6.</td>
</tr>
<tr>
<td><strong>Who has</strong> the number of pairs of shoes you can make with 18 shoes?</td>
<td>I have 9.</td>
</tr>
<tr>
<td><strong>Who has</strong> the number of cents you will get if you split 20 cents equally with a friend?</td>
<td>I have 10.</td>
</tr>
<tr>
<td><strong>Who has</strong> the number of balloons if there are 4 bunches with 5 balloons in each bunch?</td>
<td>I have 20.</td>
</tr>
<tr>
<td><strong>Who has</strong> the number of eggs in 2 dozen?</td>
<td>I have 24.</td>
</tr>
<tr>
<td><strong>Who has</strong> the number of band members if there are 5 rows with 5 members in each?</td>
<td>I have 25.</td>
</tr>
<tr>
<td><strong>Who has</strong> the number of separate triangles you can make with 15 toothpicks?</td>
<td>I have 5.</td>
</tr>
<tr>
<td><strong>Who has</strong> the number that tells how many candies each friend gets if 3 friends share 21 candies?</td>
<td>I have 7.</td>
</tr>
<tr>
<td><strong>Who has</strong> the number of feet in 9 yards?</td>
<td>I have 27.</td>
</tr>
<tr>
<td><strong>Who has</strong> the number of quarts in 4 gallons?</td>
<td>I have 16.</td>
</tr>
</tbody>
</table>
### Questions and Answers for Math Maze Cards

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who has the coin that equals $0.25?</td>
<td>I have the quarter.</td>
</tr>
<tr>
<td>Who has the coin that equals $0.50?</td>
<td>I have the half dollar.</td>
</tr>
<tr>
<td>Who has the coin that equals $0.10?</td>
<td>I have the dime.</td>
</tr>
<tr>
<td>Who has the coin that equals $0.05?</td>
<td>I have the nickel.</td>
</tr>
<tr>
<td>Who has the coin that equals $0.01?</td>
<td>I have the penny.</td>
</tr>
<tr>
<td>Who has the bill with George Washington's face on it?</td>
<td>I have the one-dollar bill.</td>
</tr>
<tr>
<td>Who has the bill with Abraham Lincoln's face on it?</td>
<td>I have the five-dollar bill.</td>
</tr>
<tr>
<td>Who has the bill with Andrew Jackson's face on it?</td>
<td>I have the twenty-dollar bill.</td>
</tr>
<tr>
<td>Who has the bill with Benjamin Franklin's face on it?</td>
<td>I have the hundred-dollar bill.</td>
</tr>
<tr>
<td>Who has two hundred fifty dollars?</td>
<td>I have $250.00.</td>
</tr>
<tr>
<td>Who has 6 dimes, 2 nickels and 3 pennies?</td>
<td>I have $0.73.</td>
</tr>
<tr>
<td>Who has two hundred dollars and fifty cents?</td>
<td>I have $200.50.</td>
</tr>
<tr>
<td>Who has 8 quarters, 1 nickel and 11 pennies?</td>
<td>I have $2.16.</td>
</tr>
<tr>
<td>Who has 5 dollars, 2 quarters, 3 dimes and 2 pennies?</td>
<td>I have $5.82.</td>
</tr>
<tr>
<td>Who has 137 pennies?</td>
<td>I have $1.37.</td>
</tr>
<tr>
<td>Who has 12 quarters?</td>
<td>I have $3.00.</td>
</tr>
<tr>
<td>Who has a $20 bill, a $5 bill, and 1 quarter?</td>
<td>I have $25.25.</td>
</tr>
<tr>
<td>Who has one hundred fifty-six dollars and two cents?</td>
<td>I have $156.02.</td>
</tr>
</tbody>
</table>
Questions and Answers for Math Maze Cards

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who has 345 rounded to the nearest ten?</td>
<td>I have 350.</td>
</tr>
<tr>
<td>Who has 345 rounded to the nearest hundred?</td>
<td>I have 300.</td>
</tr>
<tr>
<td>Who has 73 rounded to the nearest ten?</td>
<td>I have 70.</td>
</tr>
<tr>
<td>Who has 73 rounded to the nearest hundred?</td>
<td>I have 100.</td>
</tr>
<tr>
<td>Who has 417 rounded to the nearest ten?</td>
<td>I have 420.</td>
</tr>
<tr>
<td>Who has 417 rounded to the nearest hundred?</td>
<td>I have 400.</td>
</tr>
<tr>
<td>Who has 725 rounded to the nearest ten?</td>
<td>I have 730.</td>
</tr>
<tr>
<td>Who has 725 rounded to the nearest hundred?</td>
<td>I have 700.</td>
</tr>
<tr>
<td>Who has 29 rounded to the nearest ten?</td>
<td>I have 30.</td>
</tr>
<tr>
<td>Who has 29 rounded to the nearest hundred?</td>
<td>I have 0.</td>
</tr>
<tr>
<td>Who has 241 rounded to the nearest ten?</td>
<td>I have 240.</td>
</tr>
<tr>
<td>Who has 241 rounded to the nearest hundred?</td>
<td>I have 200.</td>
</tr>
<tr>
<td>Who has 2057 rounded to the nearest ten?</td>
<td>I have 2060.</td>
</tr>
<tr>
<td>Who has 2057 rounded to the nearest hundred?</td>
<td>I have 2100.</td>
</tr>
<tr>
<td>Who has 9181 rounded to the nearest ten?</td>
<td>I have 9180.</td>
</tr>
<tr>
<td>Who has 9181 rounded to the nearest hundred?</td>
<td>I have 9200.</td>
</tr>
<tr>
<td>Who has 3749 rounded to the nearest ten?</td>
<td>I have 3750.</td>
</tr>
<tr>
<td>Who has 3749 rounded to the nearest hundred?</td>
<td>I have 3700.</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>Question</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Who has the number between 82 and 87 that is a multiple of 5?</td>
<td>I have 85.</td>
</tr>
<tr>
<td>Who has a number for which the sum of the digits is 9?</td>
<td>I have 351.</td>
</tr>
<tr>
<td>Who has the number 10 more than 1079?</td>
<td>I have 1089.</td>
</tr>
<tr>
<td>Who has the number 20 less than 3683?</td>
<td>I have 3663.</td>
</tr>
<tr>
<td>Who has the number 2000 more than 2750?</td>
<td>I have 4750.</td>
</tr>
<tr>
<td>Who has the number 10 more than 1000?</td>
<td>I have 1010.</td>
</tr>
<tr>
<td>Who has the number exactly halfway between 500 and 600?</td>
<td>I have 550.</td>
</tr>
<tr>
<td>Who has the number that is the same as 10 hundreds?</td>
<td>I have 1000.</td>
</tr>
<tr>
<td>Who has the number that is 1 more than 2399?</td>
<td>I have 2400.</td>
</tr>
<tr>
<td>Who has another name for 10 tens?</td>
<td>I have 100.</td>
</tr>
<tr>
<td>Who has three thousand one?</td>
<td>I have 3001.</td>
</tr>
<tr>
<td>Who has one thousand one?</td>
<td>I have 1001.</td>
</tr>
<tr>
<td>Who has the number 200 less than 6475?</td>
<td>I have 6275.</td>
</tr>
<tr>
<td>Who has the number 300 more than 7700?</td>
<td>I have 8000.</td>
</tr>
<tr>
<td>Who has the number that is half of 100?</td>
<td>I have 50.</td>
</tr>
<tr>
<td>Who has the number that is half of 1000?</td>
<td>I have 500.</td>
</tr>
<tr>
<td>Who has the number 10 more than 99?</td>
<td>I have 109.</td>
</tr>
<tr>
<td>Who has five hundred six?</td>
<td>I have 506.</td>
</tr>
</tbody>
</table>
**Questions and Answers for Math Maze Cards**

