Grade 5 Chapter 4
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Teacher’s Guide to Using the
Chapter 4 Resource Masters

The Chapter 4 Resource Masters includes the core materials needed for Chapter 4. These materials include worksheets, extensions, and assessment options. The answers for these pages appear at the back of this booklet.

All of the materials found in this booklet are included for viewing and printing on the TeacherWorks Plus™ CD-ROM.

Chapter Resources

**Graphic Organizer** (page 1) This master is a tool designed to assist students with comprehension of grade-level concepts. While the content and layout of these tools vary, their goal is to assist students by providing a visual representation from which they can learn new concepts.

**Student-Built Glossary** (page 2) This master is a study tool that presents the key vocabulary terms from the chapter. You may suggest that students highlight or star the terms they do not understand. Give this list to students before beginning Lesson 4–1. Remind them to add these pages to their mathematics study notebooks.

**Anticipation Guide** (page 6) This master is a survey designed for use before beginning the chapter. You can use this survey to highlight what students may or may not know about the concepts in the chapter. There is space for recording how well students answer the questions before they complete the chapter. You may find it helpful to interview students a second time, after completing the chapter, to determine their progress.

**Game** (page 7) A game is provided to reinforce chapter concepts and may be used at appropriate times throughout the chapter.

Resources for Computational Lessons

**Reteach** Each lesson has an associated Reteach worksheet. In general, the Reteach worksheet focuses on the same lesson content but uses a different approach, learning style, or modality than that used in the Student Edition. The Reteach worksheet closes with computational practice of the concept.

**Skills Practice** The Skills Practice worksheet for each lesson focuses on the computational aspect of the lesson. The Skills Practice worksheet may be helpful in providing additional practice of the skill taught in the lesson.

**Homework Practice** The Homework Practice worksheet provides an opportunity for additional computational practice. The Homework Practice worksheet includes word problems that address the skill taught in the lesson.

**Problem-Solving Practice** The Problem-Solving Practice worksheet presents additional reinforcement in solving word problems that apply both the concepts of the lesson and some review concepts.

**Enrich** The Enrich worksheet presents activities that extend the concepts of the lesson. Some Enrich materials are designed to widen students’ perspectives on the mathematics they are learning. These worksheets are written for use with all levels of students.

Resources for Problem-Solving Strategy and Problem-Solving Investigation Lessons

In recognition of the importance of problem-solving strategies, worksheets for problem-solving lessons follow a slightly different format. For problem-solving lessons, a two-page Reteach worksheet offers a complete model for choosing a problem-solving strategy. For each Problem-Solving Strategy lesson, Reteach and Homework Practice worksheets offer reinforcement of the strategy taught in the Student Edition lesson. In contrast, the Problem-Solving
Investigation worksheets include a model strategy on the Reteach worksheets and provide problems requiring several alternate strategies on the Homework Practice and Skills Practice worksheets.

**Assessment Options** The assessment masters in the Chapter 4 Resource Masters offer a wide variety of assessment tools for monitoring progress as well as final assessment.

**Individual Progress Checklist** This checklist explains the chapter’s goals or objectives. Teachers can record whether a student’s mastery of each objective is beginning (B), developing (D), or mastered (M). The checklist includes space to record notes to parents as well as other pertinent observations.

**Chapter Diagnostic Assessment** This one-page test assesses students’ grasp of skills that are needed for success in the chapter.

**Chapter Pretest** This one-page quick check of the chapter’s concepts is useful for determining pacing. Performance on the pretest can help you determine which concepts can be covered quickly and which specific concepts may need additional time.

**Mid-Chapter Review** This one-page chapter test provides an option to assess the first half of the chapter. It includes both multiple-choice and free-response questions.

**Quizzes** Three free-response quizzes offer quick assessment opportunities at appropriate intervals in the chapter.

**Vocabulary Test** This one-page test focuses on chapter vocabulary. It is suitable for all students. It includes a list of vocabulary words and questions to assess students’ knowledge of the words.

**Oral Assessment** This two-page test consists of one page for teacher directions and questions and a second page for recording responses. Although this assessment is designed to be used with all students, the interview format focuses on assessing chapter content assimilated by ELL students.

**Chapter Project Rubric** This one-page rubric is designed for use in assessing the chapter project. You may want to distribute copies of the rubric when you assign the project and use the rubric to record each student’s chapter project score.

**Foldables Rubric** This one-page rubric is designed to assess the Foldables graphic organizer. The rubric is written to the students, telling them what you will be looking for as you evaluate their completed Foldables graphic organizer.

**Leveled Chapter Tests**
- **Form 1** assesses basic chapter concepts through multiple-choice questions.
- **Form 2A** is primarily for those who may have missed the Form 1 test. It may be used as a retest for students who received additional instruction following the Form 1 test.
- **Form 2B** is designed for students with a below-level command of the English language.
- **Form 2C** is a free-response test.
- **Form 2D** is written for students with a below-level command of the English language.
- **Form 3** is a free-response test.
- **Extended-Response Test** is an extended response test.

**Student Recording Sheet** This one-page recording sheet is for the standardized test in the Student Edition.

**Cumulative Standardized Test Practice** This three-page test, aimed at on-level students, offers multiple-choice questions and free-response questions.

**Answers**
The answers for the Anticipation Guide and Lesson Resources are provided as reduced pages with answers appearing in black. Full size line-up answer keys are provided for the Assessment Masters.
Use this graphic organizer to take notes on **Chapter 4: Fractions and Decimals**. Fill in the missing information.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>greatest common factor (GCF)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>equivalent fractions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>least common multiple (LCM)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>least common denominator (LCD)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ordered pair</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
This is an alphabetical list of new vocabulary terms you will learn in **Chapter 4: Fractions and Decimals**. As you study the chapter, complete each term’s definition or description. Remember to add the page number where you found the term. Add this page to your math study notebook to review vocabulary at the end of the chapter.

<table>
<thead>
<tr>
<th>Vocabulary Term</th>
<th>Found on Page</th>
<th>Definition/Description/Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>common factor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>common multiple</td>
<td></td>
<td></td>
</tr>
<tr>
<td>coordinate plane</td>
<td></td>
<td></td>
</tr>
<tr>
<td>denominator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>equivalent fractions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fraction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>greatest common factor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>least common denominator</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Student-Built Glossary (continued)

<table>
<thead>
<tr>
<th>Vocabulary Term</th>
<th>Found on Page</th>
<th>Definition/Description/Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>least common multiple</td>
<td></td>
<td></td>
</tr>
<tr>
<td>improper fraction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>mixed number</td>
<td></td>
<td></td>
</tr>
<tr>
<td>multiple</td>
<td></td>
<td></td>
</tr>
<tr>
<td>numerator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>proper fraction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>rational number</td>
<td></td>
<td></td>
</tr>
<tr>
<td>simplest form</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Dear Family,

Today my class started Chapter 4: Fractions and Decimals. I will be learning to find the greatest common factor of two or more numbers. I will learn to simplify fractions, to write fractions as decimals, and write decimals as fractions. I will also learn about the coordinate plane and how to determine ordered pairs and functions. Here are my vocabulary words and an activity that we can do together.

Sincerely, ______________________

**Key Vocabulary**

**equivalent fractions** Fractions that represent the same number. Example: \(\frac{3}{4} = \frac{6}{8} = \frac{9}{12}\).

**greatest common factor** The largest number that divides evenly into two or more numbers. Example: The greatest common factor of 12, 18, and 30 is 6.

**least common multiple** The smallest whole number greater than 0 that is a common multiple of each of two or more numbers. Example: The LCM of 2 and 3 is 6.

**mixed number** The sum of a whole number and a fraction.

**simplest form** A fraction in which the numerator and the denominator have no common factor greater than 1. Example: \(\frac{5}{12}\) is in simplest form because 5 and 12 have no common factor greater than 1.