<table>
<thead>
<tr>
<th>Who has</th>
<th>a number sentence for finding the number of eggs in 3 dozen?</th>
<th>I have $3 \times 12 = 36$.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who has</td>
<td>a number sentence for finding the number of days in 4 weeks?</td>
<td>I have $4 \times 7 = 28$.</td>
</tr>
<tr>
<td>Who has</td>
<td>the number of feet in a yard?</td>
<td>I have 3.</td>
</tr>
<tr>
<td>Who has</td>
<td>the number of feet in 2 yards?</td>
<td>I have 6.</td>
</tr>
<tr>
<td>Who has</td>
<td>$7 \times 20$?</td>
<td>I have 140.</td>
</tr>
<tr>
<td>Who has</td>
<td>$5 \times 400$?</td>
<td>I have 2000.</td>
</tr>
<tr>
<td>Who has</td>
<td>the name for a solid with one triangular face for every side of the base?</td>
<td>I have pyramid.</td>
</tr>
<tr>
<td>Who has</td>
<td>the name for a solid with one circular base and a curved surface?</td>
<td>I have cone.</td>
</tr>
<tr>
<td>Who has</td>
<td>the number of cars if there are 6 rows with 3 cars in each row?</td>
<td>I have 18.</td>
</tr>
<tr>
<td>Who has</td>
<td>the number of sandwiches you can make with 16 slices of bread?</td>
<td>I have 8.</td>
</tr>
<tr>
<td>Who has</td>
<td>137 pennies?</td>
<td>I have $1.37$.</td>
</tr>
<tr>
<td>Who has</td>
<td>12 quarters?</td>
<td>I have $3.00$.</td>
</tr>
<tr>
<td>Who has</td>
<td>345 rounded to the nearest ten?</td>
<td>I have 350.</td>
</tr>
<tr>
<td>Who has</td>
<td>345 rounded to the nearest hundred?</td>
<td>I have 300.</td>
</tr>
<tr>
<td>Who has</td>
<td>73 rounded to the nearest ten?</td>
<td>I have 70.</td>
</tr>
<tr>
<td>Who has</td>
<td>the number 10 more than 1079?</td>
<td>I have 1089.</td>
</tr>
<tr>
<td>Who has</td>
<td>the number 20 less than 3683?</td>
<td>I have 3663.</td>
</tr>
<tr>
<td>Who has</td>
<td>the number 2000 more than 2750?</td>
<td>I have 4750.</td>
</tr>
</tbody>
</table>
Questions and Answers for Math Maze Cards

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who has the sum of ( \frac{1}{2} ) and ( \frac{1}{3} )?</td>
<td>I have ( \frac{2}{3} ).</td>
</tr>
<tr>
<td>Who has the difference between ( \frac{1}{2} ) and ( \frac{1}{3} )?</td>
<td>I have ( \frac{1}{3} ).</td>
</tr>
<tr>
<td>Who has two fractions with a sum of ( \frac{4}{5} ) and a difference of ( \frac{3}{5} )?</td>
<td>I have ( \frac{3}{5} ) and ( \frac{1}{5} ).</td>
</tr>
<tr>
<td>Who has the sum of ( \frac{2}{4} ) and ( \frac{1}{2} )?</td>
<td>I have ( \frac{2}{4} ).</td>
</tr>
<tr>
<td>Who has the difference between ( \frac{4}{5} ) and ( \frac{2}{5} )?</td>
<td>I have ( \frac{3}{5} ).</td>
</tr>
<tr>
<td>Who has two fractions with a sum of ( \frac{4}{5} ) and a difference of 0?</td>
<td>I have ( \frac{2}{5} ) and ( \frac{3}{5} ).</td>
</tr>
<tr>
<td>Who has the sum of ( \frac{3}{5} ) and ( \frac{2}{5} )?</td>
<td>I have ( \frac{4}{5} ).</td>
</tr>
<tr>
<td>Who has the difference between ( \frac{4}{7} ) and ( \frac{2}{7} )?</td>
<td>I have ( \frac{1}{7} ).</td>
</tr>
<tr>
<td>Who has two fractions with a sum of ( \frac{8}{9} ) and a difference of ( \frac{6}{9} )?</td>
<td>I have ( \frac{6}{9} ) and ( \frac{3}{9} ).</td>
</tr>
<tr>
<td>Who has the sum of ( \frac{1}{2} ) and ( \frac{1}{3} )?</td>
<td>I have ( \frac{2}{3} ) or 1 whole.</td>
</tr>
<tr>
<td>Who has the difference between ( \frac{4}{5} ) and ( \frac{3}{5} )?</td>
<td>I have ( \frac{1}{5} ) or 0.</td>
</tr>
<tr>
<td>Who has two fractions with a sum of ( \frac{9}{10} ) and a difference of ( \frac{5}{10} )?</td>
<td>I have ( \frac{7}{10} ) and ( \frac{2}{10} ).</td>
</tr>
<tr>
<td>Who has the sum of ( \frac{2}{3} ) and ( \frac{2}{3} )?</td>
<td>I have ( \frac{4}{3} ).</td>
</tr>
<tr>
<td>Who has the difference between ( \frac{5}{7} ) and ( \frac{2}{7} )?</td>
<td>I have ( \frac{3}{7} ).</td>
</tr>
<tr>
<td>Who has two fractions with a sum of ( \frac{2}{5} ) and a difference of 0?</td>
<td>I have ( \frac{1}{5} ) and ( \frac{1}{5} ).</td>
</tr>
<tr>
<td>Who has the sum of ( \frac{3}{5} ) and ( \frac{2}{5} )?</td>
<td>I have ( \frac{8}{5} ).</td>
</tr>
<tr>
<td>Who has the difference between ( \frac{3}{12} ) and ( \frac{4}{12} )?</td>
<td>I have ( \frac{1}{12} ).</td>
</tr>
<tr>
<td>Who has two fractions with a sum of ( \frac{3}{10} ) and a difference of ( \frac{1}{10} )?</td>
<td>I have ( \frac{2}{10} ) and ( \frac{1}{10} ).</td>
</tr>
</tbody>
</table>
### Questions and Answers for Math Maze Cards

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Who has the name for the study of shapes?</strong></td>
<td><strong>I have geometry.</strong></td>
</tr>
<tr>
<td><strong>Who has the name for a 3-sided 2-D figure?</strong></td>
<td><strong>I have triangle.</strong></td>
</tr>
<tr>
<td><strong>Who has the name for a 3-D figure that has 6 faces that are rectangles but not squares?</strong></td>
<td><strong>I have rectangular prism.</strong></td>
</tr>
<tr>
<td><strong>Who has the name of a 3-D figure that has no faces, edges, or corners?</strong></td>
<td><strong>I have sphere.</strong></td>
</tr>
<tr>
<td><strong>Who has the name of a 3-D shape that has 2 circles for bases?</strong></td>
<td><strong>I have cylinder.</strong></td>
</tr>
<tr>
<td><strong>Who has the name for a 6-sided 2-D figure?</strong></td>
<td><strong>I have hexagon.</strong></td>
</tr>
<tr>
<td><strong>Who has the name for an 8-sided 2-D figure?</strong></td>
<td><strong>I have octagon.</strong></td>
</tr>
<tr>
<td><strong>Who has the name for a 5-sided 2-D figure?</strong></td>
<td><strong>I have pentagon.</strong></td>
</tr>
<tr>
<td><strong>Who has a cone that you can eat?</strong></td>
<td><strong>I have ice cream cone.</strong></td>
</tr>
<tr>
<td><strong>Who has the name for the distance around the outside of a 2-D figure?</strong></td>
<td><strong>I have perimeter.</strong></td>
</tr>
<tr>
<td><strong>Who has the name for the amount of space covered by a 2-D figure?</strong></td>
<td><strong>I have area.</strong></td>
</tr>
<tr>
<td><strong>Who has the perimeter of a square that measures 8 inches on each side?</strong></td>
<td><strong>I have 32 inches.</strong></td>
</tr>
<tr>
<td><strong>Who has the area of a square that measures 8 inches on each side?</strong></td>
<td><strong>I have 64 square inches.</strong></td>
</tr>
<tr>
<td><strong>Who has the area of a square that measures 6 inches on each side?</strong></td>
<td><strong>I have 36 square inches.</strong></td>
</tr>
<tr>
<td><strong>Who has the name for a 2-D figure with sides that are all line segments?</strong></td>
<td><strong>I have polygon.</strong></td>
</tr>
<tr>
<td><strong>Who has the name for a 3-D figure with a square for a base and 4 faces that are triangles?</strong></td>
<td><strong>I have square pyramid.</strong></td>
</tr>
<tr>
<td><strong>Who has the name of a quadrilateral that has all sides and angles the same?</strong></td>
<td><strong>I have square.</strong></td>
</tr>
<tr>
<td><strong>Who has the name for a 3-D shape with all faces the same?</strong></td>
<td><strong>I have cube.</strong></td>
</tr>
</tbody>
</table>
### Questions and Answers for Math Maze Cards