**Activity**

Sort a bag of candy into color piles. For example, a bag of 20 candy hearts could be used. Record the correct fraction that matches each pile. For example: If you have 5 pinks, you would record \(\frac{5}{20}\). Record all colors into fraction form. After all fractions have been recorded, practice combining the fractions.

**Books to Read**

**Fraction Fun**
by David Adler

**The Doorbell Rang**
by Pat Hutchins

**Gator Pie**
by Louise Mathews
Estimada familia:

Hoy mi clase comenzó el Capítulo 4: Las fracciones y los decimales. Aprenderé a calcular el máximo común divisor de dos o más números. Aprenderé a reducir fracciones y a escribirlas como decimales y los decimales como fracciones.

Aprenderé también acerca del plano de coordenadas y cómo determinar pares ordenados y funciones. A continuación, están mis palabras del vocabulario y una actividad que podemos realizar juntos.

Sinceramente, _____________________

Vocabulario clave

**fracciones equivalentes** Fracciones que representan el mismo número.

**máximo común divisor** El mayor número que divide exactamente a dos o más números. Ejemplo: El máximo común divisor de 12, 18 y 30 es 6.

**mínimo común múltiplo** El menor número entero, mayor que 0, múltiplo común de dos o más números.

**número mixto** La suma de un número entero y una fracción.

**forma reducida** Fracción en que el numerador y el denominador no tienen un factor común mayor que 1.

**Actividad**

Clasifiquen una bolsa de caramelos en montones de colores. Por ejemplo, podrían usar una bolsa de corazones conversadores. Anoten la fracción correcta que concuerde con cada montón. Por ejemplo: si tienen 5 corazones rosados, anotarían $\frac{5}{20}$. Anoten todos los colores en forma de fracciones. Luego de anotar todas las fracciones, practiquen combinarlas.

**Libros recomendados**

*Fraction Fun* (Diversión con fracciones) de David Adler

*The Doorbell Rang* (Sonó el timbre) de Pat Hutchins

*Gator Pie* (Pastel de cocodrilo) de Louise Mathews
**Anticipation Guide**

*Fractions and Decimals*

**STEP 1 Before you begin Chapter 4**

- Read each statement.
- Decide whether you agree (A) or disagree (D) with the statement.
- Write A or D in the first column OR if you are not sure whether you agree or disagree, write NS (not sure).

<table>
<thead>
<tr>
<th>A, D, or NS</th>
<th>Statement</th>
<th>STEP 2 A or D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Equivalent fractions represent the same number.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>The greatest common factor is the smallest number that divides evenly into two or more numbers.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>The greatest common factor of 12, 18, and 30 is 6.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>The least common multiple is the smallest whole number greater than 0 that is a common multiple of each of two or more numbers.</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>A fraction in which the numerator and the denominator have no common factor greater than 1 is in simplest form.</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>$\frac{6}{12}$ is in simplest form.</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>In the fraction $\frac{2}{4}$, 2 is the numerator.</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>In the fraction $\frac{6}{12}$, 12 is the denominator.</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>$\frac{3}{4}$, $\frac{6}{8}$, and $\frac{9}{12}$ are equivalent fractions.</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>$\frac{4}{5}$ and $\frac{1}{2}$ are equivalent fractions.</td>
<td></td>
</tr>
</tbody>
</table>

**STEP 2 After you complete Chapter 4**

- Reread each statement and complete the last column by entering an A (agree) or a D (disagree).
- Did any of your opinions about the statements change from the first column?
- For those statements that you mark with a D, use a separate sheet of paper to explain why you disagree. Use examples, if possible.
Game

Change that Fraction

You will need:

• 2 pairs of number cubes
• paper and pencil

Give each player a pair of number cubes, paper, and pencil.

1. Have each player toss her or his number cubes and form a proper fraction with the numbers tossed on the cubes.

2. Find a common denominator between the fractions.

3. Convert his or her fraction to the common denominator.

4. Award the person with the larger numerator in the new fraction the number of points in their numerator. The first player to reach 150 points wins.
The GCF (greatest common factor) of two numbers is the greatest number that is a factor of both.

Find the GCF of 12 and 16.
Factors of 12: 1, 2, 3, 4, 6, 12
Factors of 16: 1, 2, 4, 8, 16
The GCF of 12 and 16 is 4.

Find the GCF of 20 and 24.
Factors of 20: 1, 2, 4, 5, 10, 20
Factors of 24: 1, 2, 3, 4, 6, 8, 12, and 24
The GCF of 20 and 24 is 4.

List all the factors of each number. Circle each set of common factors. Then identify the GCF.

1. 8: 
   32: 
   GCF:

2. 9: 
   15: 
   GCF:

3. 6: 
   42: 
   GCF:

Find the greatest common factor (GCF) of each set of numbers.

4. 28 and 40
5. 10 and 25
6. 18 and 24
7. 14 and 21
8. 35 and 42
9. 15, 25, 30
Skills Practice
Greatest Common Factor

1. Identify the common factors of each set of numbers.
   1. 36, 40
   2. 55, 77
   3. 8, 20, 36
   4. 15, 30, 40

2. Find the GCF of each set of numbers.
   5. 10 and 15
   6. 6 and 24
   7. 16 and 36
   8. 24 and 30
   9. 9 and 21
   10. 12 and 40
   11. 8 and 28
   12. 18 and 27
   13. 12 and 60
   14. 14 and 18
   15. 20 and 30
   16. 24 and 45
   17. 27 and 30
   18. 10 and 22
   19. 12 and 36
   20. 11 and 15
   21. 4, 12, and 30
   22. 12, 18, and 36
   23. 9, 16, and 25
   24. 9, 15, and 21
   25. 12, 15, and 21
   26. 9, 36, and 45

3. Solve.
   27. Thirty people at the nature center signed up for hiking, and 18 signed up for bird watching. They will be divided up into smaller groups. What is the greatest number of people that can be in each group and have all groups the same size?

   ________________

   28. Rosa found 8 different wildflowers and 20 different leaves on her hike. She plans to display them in 7 equal rows on a poster. What is the greatest number of flowers or leaves she can put in each row?

   ________________
Identify the common factors of each set of numbers.

1. 4, 6, 8, 32 ______
2. 3, 6, 12, 24 ______

Find the GCF of each set of numbers.

3. 5, 45 ______
4. 6, 42 ______
5. 12, 24, 60 ______
6. 4, 16, 32 ______
7. 15, 30, 60 ______
8. 9, 18, 27 ______

Solve.

9. Janice has three CD storage cases that can hold 18, 36, and 64 CDs. The cases have sections holding the same number of CDs. What is the greatest number of CDs in a section? _________________

10. Packages of cheese are sold in sealed containers that have sections holding the same number of slices. The containers can hold 6, 12, and 24 sections. What is the greatest number of sections in each container? _______________

Find each sum or difference. (Lesson 3–7)

11. 6.2 + 8.5 ______
12. 1.23 + 3 ______
13. 65.2 + 38.11 ______
14. 58.67 + 28.72 ______
15. 0.856 + 14 ______
16. 6.7 – 2.4 ______
17. 18.87 – 3.44 ______
18. 56 – 12.38 ______
19. 76 – 44.92 ______
20. 24.33 – 3.88 ______
Problem-Solving Practice

Greatest Common Factor

Solve.

1. Aaron played 24 softball games, and Marianne played 20 games. What is the greatest common factor of these numbers?

2. Ellen is making flower arrangements. She has 48 carnations and 40 roses. What is the greatest number of identical arrangements she can make using all the flowers?

3. Mrs. Ellis’ class contains 30 students. Mr. Hernandez’ class contains 25 students. They want equal-sized science groups, so that they can share supplies. What is the largest number of students that can be in a group?