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who has 5 cents?</td>
<td>I have a nickel.</td>
</tr>
<tr>
<td>Who has 10 cents in dimes?</td>
<td>I have a dime.</td>
</tr>
<tr>
<td>Who has 20 cents in nickels?</td>
<td>I have 4 nickels.</td>
</tr>
<tr>
<td>Who has 30 cents in dimes?</td>
<td>I have 3 dimes.</td>
</tr>
<tr>
<td>Who has 25 cents in nickels?</td>
<td>I have 5 nickels.</td>
</tr>
<tr>
<td>Who has 35 cents in nickels?</td>
<td>I have 7 nickels.</td>
</tr>
<tr>
<td>Who has 40 cents in dimes?</td>
<td>I have 4 dimes.</td>
</tr>
<tr>
<td>Who has 45 cents in nickels?</td>
<td>I have 9 nickels.</td>
</tr>
<tr>
<td>Who has 50 cents in dimes?</td>
<td>I have 5 dimes.</td>
</tr>
<tr>
<td>Who has 70 cents in dimes?</td>
<td>I have 7 dimes.</td>
</tr>
<tr>
<td>Who has 55 cents in nickels?</td>
<td>I have 11 nickels.</td>
</tr>
<tr>
<td>Who has 90 cents in dimes?</td>
<td>I have 9 dimes.</td>
</tr>
<tr>
<td>Who has 40 cents in nickels?</td>
<td>I have 8 nickels.</td>
</tr>
<tr>
<td>Who has the same amount in nickels as 5 dimes?</td>
<td>I have 10 nickels.</td>
</tr>
<tr>
<td>Who has 50 cents in quarters?</td>
<td>I have 2 quarters.</td>
</tr>
<tr>
<td>Who has 75 cents in quarters?</td>
<td>I have 3 quarters.</td>
</tr>
<tr>
<td>Who has the same amount in dimes as 20 nickels?</td>
<td>I have 10 dimes.</td>
</tr>
<tr>
<td>Who has the same amount in quarters as 5 nickels?</td>
<td>I have a quarter.</td>
</tr>
</tbody>
</table>

---

206 Afterschool Achievers: Math Club
### Questions and Answers for Math Maze Cards

<table>
<thead>
<tr>
<th>Who has</th>
<th>Two numbers that have a difference of 20?</th>
<th>I have 50 and 30.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who has</td>
<td>the number of inches in a foot?</td>
<td>I have 12.</td>
</tr>
<tr>
<td>Who has</td>
<td>a figure with a perimeter of 16 inches?</td>
<td>I have a square with sides that are each 4 inches long.</td>
</tr>
<tr>
<td>Who has</td>
<td>the number of nickels in 30 cents?</td>
<td>I have 6.</td>
</tr>
<tr>
<td>Who has</td>
<td>the sum of 25 and 45?</td>
<td>I have 70.</td>
</tr>
<tr>
<td>Who has</td>
<td>the equation to show the number of toes on 4 people?</td>
<td>I have $4 \times 10 = 40$.</td>
</tr>
<tr>
<td>Who has</td>
<td>the number that comes next? 10, 20, 30, 40, ___</td>
<td>I have 50.</td>
</tr>
<tr>
<td>Who has</td>
<td>the measurement of how heavy something is?</td>
<td>I have weight.</td>
</tr>
<tr>
<td>Who has</td>
<td>a tool used to weigh a baby?</td>
<td>I have a scale.</td>
</tr>
<tr>
<td>Who has</td>
<td>the name of a closed figure made up of line segments?</td>
<td>I have polygon.</td>
</tr>
<tr>
<td>Who has</td>
<td>the name of a 5-sided polygon?</td>
<td>I have pentagon.</td>
</tr>
<tr>
<td>Who has</td>
<td>a picture that shows a cube?</td>
<td>I have 🎁</td>
</tr>
<tr>
<td>Who has</td>
<td>a picture that shows an angle?</td>
<td>I have 📈</td>
</tr>
<tr>
<td>Who has</td>
<td>a multiplication sentence for finding the number of ears on 8 bunnies?</td>
<td>I have $8 \times 2 = 16$.</td>
</tr>
<tr>
<td>Who has</td>
<td>a multiplication sentence for finding the number of wheels on 3 dogs?</td>
<td>I have $3 \times 0 = 0$.</td>
</tr>
<tr>
<td>Who has</td>
<td>the next number in this pattern? 4, 8, 12, 16, ___</td>
<td>I have 20.</td>
</tr>
<tr>
<td>Who has</td>
<td>the missing number in this pattern? 3, 6, 9, 12, 15, ___ 21, 24</td>
<td>I have 18.</td>
</tr>
<tr>
<td>Who has</td>
<td>the time one hour after 5:15 P.M.?</td>
<td>I have 6:15 P.M.</td>
</tr>
</tbody>
</table>
### Questions and Answers for Math Maze Cards

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who has the number of legs on 2 horses?</td>
<td>I have 8.</td>
</tr>
<tr>
<td>Who has the number of days in a week?</td>
<td>I have 7.</td>
</tr>
<tr>
<td>Who has the word used for a part of the whole?</td>
<td>I have fraction.</td>
</tr>
<tr>
<td>Who has ( \frac{1}{2} ) or ( \frac{6}{12} ) of a foot?</td>
<td>I have 6 inches.</td>
</tr>
<tr>
<td>Who has 3 nickels?</td>
<td>I have ( \frac{1}{20} ) of a dollar.</td>
</tr>
<tr>
<td>Who has 75¢?</td>
<td>I have ( \frac{3}{4} ) of a dollar.</td>
</tr>
<tr>
<td>Who has a number sentence for finding the number of nickels in 45 cents?</td>
<td>I have ( 45 \div 5 = 9 ).</td>
</tr>
<tr>
<td>Who has a number sentence for finding the number of ounces in 3 pounds?</td>
<td>I have ( 3 \times 16 = 48 ).</td>
</tr>
<tr>
<td>Who has the number of days in 2 weeks?</td>
<td>I have 14.</td>
</tr>
<tr>
<td>Who has the number that comes after 10?</td>
<td>I have 11.</td>
</tr>
<tr>
<td>Who has ( 5 \times 800 )?</td>
<td>I have 4000.</td>
</tr>
<tr>
<td>Who has ( 3 \times 300 )?</td>
<td>I have 900.</td>
</tr>
<tr>
<td>Who has the name for a solid with two circular bases connected by a curved surface?</td>
<td>I have cylinder.</td>
</tr>
<tr>
<td>Who has a rectangular prism that holds shoes?</td>
<td>I have shoe box.</td>
</tr>
<tr>
<td>Who has two cubes?</td>
<td>I have a pair of dice.</td>
</tr>
<tr>
<td>Who has the number of groups of 6 beads you can make with 6 beads?</td>
<td>I have 1.</td>
</tr>
<tr>
<td>Who has the number of pairs of shoes you can make with 18 shoes?</td>
<td>I have 9.</td>
</tr>
<tr>
<td>Who has the coin that equals $0.50?</td>
<td>I have the half dollar.</td>
</tr>
</tbody>
</table>
### Questions and Answers for Math Maze Cards

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who has the bill with George Washington’s face on it?</td>
<td>I have the one-dollar bill.</td>
</tr>
<tr>
<td>Who has two hundred fifty dollars?</td>
<td>I have $250.00.</td>
</tr>
<tr>
<td>Who has 241 rounded to the nearest ten?</td>
<td>I have 240.</td>
</tr>
<tr>
<td>Who has 725 rounded to the nearest ten?</td>
<td>I have 730.</td>
</tr>
<tr>
<td>Who has a number for which the sum of the digits is 9?</td>
<td>I have 351.</td>
</tr>
<tr>
<td>Who has another name for 10 tens?</td>
<td>I have 100.</td>
</tr>
<tr>
<td>Who has the sum of $\frac{1}{4}$ and $\frac{1}{2}$?</td>
<td>I have $\frac{3}{4}$.</td>
</tr>
<tr>
<td>Who has the sum of $\frac{2}{3}$ and $\frac{3}{4}$?</td>
<td>I have $\frac{4}{7}$.</td>
</tr>
<tr>
<td>Who has the difference between $\frac{4}{3}$ and $\frac{3}{2}$?</td>
<td>I have $\frac{5}{6}$.</td>
</tr>
<tr>
<td>Who has the name for a 6-sided 2-D figure?</td>
<td>I have hexagon.</td>
</tr>
<tr>
<td>Who has the name for the distance around the outside of a 2-D figure?</td>
<td>I have perimeter.</td>
</tr>
<tr>
<td>Who has the perimeter of a square that measures 8 inches on each side?</td>
<td>I have 32 inches.</td>
</tr>
<tr>
<td>Who has 25 cents in nickels?</td>
<td>I have 5 nickels.</td>
</tr>
<tr>
<td>Who has 50 cents in dimes?</td>
<td>I have 5 dimes.</td>
</tr>
<tr>
<td>Who has the same amount in quarters as 5 nickels?</td>
<td>I have a quarter.</td>
</tr>
<tr>
<td>Who has two numbers that have a sum of 11 and a difference of 1?</td>
<td>I have 6 and 5.</td>
</tr>
<tr>
<td>Who has two numbers that have a sum of 12 and a difference of 2?</td>
<td>I have 7 and 5.</td>
</tr>
<tr>
<td>Who has two numbers that have a difference of 300?</td>
<td>I have 900 and 600.</td>
</tr>
<tr>
<td>Question</td>
<td>Answer</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>Who has two numbers that have a difference of 600?</td>
<td>I have 800 and 200.</td>
</tr>
<tr>
<td>Who has 15 plus 8?</td>
<td>I have 23.</td>
</tr>
<tr>
<td>Who has 77 plus 4?</td>
<td>I have 81.</td>
</tr>
<tr>
<td>Who has the number of inches in 3 feet or a yard?</td>
<td>I have 36.</td>
</tr>
<tr>
<td>Who has the number of decimeters in 3 meters?</td>
<td>I have 30.</td>
</tr>
<tr>
<td>Who has the tool we use to keep track of the days of the month?</td>
<td>I have a calendar.</td>
</tr>
<tr>
<td>Who has the name for the answer in addition?</td>
<td>I have sum.</td>
</tr>
<tr>
<td>Who has the word for a number close to an exact amount?</td>
<td>I have estimate.</td>
</tr>
<tr>
<td>Who has the name for numbers ending in 1, 3, 5, 7, or 9?</td>
<td>I have odd numbers.</td>
</tr>
<tr>
<td>Who has the number of nickels that make 2 dollars?</td>
<td>I have 40.</td>
</tr>
<tr>
<td>Who has the number of nickels that make a quarter?</td>
<td>I have 5.</td>
</tr>
<tr>
<td>Who has the sum of 33 and 10?</td>
<td>I have 43.</td>
</tr>
<tr>
<td>Who has the sum of 5 and 15?</td>
<td>I have 20.</td>
</tr>
<tr>
<td>Who has the sum of 72 and 20?</td>
<td>I have 92.</td>
</tr>
<tr>
<td>Who has the equation to show the number of cents in 7 nickels?</td>
<td>I have $7 \times 5 = 35$.</td>
</tr>
<tr>
<td>Who has the number that comes next? 9, 12, 15,</td>
<td>I have 18.</td>
</tr>
<tr>
<td>Who has the equation to show the number of wheels on 8 tricycles?</td>
<td>I have $8 \times 3 = 24$.</td>
</tr>
<tr>
<td>Who has the weight of a slice of cheese?</td>
<td>I have 1 ounce.</td>
</tr>
</tbody>
</table>
Questions and Answers for Math Maze Cards

<table>
<thead>
<tr>
<th>Who has ...</th>
<th>I have ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>the heavier weight— a two-pound</td>
<td>weight.</td>
</tr>
<tr>
<td>weight or an 18-ounce weight?</td>
<td></td>
</tr>
<tr>
<td>The number of pounds of candy</td>
<td>3</td>
</tr>
<tr>
<td>you can buy at 50 cents a pound</td>
<td></td>
</tr>
<tr>
<td>with $1.50?</td>
<td></td>
</tr>
<tr>
<td>A picture that shows a ray?</td>
<td></td>
</tr>
<tr>
<td>A multiplication sentence for</td>
<td>$3 \times 5 = 15$.</td>
</tr>
<tr>
<td>finding the number of cents in 3</td>
<td></td>
</tr>
<tr>
<td>nickels?</td>
<td></td>
</tr>
<tr>
<td>A multiplication sentence for</td>
<td>$3 \times 7 = 21$.</td>
</tr>
<tr>
<td>finding the number of days in 3</td>
<td></td>
</tr>
<tr>
<td>weeks?</td>
<td></td>
</tr>
<tr>
<td>The number of minutes in half an</td>
<td>30.</td>
</tr>
<tr>
<td>hour?</td>
<td></td>
</tr>
<tr>
<td>The time 15 minutes after 6:00 A.</td>
<td>6:15 A.M.</td>
</tr>
<tr>
<td>M.?</td>
<td></td>
</tr>
<tr>
<td>The letters used to show times</td>
<td>P.M.</td>
</tr>
<tr>
<td>after noon and before midnight?</td>
<td></td>
</tr>
<tr>
<td>The number of feet in 2 yards?</td>
<td>6.</td>
</tr>
<tr>
<td>The number of cents in 4 nickels?</td>
<td>20.</td>
</tr>
<tr>
<td>The number of centimeters in 2</td>
<td>200.</td>
</tr>
<tr>
<td>meters?</td>
<td></td>
</tr>
<tr>
<td>The number of eggs in 2 dozen?</td>
<td>24.</td>
</tr>
<tr>
<td>A 25¢?</td>
<td>$\frac{1}{4}$ of a dollar.</td>
</tr>
<tr>
<td>A $\frac{2}{3}$ of a yard?</td>
<td>2 feet.</td>
</tr>
<tr>
<td>A dime?</td>
<td>$\frac{3}{8}$ of a dollar.</td>
</tr>
<tr>
<td>3 slices of a pizza that was cut</td>
<td></td>
</tr>
<tr>
<td>into 8 equal slices?</td>
<td>$\frac{3}{8}$.</td>
</tr>
<tr>
<td>A number sentence for finding the</td>
<td>$40 \div 10 = 4$.</td>
</tr>
<tr>
<td>number of dimes in 40 cents?</td>
<td></td>
</tr>
<tr>
<td>The number of cents in 5 dimes?</td>
<td>50.</td>
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### Questions and Answers for Math Maze Cards