4. Kendall is making holiday cookies. He made 48 sugar cookies and 36 chocolate chip cookies. What is the greatest number of bags of cookies he can make if each bag has the same amount of each kind of cookie?

5. John placed 128 beads in equal rows to make an art project. His friend Mark used 125 beads to make a similar project. Is it possible for their projects to contain the same number of beads in a row? Explain your answer.

6. Erin’s parents are starting an orchard. They bought 250 apple trees, 125 peach trees, and 175 pear trees. They want to plant the same number of trees in each row. They want only one type of tree in a row, and they want to plant all the trees. What is the greatest number of trees they can plant in a row?
Here is a different way to find the greatest common factor (GCF) of two numbers. This method works well for large numbers.

**Find the GCF of 848 and 1,325.**

**Step 1**  
Divide the smaller number into the larger.  
1 R477  
848)1,325  
 848  
  477

**Step 2**  
Divide the remainder into the divisor.  
Repeat this step until you get a remainder of 0.  
1 R371  
1 R06  
3 R53  
2 R0  
477)848  
 371)477  
106)371  
53)106  
  477  
  371  
  106  
  53  
  106  
  0

**Step 3**  
The last divisor is the GCF of the two original numbers.  
The GCF of 848 and 1,325 is 53.

Use the method above to find the GCF for each pair of numbers.

1. 187; 578  
2. 161; 943  
3. 215; 1,849  
4. 453; 484  
5. 432; 588  
6. 279; 403  
7. 1,325; 3,498  
8. 9,840; 1,751  
9. 3,484; 5,963  
10. 1,802; 106  
11. 45,787; 69,875  
12. 35,811; 102,070
### Make an Organized List

Otto plays a game. He spins two spinners and finds the sum of the numbers he lands on. What sums can Otto make?

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Understand</th>
<th><strong>What do you know?</strong> Spinner A is marked __________ and Spinner B is marked ______________.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>What do you need to find?</strong> What ______________ Otto can make.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 2</th>
<th>Plan</th>
<th><strong>Make a plan.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>You can make an organized list to solve the problem.</td>
</tr>
</tbody>
</table>

**Remember:** A sum is the answer to an addition problem.

<table>
<thead>
<tr>
<th>Step 3</th>
<th>Solve</th>
<th><strong>Carry out your plan</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Make a list of possible sums.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spinner A</td>
<td>Spinner B</td>
<td></td>
</tr>
<tr>
<td>+</td>
<td>=</td>
<td></td>
</tr>
<tr>
<td>+</td>
<td>=</td>
<td></td>
</tr>
<tr>
<td>+</td>
<td>=</td>
<td></td>
</tr>
<tr>
<td>+</td>
<td>=</td>
<td></td>
</tr>
</tbody>
</table>
Reteach

Problem-Solving Strategy (continued)

Step 3
Solve

\[
\begin{align*}
+ & = \\
+ & =
\end{align*}
\]

What sums can Otto make? _______________

Step 4
Check

Is the solution reasonable?
Reread the problem. Have you answered the question? How can you check your answer?
________________________________________________________________________
________________________________________________________________________

Solve using the **make an organized list strategy**.

1. A spinner has 3 equal sections that are white, yellow, and green. Another spinner has 3 equal sections that are blue, purple, and red. How many different combinations of colors are possible if you spin each spinner once?

2. Liz has 4 different rings and 3 different bracelets. If she wears one ring and one bracelet, how many different combinations can she make?


4–2  
Skills Practice  
Problem-Solving Strategy  

Make an organized list.  

Solve. Use the make an organized list strategy.  

1. Tom has a blue shirt, a red shirt, and a yellow shirt. He also has a pair of blue jeans, a pair of khaki pants, and a pair of corduroys. How many combinations of shirt and pants are possible?  

2. If you have ham, turkey, and roast beef, with wheat, white, and rye bread along with mayonnaise and mustard, how many sandwich combinations are possible? Hint: Choose only one meat, one bread, and one condiment.  