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<th>Answer</th>
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<td>Who has the number of quarters in 3 dollars?</td>
<td>I have 12.</td>
</tr>
<tr>
<td>Who has $9 \times 900$?</td>
<td>I have 8100.</td>
</tr>
<tr>
<td>Who has the number of boxes of cookies there are if you have 12 cookies with 4 cookies in each box?</td>
<td>I have 3.</td>
</tr>
<tr>
<td>Who has the number of band members if there are 5 rows with 5 members in each?</td>
<td>I have 25.</td>
</tr>
<tr>
<td>Who has 8 quarters, 1 nickel and 11 pennies?</td>
<td>I have $2.16.</td>
</tr>
<tr>
<td>Who has 2057 rounded to the nearest hundred?</td>
<td>I have 2100.</td>
</tr>
<tr>
<td>Who has the number 200 less than 6475?</td>
<td>I have 6275.</td>
</tr>
<tr>
<td>Who has the difference between $\frac{3}{2}$ and $\frac{1}{2}$?</td>
<td>I have $\frac{1}{2}$.</td>
</tr>
<tr>
<td>Who has the name of a 3-D figure that has no faces, edges or corners?</td>
<td>I have sphere.</td>
</tr>
<tr>
<td>Who has 40 cents in nickels?</td>
<td>I have 8 nickels.</td>
</tr>
<tr>
<td>Who has three thousand one?</td>
<td>I have 3001.</td>
</tr>
<tr>
<td>Who has the number between 82 and 87 that it is a multiple of 5?</td>
<td>I have 85.</td>
</tr>
<tr>
<td>Who has 3749 rounded to the nearest ten?</td>
<td>I have 3750.</td>
</tr>
<tr>
<td>Who has the time that means “quarter to 4” in the afternoon?</td>
<td>I have 3:45 P.M.</td>
</tr>
<tr>
<td>Who has the number of cents you will get if you split 20 cents equally with a friend?</td>
<td>I have 10.</td>
</tr>
<tr>
<td>Who has a description of a cylinder?</td>
<td>I have a solid that has two faces that are circles.</td>
</tr>
<tr>
<td>Who has $5 \times 50$?</td>
<td>I have 250.</td>
</tr>
<tr>
<td>Who has a number sentence for finding the number of wheels on 6 tricycles?</td>
<td>I have $6 \times 3 = 18$.</td>
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<table>
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<td>Fraction concepts (12, 13, 14, 15)</td>
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<td>42, 87, 132, 152, 157, 162, 167, 172, 177</td>
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Basic Operations

Diagnostic Test #2

Choose the best answer to each question. Draw a circle around the problem that has the same answer.

1. 5 + 6    a. 5 + 5 + 1    b. 6 + 6 + 1    c. 10 + 2
2. 8 + 6    a. 6 + 10    b. 10 + 4    c. 4 + 9
3. 7 + 9    a. 7 + 7 + 1    b. 10 + 6    c. 7 + 10 + 1

Add or subtract.

4. 4 + 9 =   13
5. 12 + 8 =   20
6. 16 - 9 =   __
7. 13 - 8 =   __

Fill in the missing fractions.

8. __ + __ = 1
9. __ + __ = __

Circle the answer.

10. Show all the ways you can think of to make 25 cents without using pennies. Circle the coins in each row to show your answers.

Activity Correlation

<table>
<thead>
<tr>
<th>Concepts (and diagnostic item numbers)</th>
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<tr>
<td>Addition and subtraction facts; mental math (1-7)</td>
<td>1, 2, 4, 8, 9, 11, 14, 19, 24, 33, 34, 37, 39, 41, 46, 49, 51, 53, 56, 61, 66, 68, 85, 94, 144, 154, 164</td>
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<td>Addition without regrouping (11)</td>
<td>1, 2, 4, 16, 26, 49, 68</td>
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<tr>
<td>Addition with regrouping (13)</td>
<td>6, 10, 12, 31, 36</td>
</tr>
<tr>
<td>Subtraction without regrouping (12)</td>
<td>2, 7</td>
</tr>
<tr>
<td>Subtraction with regrouping (14)</td>
<td>40, 105</td>
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<tr>
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<td>64, 69, 77, 79, 84, 86, 89, 91, 97, 102, 126, 131, 136, 138, 147, 149, 153, 154, 164, 169, 171, 173, 174, 179</td>
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<td>Solve problems using multiplication or division (16, 18, 19)</td>
<td>112, 170, 175</td>
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</tr>
<tr>
<td>Remainders in division (18, 19)</td>
<td>130, 134, 139, 141, 146, 151, 163</td>
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</tbody>
</table>

Find the answers to these problems:

11. \( \frac{11}{3} \) 12. \( \frac{54}{8} \) 13. \( \frac{36}{14} \) 14. \( \frac{305}{269} \)

15. \( 7 \times 5 = \) 35 16. \( 6 \times 4 = \) 24

17. \( 3 \times 9 = \) 27 18. \( 8 \times 2 = \) 16

Show how much you know about multiplication.

Find the answers to these problems:

19. \( \frac{9}{7} \) 20. \( \frac{5}{4} \) 21. \( \frac{3}{2} \)

22. \( \frac{7}{6} \) 23. \( \frac{4}{3} \) 24. \( \frac{5}{2} \)

Show how much you know about division.

16. Dana and three friends shared 24 apple slices. How many apple slices did they each get? 6

17. 27 - 9 = 3 20 + 5 = 4

18. John, Matt and Josh have 29 gumballs. They have agreed to share them evenly. If there are any left over they will give them to John's little sister. How many gumballs will each boy get? 9

19. Later the 3 boys find a package of 5 cupcakes in the kitchen. They agree to share them evenly again, and John's little sister will get the leftovers again. How many cupcakes will each boy get? 1

20. How many cupcakes will John's little sister get? 2

Activity Numbers
Choose the best answer to each question. Geometric shapes don't have names like Sam or Sarah. They have names like triangle, square, rectangle, or cylinder. How many of these shapes can you match with their names?

Circle the right word.

1. square hexagon triangle square rectangle triangle

2. cylinder cube cone cylinder cube cone

Which one does not belong?

5. Circle the shape that is not a triangle.

6. Circle the shape that is not a square.

7. Circle the shape that is not a rectangle.

8. Circle the shape that is not a parallelogram.

Look at these figures carefully. Draw rings around the two figures that are the same size and shape.

Name Date

11. If you fold this shape on the dotted line, the two sides are exactly the same. This line is called the line of symmetry. Draw a line on this triangle where you could fold it so the two halves are exactly the same.

The number of square tiles that cover a floor is called the area of the floor.

Can you find the area for these two floors?

12. The area of this floor is 8 square tiles.

13. The area of this floor is 16 square tiles.

14. If each side of this triangle is 1 inch, how many inches long are the sides of the triangle all together? The sides of this triangle all together are 3 inches long.

15. Karissa drew a star on the grid above. Can you name the point? Circle the correct answer.

16. Name Date

Activity Correlation

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<td>Line symmetry (11)</td>
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<td>27, 133, 161</td>
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<td>25, 165</td>
</tr>
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### Measurement Diagnostic Test #4

Choose the best answer to each question.

1. How fast can you get to school?
   - ruler
   - thermometer
   - clock

2. How long is your arm?
   - clock
   - scale
   - ruler

3. How hot is the air outside?
   - Thermometer
   - clock
   - scale

4. How much do your books weigh?
   - ruler
   - scale
   - clock

Which is which? Circle the best choice.

5. Which weighs about 1 pound?
   - a loaf of bread
   - a car
   - a dog

6. Which is about 1 foot long?
   - a loaf of bread
   - a car
   - an egg

7. Which is about 1 centimeters long?
   - a paper clip
   - a baseball bat
   - a jump rope

Read each problem for clues. Then write the time to answer the question.

8. If you get up in the morning at 6:30 and get to school two hours later, what time would you get to school?
   - I would get to school at ______ 8:30 ______

9. Imagine it is 6:45 in the evening and you are waiting for dinner. Three hours ago you had a snack. What time did you have your snack?
   - I had my snack at ______ 3:45 ______

---

### Activity Correlation

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<thead>
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<th>Activity Numbers</th>
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<td>52</td>
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<tr>
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<tr>
<td>Time (8, 9, 12, 15, 25)</td>
<td>17, 38, 72, 88, 125</td>
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<tr>
<td>Money (10, 11, 19, 24)</td>
<td>1, 32, 44, 73, 74, 78, 95, 117, 147, 168</td>
</tr>
<tr>
<td>Temperature (14)</td>
<td>128</td>
</tr>
<tr>
<td>Capacity (20, 23)</td>
<td>113, 160, 166</td>
</tr>
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</table>
Choose the best answer to each question.

1. 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50
2. 6, 9, 12, 15, 18, 21, 24

Draw the next figure in this pattern.
3. X X O X X B X X O X X B X

Look at the word pattern below.
4. What is the 1st word? cat
don cat
cat
dog
cat
5. What is the 21st word? ____________
dog
dog
6. What would the 20th word in the pattern be? ____________
How did you get that answer? Answers will vary. Reference to odd and even numbers or the alternating pattern of the words shows abstract thinking.

Find the next three numbers in these patterns.
7. 0, 1, 3, 4, 6, 7, 9, 10, 12, 13
8. 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 65
9. 0, 10, 11, 21, 22, 32, 33, 43, 44

Which one is true? Find 2 true sentences.
10. • 3 + (4 + 6) is the same as (3 + 4) + 6.
    • 3 + (4 + 6) is the same as (3 + 4) + 4.
    • 3 + (4 + 6) is the same as 12 + 6.
    • 79 + 11 is the same as 11 + 79.

Name ____________________________ Date ____________

Activity Correlation

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<tr>
<td>Visual patterns (3, 4, 5, 6)</td>
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<td>9, 54, 59, 119</td>
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<tr>
<td>Symbols (15, 16, 17, 18)</td>
<td>22</td>
</tr>
<tr>
<td>Find the rule (19, 20)</td>
<td>76, 81</td>
</tr>
</tbody>
</table>
Choose the best answer to each question.

See how many of these questions about reading numbers you can answer.

1. Think about the number 423. Which digit is in the ones place?
   - A 5  
   - B 4  
   - C 3  
   - D 2

2. Which number has an 8 in the thousands place?
   - A 18,923 
   - B 81,923 
   - C 10,823 
   - D 10,008

3. Which choice shows five thousand, one hundred?
   - A 5,100 
   - B 5,500 
   - C 1,500 
   - D 1,100

4. Look at all the numbers. Which number is the least?
   - A 24,400 
   - B 28,400 
   - C 24,499 
   - D 22,999

5. All these word names look alike, but they are all different. Find the one that gives the word form of 723,044.
   - A seven hundred twenty-three and four hundred four 
   - B seven hundred twenty-three thousand, forty-four 
   - C seven hundred twenty-three thousand, four hundred forty 
   - D seven hundred twenty-three thousand, four hundred four.

The next three questions ask you to think about the sizes of different numbers.

6. Choose the number that is closest to 32.
   - A 10  
   - B 20  
   - C 30  
   - D 40

7. Which number is closest to 387?
   - A 300  
   - B 400  
   - C 500  
   - D 700

8. One jar has 22 candies. The other has 17 candies. Which number is close to how many candies there are altogether?
   - A 20  
   - B 40  
   - C 60  
   - D 427
Even or Odd?

9. Which set shows an odd number of dots?
   A  B  C  D
   [diagram]

10. Draw a circle around four odd numbers.
    5 13 4 25 2 34 47 108

11. Circle the numbers you say when you count by twos.
    5 10 13 15 20 22 25 34 45

See how many of these questions about fractions you can answer.

12. Which set has \( \frac{3}{4} \) of the stars colored?
    A  B  C  D
    [diagram]

13. Color in \( \frac{2}{3} \) of this box with your pencil.
    [box with three sections]

14. Now color in \( \frac{2}{3} \) of this box.
    [box with three sections]

15. Think about these fractions. Which one is greater than all the others?
    A  \( \frac{2}{5} \)  B  \( \frac{2}{3} \)  C  \( \frac{2}{9} \)  D  \( \frac{2}{6} \)

For the next two questions, you choose the problem.

16. Which problem shows another way to find the answer for \( 15 + 15 + 15 \)?
    A  \( 15 \times 3 = \)  B  \( 15 + 3 = \)  C  \( 15 - 3 = \)  D  \( 15 \div 3 = \)

17. Write a multiplication sentence for this picture.
    [flowers]

18. Imagine you are 9 years old and you are in 3rd grade. You have 3 sets of markers and each box has 16 markers in it. Which problem would tell you how many markers you have altogether?
    A  \( 9 \times 3 = \)  B  \( 3 \times 3 = \)  C  \( 3 \times 16 = \)  D  \( 16 \times 9 = \)

19. Draw a picture to show \( 6 \div 3 = 2 \).
Choose the best answer to each question.

Draw a circle around the problem that has the same answer.

1. $8 + 6$  
   a. $6 + 10$  
   b. $10 + 4$  
   c. $4 + 9$

2. $7 + 8$  
   a. $7 + 7 + 1$  
   b. $10 + 6$  
   c. $7 + 10 + 1$

3. $5 + 6$  
   a. $5 + 5 + 1$  
   b. $6 + 6 + 1$  
   c. $10 + 2$

Add or subtract.

4. $9 + 4 = \underline{\hspace{2cm}}$  
5. $13 + 7 = \underline{\hspace{2cm}}$

6. $16 - 7 = \underline{\hspace{2cm}}$  
7. $13 - 5 = \underline{\hspace{2cm}}$

Fill in the missing fractions.

8. $\frac{1}{2} + \underline{\hspace{2cm}} = 1$  
9. $\frac{1}{4} + \frac{2}{4} = \underline{\hspace{2cm}}$

Circle the answer.

10. Show all the ways you can think of to make 35 cents without using pennies. Circle the coins in each row to show your answers.
Find the answers to these problems:

11. 327  
    + 51

12. 36  
    + 96

13. 584  
    - 143

14. 406  
    - 182

Show how much you know about multiplication.

15. $8 \times 5 = \underline{_______}$  
    $7 \times 4 = \underline{_______}$

16. $3 \times 8 = \underline{_______}$  
    $6 \times 2 = \underline{_______}$

Show how much you know about division.


How many apple slices did they each get?  

17. $27 \div 3 = \underline{_______}$  
    $30 \div 5 = \underline{_______}$

18. $42 \div 7 = \underline{_______}$  
    $32 \div 8 = \underline{_______}$

19. $30 \div 10 = \underline{_______}$  
    $28 \div 4 = \underline{_______}$

18. John, Matt and Josh have 31 gumballs. They have agreed to share them evenly. If there are any left over they will give them to John’s little sister.

How many gumballs will each boy get?  

How many will John’s little sister get?  

19. Later the 3 boys find a package of 7 cookies in the kitchen. They agree to share them evenly again, and John’s little sister will get the leftovers again.

How many cookies will each boy get?  

How many cookies will John’s little sister get?
Choose the best answer to each question.
Shapes have names like triangle, square, rectangle, or cylinder.
How many of these shapes can you match with their names?