3. Allie has square beads that are red, blue, and green. She has round beads that are yellow and white. If she chooses one color from each shape of beads, how many combinations of colors can she have?  

4. Health Ms. Dawson eats a fruit and a vegetable for lunch each day. She selects an apple, a banana, an orange, or a pear for her fruit. She chooses carrot sticks, celery sticks, or green-pepper slices for her vegetable. How many combinations of 1 fruit and 1 vegetable can she make?  

Solve. Use any strategy.  

5. There are three girls, Jackie, Janey, and Janelle. How many different ways can the girls be lined up?  

6. Greta orders stickers that come with 12 sheets per package. Each sheet has 10 rows of stickers and each row has 8 stickers. How many stickers are in each package?
Make an organized list.

Solve. Use the make an organized list strategy.

1. Andy only knows three people in the study hall. Desks are arranged in pairs. How many possible ways can Andy sit next to someone he knows?

2. Russ has to go to the office, the school store, and the water fountain. How many different ways can Russ make the stops?

3. Linda has black pants and a pair of jeans, black and red shoes, a red striped jersey and a white jersey. How many outfits can she make if she always wears a jersey, pants, and shoes?

4. How many different ways you can write the product of the prime factors of 24?

Spiral Review

Identify the common factors of each set of numbers. (Lesson 4–1)

5. 5, 25, 35 _______ 6. 18, 32, 36, 44 _______

Find the GCF of each set of numbers.

7. 8, 72 _______ 8. 7, 56 _______
9. 3, 9, 12 _______ 10. 9, 18, 27_______
11. 4, 18, 24 _______
Enrich

LCD Fraction Riddles

A conjecture is an educated guess or an opinion. Mathematicians and scientists often make conjectures when they observe patterns in a collection of data. On this page, you will be asked to make a conjecture about polygons. A polygon is a closed two-dimensional figure with at least three sides.

Use a protractor to measure the angles of each polygon. Then find the sum of the measures. (Use the quadrilateral at the right as an example.)

1. 

2. 

3. 

4. 

5. Make a conjecture. How is the sum of the angle measures of a polygon related to the number of sides?

6. Test your conjecture. On a clean sheet of paper, use a straightedge to draw a hexagon. What do you guess is the sum of the angle measures? Measure each angle and find the sum. Was your conjecture true?
Reteach
Simplifying Fractions

When a fraction is in simplest form, 1 is the only common factor of its numerator and denominator.

Write in simplest form: \( \frac{16}{40} \)

**Step 1**
Find the GCF of the numerator and the denominator.

Factors of 16: 1, 2, 4, 8, 16
Factors of 40: 1, 2, 4, 5, 8, 10, 20, 40
GCF: 8

**Step 2**
Divide the numerator and the denominator by their GCF.

\[
\frac{16}{40} = \frac{16 \div 8}{40 \div 8} = \frac{2}{5}
\]

Check that \( \frac{2}{5} \) is in simplest form.

Factors of 2: 1, 2
Factors of 5: 1, 5

The only common factor of 2 and 5 is 1, so \( \frac{2}{5} \) is in simplest form.

Write each fraction in simplest form.

1. \( \frac{6}{10} \)
   - Factors of 6: □ □ □ □ □ □ □
   - Factors of 10: □ □ □ □ □ □ □
   - Simplest Form: □ □ □ □ □ □ □

2. \( \frac{9}{36} \)
   - Factors of 9: □ □ □ □ □ □ □
   - Factors of 36: □ □ □ □ □ □ □
   - Simplest Form: □ □ □ □ □ □ □

3. \( \frac{12}{30} \)
   - Factors of 12: □ □ □ □ □ □ □
   - Factors of 30: □ □ □ □ □ □ □
   - Simplest Form: □ □ □ □ □ □ □

4. \( \frac{20}{25} \)
   - Factors of 20: □ □ □ □ □ □ □
   - Factors of 25: □ □ □ □ □ □ □
   - Simplest Form: □ □ □ □ □ □ □

5. \( \frac{6}{18} \)
6. \( \frac{15}{40} \)
7. \( \frac{8}{30} \)
8. \( \frac{24}{27} \)
9. \( \frac{16}{28} \)
10. \( \frac{30}{48} \)
11. \( \frac{20}{24} \)
12. \( \frac{21}{28} \)
Skills Practice

Simplifying Fractions

Replace each \( x \) with a number so the fractions are equivalent.