Circle the right word.

1.  
   square  rectangle  triangle
2.  
   square  hexagon  triangle
3.  
   cylinder  cube  cone
4.  
   cylinder  cube  cone

Which one does not belong?

5. Circle the shape that is not a parallelogram.  
   
6. Circle the shape that is not a rectangle.  
   
7. Circle the shape that is not a square.  
   
8. Circle the shape that is not a triangle.  

Look at these figures carefully. Draw rings around the two figures that are the same size and shape.

9.  
   [Images of shapes]

10.  
    [Images of shapes]
11. If you fold this shape on the dotted line, the two sides are exactly the same. This line is called the line of symmetry.

Draw a line on this triangle where you could fold it so the two halves are exactly the same.

The number of square tiles that cover a floor is called the area of the floor.

Can you find the area for these two floors?

12. The area of this floor is _______ square tiles.

13. The area of this floor is _______ square tiles.

14. If each side of this triangle is 2 inches, how many inches long are the sides of the triangle all together? The sides of this triangle all together are _______ inches long.

15. Sam drew a triangle on the grid above. Can you name the point? Circle the correct answer.

E3   C2   D2   E2

Name  Date
Choose the best answer to each question.

Choose the tool you would use to answer each question.

1. How long are you in school?
   ruler   thermometer   clock
2. How long is your leg?
   clock   scale   ruler
3. How hot is the soup?
   thermometer   clock   scale
4. How much does your backpack weigh?
   ruler   scale   clock

Which is which? Circle the best choice.

5. Which weighs about 1 pound?
   a loaf of bread   a car   a dog
6. Which is about 6 centimeter long?
   a loaf of bread   a car   an egg
7. Which is about 1 inch long?
   a paper clip   a baseball bat   a jump rope

Read each problem for clues. Then write the time to answer the question.

8. If you get up in the morning at 7:30 and get to school one hour later, what time would you get to school?

   I would get to school at ____________________.

9. Imagine it is 6:45 in the evening and you are waiting for dinner. Two hours ago you had a snack. What time did you have your snack?

   I had my snack at ____________________.
Circle the correct answer to each question about measuring.

10. How many days are in a week?  7  12  52

11. How many inches equal 1 foot?  12  24  36

12. How hot is a summer day?  1° F  32° F  80° F

13. How many pennies equal 1 nickel?  2  5  10

14. How many pennies equal 1 dollar?  10  20  100

Fill in these blanks with the number that tells how many.

15. ______ inches = 1 foot

16. ______ milliliters in 1 liter

17. ______ cents in 2 dimes

18. ______ minutes equal 1 hour

19. 1 yard equals ______ feet.

20. ______ ounces = 1 pound

Now we tell you the numbers. See if you can write the correct word in each blank.

21. There are 12 inches in 1 ______

22. There are 100 ______ in 1 meter.

23. It takes 4 ______ to make 1 gallon.

24. You need 10 ______ to make 1 dollar.

25. There are 12 months in 1 ______

26. 1 ft 1 ft 1 ft 1 ft 1 ft 1 ft 1 ft 1 ft

How many yards long is this tape? ______

Name

Date
Choose the best answer to each question.

Continue the patterns.
1. 0, 10, 20, 30, ______, ______, ______
2. 4, 8, 12, 16, ______, ______, ______

Draw the next letter in this pattern.
3. A A A Z B B B Z A A A Z ______

Look at the word pattern below.
hat, coat, hat, coat, hat

4. What is the 1st word? ____________
5. What is the 2nd word? ____________
6. What would the 20th word in the pattern be? ____________

How did you get that answer? ______________________________________________________________________

Find the next three numbers in these patterns.
7. 1, 2, 4, 5, 7, 8, 10, ______, ______, ______
8. 0, 2, 4, 6, 8, 10, ______, ______, ______
9. 0, 1, 11, 12, 22, 23, ______, ______, ______

Which ones are true? Find 2 true sentences.
Fill in the circles for the true sentences.

10. □ 3 + (4 +6) is the same as (3 + 4) + 3.
□ 3 + (4 +6) is the same as (3 + 4) + 4.
□ 3 + (4 + 6) is the same as 3 + 10.
□ 64 + 12 is the same as 12 + 64.
Fill in the blanks with a 1 or a 0.

11. \(17 + \underline{\phantom{1}} = 17\)  
12. \(842 + \underline{\phantom{1}} = 843\)

13. \(\underline{\phantom{1}} \times 31 = 0\)  
14. \(14 \times \underline{\phantom{1}} = 14\)

Write <, >, or = in the \(\bigcirc\).

15. 82 \(\bigcirc\) 79  
16. 146 + 35 \(\bigcirc\) 35 + 146

17. 665 + 47 \(\bigcirc\) 675 + 37  
18. 1 \(\bigcirc\) 18 \(\times\) 0

Find the rule.

19. Look at the numbers in the table. If you know the number in the first column, how can you find the number in the second column? After you find the rule, fill in the rest of the table.

<table>
<thead>
<tr>
<th>3</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>12</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

What is the rule for the table?
__________________________________________________________________________________________
__________________________________________________________________________________________

20. Here is a different table with a different rule. Find the rule, then complete this table.

<table>
<thead>
<tr>
<th>2</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>9</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

What is the rule for the table?
__________________________________________________________________________________________
__________________________________________________________________________________________
Choose the best answer to each question.

1. Think about the number 423. Which digit is in the ones place?
   - A 5
   - B 4
   - C 3
   - D 2

2. Which number has an 8 in the thousands place?
   - A 18,923
   - B 81,923
   - C 10,823
   - D 10,083

3. Which choice shows five thousand, one hundred?
   - A 5,100
   - B 5,500
   - C 1,500
   - D 1,100

4. Look at all the numbers. Which number is the least?
   - A 24,400
   - B 28,400
   - C 24,499
   - D 22,999

5. All these word names look alike, but they are all different. Find the one that gives the word form of 723,044.
   - A seven hundred twenty-three and four hundred forty
   - B seven hundred twenty-three thousand, forty-four
   - C seven hundred twenty-three thousand, forty
   - D seven hundred twenty-three thousand, four hundred forty

The next three questions ask you to think about the sizes of different numbers.

6. Choose the number that is closest to 32.
   - A 10
   - B 20
   - C 30
   - D 40

7. Which number is closest to 3877?
   - A 300
   - B 500
   - C 400
   - D 700

8. One jar has 22 candies. The other has 17 candies. Which number is closest to how many candies there are altogether?
   - A 20
   - B 40
   - C 60
   - D 427

---

Even or Odd?

9. Which set shows an odd number of dots?
   - A
   - B
   - C
   - D

10. Draw a circle around four odd numbers.
   - A 3 4 5 6
   - B 5 6 7 8
   - C 1 3 5 7
   - D 1 4 6 9

11. Circle the numbers you say when you count by twos.
   - A 2 4 6 8
   - B 2 4 6 8
   - C 3 5 7 9
   - D 3 5 7 9

See how many of these questions about fractions you can answer.

12. Which set has \( \frac{1}{2} \) of the stars colored?
   - A
   - B
   - C
   - D

13. Color in \( \frac{1}{3} \) of this box with your pencil.
    Answers will vary

14. Now color in \( \frac{1}{2} \) of this box.
    Answers will vary

---

For the next two questions, you choose the problem.

15. Think about these fractions. Which one is greater than all the others?
   - A \( \frac{1}{2} \)
   - B \( \frac{1}{3} \)
   - C \( \frac{1}{4} \)
   - D \( \frac{1}{6} \)

16. Which problem shows another way to find the answer for \( 15 \times 3 = 45 \)?
   - A \( 15 \times 3 = 45 \)
   - B \( 5 \times 3 = 15 \)
   - C \( 15 \times 3 = 45 \)
   - D \( 16 \times 3 = 48 \)

17. Write a multiplication sentence for this picture.
   - A \( 3 \times 2 = 6 \) or \( 2 \times 3 = 6 \)

18. Imagine you are 9 years old and you are in 3rd grade. You have 3 sets of markers and each box has 16 markers in it. Which problem would tell you how many markers you have altogether?
   - A \( 9 \times 3 = \)
   - B \( 3 \times 3 = \)
   - C \( 16 \times 3 = \)
   - D \( 16 \times 9 = \)

19. Draw a picture to show \( 3 \times 3 = \)
   - A \( X X X \times X X X \)
   - B \( X X X \times X X X \)
   - C \( X X X \times X X X \)
   - D \( X X X \times X X X \)

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Choose the best answer to each question.

Choose the best answer to each question.
Draw a circle around the problem that has the same answer.

1. 8 + 6
   a. 6 + 10
   b. (10 + 4)
   c. 4 + 9

2. 7 + 8
   a. (7 + 7 + 1)
   b. 10 + 6
   c. 7 + 10 + 1

3. 5 + 6
   a. (5 + 5 + 1)
   b. 6 + 6 + 1
   c. 10 + 2

Add or subtract.

4. 9 + 4 = __13__
5. 13 + 7 = __20__

6. 16 - 7 = __9__
7. 13 - 5 = __8__

Fill in the missing fractions.
8. \(\frac{1}{2} + \frac{1}{4} = 1\)
9. \(\frac{1}{4} + \frac{1}{4} = \frac{1}{2}\)

Circle the answer.

10. Show all the ways you can think of to make 35 cents without using pennies. Circle the coins in each row to show your answers.

Other answers are possible.

Find the answers to these problems:

11. \(\frac{327}{49}\)
12. \(\frac{36}{96}\)
13. \(\frac{584}{144}\)
14. \(\frac{406}{182}\)

Show how much you know about multiplication.

15. \(8 \times 5 = \boxed{40}\)
16. \(3 \times 8 = \boxed{24}\)
17. \(6 \times 2 = \boxed{12}\)

Show how much you know about division.

18. Nina and three friends shared 12 apple slices.
   How many apple slices did they each eat? \(\boxed{3}\)

19. John, Matt, and Josh have 31 gumballs. They have agreed to share them evenly. If there are any left over they will give them to John’s little sister.
   How many gumballs will each boy get? \(\boxed{10}\)
   How many will John’s little sister get? \(\boxed{1}\)

20. Later the 3 boys find a package of 7 cookies in the kitchen. They agree to share them evenly again, and John’s little sister will get the leftovers again.
   How many cookies will each boy get? \(\boxed{2}\)
   How many cookies will John’s little sister get? \(\boxed{1}\)
Choose the best answer to each question.

Shapes have names like triangle, square, rectangle, or cylinder. How many of these shapes can you match with their names?

Circle the right word.
1. square, rectangle, triangle
2. square, hexagon, triangle
3. cylinder, cube, cone
4. cylinder, cube, cone

Which one does not belong?
5. Circle the shape that is not a parallelogram.
6. Circle the shape that is not a rectangle.
7. Circle the shape that is not a square.
8. Circle the shape that is not a triangle.

Look at these figures carefully. Draw rings around the two figures that are the same size and shape.
9. □ □ □ □ 10. □ □ □ □

11. If you fold this shape on the dotted line, the two sides are exactly the same. This line is called the line of symmetry.
   Draw a line on this triangle where you could fold it so the two halves are exactly the same.

   The number of square tiles that cover a floor is called the area of the floor.

   Can you find the area for these two floors?
12. The area of this floor is ___6___ square tiles.
13. The area of this floor is ___13___ square tiles.

14. If each side of this triangle is 2 inches, how many inches long are the sides of the triangle all together? The sides of this triangle all together are ___6___ inches long.

15. Sam drew a triangle on the grid above. Can you name the point? Circle the correct answer.
   E3  C2  D2  E2

Name  Date

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Choose the best answer to each question.
Choose the tool you would use to answer each question.
1. How long are you in school?
   ruler  thermometer  clock
2. How long is your leg?
   clock  scale  ruler
3. How hot is the soup?
   thermometer  clock  scale
4. How much does your backpack weigh?
   ruler  scale  clock
Which is which? Circle the best choice.
5. Which weighs about 1 pound?
   a loaf of bread  a car  a dog
6. Which is about 6 centimeters long?
   a loaf of bread  a car  an egg
7. Which is about 1 inch long?
   a paper clip  a baseball bat  a jump rope
Read each problem for clues. Then write the time to answer the question.
8. If you get up in the morning at 7:30 and get to school one hour later, what time would you get to school?
   I would get to school at ________ 8:30 ________
9. Imagine it is 6:45 in the evening and you are waiting for dinner. Two hours ago you had a snack. What time did you have your snack?
   I had my snack at ________ 4:45 ________

Circle the correct answer to each question about measuring.
10. How many days are in a week?
    7  12  52
11. How many inches equal 1 foot?
    12  24  36
12. How hot is a summer day?
    1° F  32° F  80°F
13. How many pennies equal 1 nickel?
    2  5  10
14. How many pennies equal 1 dollar?
    10  20  100

Fill in these blanks with the number that tells how many.
15. __________ inches = 1 foot
    12
16. __________ milliliters in 1 liter
    1000
17. __________ cents in 2 dimes
    20
18. __________ minutes equal 1 hour
    60
19. 1 yard equals __________ feet.
    3
20. __________ ounces = 1 pound
    16

Now we tell you the numbers. See if you can write the correct word in each blank.
21. There are 12 inches in 1 ________ foot ________
22. There are 100 ________ centimeters ________ in 1 meter.
23. It takes 4 ________ quarts ________ to make 1 gallon.
24. You need 10 ________ dimes ________ to make 1 dollar.
25. There are 12 months in 1 ________ year ________
26. __________ How many yards long is this tape? 3 yards

Name  Date

Grade 3
Choose the best answer to each question.

Continue the patterns.
1. 0, 10, 20, 30, 40, 50, 60
2. 4, 8, 12, 16, 20, 24, 28

Draw the next letter in this pattern.
3. A A A Z B B B Z A A Z _ B

Look at the word pattern below.
hat, coat, hat, coat

4. What is the 1st word? hat
5. What is the 2nd word? coat

6. What would the 20th word in the pattern be? coat

How did you get that answer? Even number words are coat.

Find the next three numbers in these patterns.
7. 1, 2, 4, 5, 7, 8, 9, 10, 11, 13, 14
8. 0, 2, 4, 6, 8, 10, 12, 14, 16
9. 0, 1, 11, 12, 22, 23, 33, 34, 44

Which ones are true? Find 2 true sentences.
Fill in the circles with the true sentences.
10. ○ 3 + (4 + 6) is the same as (3 + 4) + 3.
    ○ 3 + (4 + 6) is the same as (3 + 4) + 4.
    ○ 3 + (4 + 6) is the same as 3 + 10.
    ○ 64 + 12 is the same as 12 + 64.

Fill in the blanks with a 1 or a 0.
11. 17 + 0 = 17
12. 842 + 0 = 843
13. _ _ _ x 31 = 0
14. 14 x 1 = 14
15. 82 _ _ 79
16. 146 + 35 = 35 + 146
17. 665 + 47 _ _ 675 + 37
18. 1 _ _ 18 x 0

Find the rule.
19. Look at the numbers in the table. If you know the number in the first column, how can you find the number in the second column? After you find the rule, fill in the rest of the table.

   What is the rule for the table?
   Multiply by 2.

   3
   4
   10
   12
   20
   22
   30

20. Here is a different table with a different rule. Find the rule, then complete this table.

   What is the rule for the table?
   Add 2.

   2
   4
   8
   10
   12
   14