1. \( \frac{1}{7} = \frac{x}{28} \)
   2. \( \frac{2}{3} = \frac{x}{20} \)
   3. \( \frac{2}{7} = \frac{x}{21} \)

4. \( \frac{6}{7} = \frac{x}{35} \)
   5. \( \frac{1}{10} = \frac{x}{30} \)
   6. \( \frac{6}{7} = \frac{x}{14} \)

7. \( \frac{3}{8} = \frac{9}{x} \)
   8. \( \frac{1}{3} = \frac{14}{x} \)
   9. \( \frac{4}{5} = \frac{20}{x} \)

10. \( \frac{2}{x} = \frac{14}{21} \)
   11. \( \frac{8}{x} = \frac{16}{18} \)
   12. \( \frac{1}{x} = \frac{4}{36} \)

Write each fraction in simplest form. If the fraction is already in simplest form, write simplest form.

13. \( \frac{16}{20} \)
   14. \( \frac{1}{2} \)
   15. \( \frac{3}{12} \)

16. \( \frac{2}{5} \)
   17. \( \frac{3}{7} \)
   18. \( \frac{28}{32} \)

19. \( \frac{40}{48} \)
   20. \( \frac{12}{18} \)
   21. \( \frac{5}{8} \)

22. \( \frac{15}{36} \)
   23. \( \frac{2}{3} \)
   24. \( \frac{3}{24} \)

Solve.

25. Of the 27 students in Jarrod’s class, 18 receive an allowance each week. What fraction of the students, in simplest form, receive an allowance?

26. Of the 18 students who receive an allowance, 14 do chores around the house. What fraction of these students, in simplest form, do chores around the house?
Replace each \( x \) with a number so the fractions are equivalent.

1. \( \frac{6}{16} = \frac{3}{x} \) \( \quad \)
2. \( \frac{5}{15} = \frac{1}{x} \) \( \quad \)
3. \( \frac{10}{35} = \frac{x}{7} \) \( \quad \)
4. \( \frac{20}{25} = \frac{4}{x} \) \( \quad \)

Write each fraction in simplest form. If the fraction is already in simplest form, write simplest form.

5. \( \frac{2}{4} \) \( \quad \)
6. \( \frac{1}{3} \) \( \quad \)
7. \( \frac{12}{16} \) \( \quad \)
8. \( \frac{9}{10} \) \( \quad \)
9. \( \frac{4}{15} \) \( \quad \)
10. \( \frac{2}{10} \) \( \quad \)

Solve these using the make an organized list strategy. (Lesson 4–2)

11. How many different arrangements are possible for the prime factors of 12? \( \quad \)
12. Mr. and Mrs. Garcia have three children: Maria, Paul, and Jon. They would like to have a family picture taken. If Mr. and Mrs. Garcia stand in the back, how many different ways can their children stand in front of them? \( \quad \)
13. Eric needs to go to the shoe store, the grocery store, and the library. How many different ways can Eric make the stops? \( \quad \)
Problem-Solving Practice
Simplifying Fractions

Solve.

1. Alex walked 4 of the 6 blocks to school. Write this fraction in its simplest form.

2. Jennifer played 3 of 9 innings in the ball game. Write this fraction in its simplest form.

3. Mali is baby-sitting her neighbor’s children for an hour a day. She earned $100 in 4 weeks. Use a simplified fraction to show how much of the total she earned in one week.

4. Casey fed 9 of the 24 animals at a veterinarian’s office. His brother Tim fed 6 of 16 animals at the animal shelter. Did the brothers feed an equivalent fraction of animals? Explain your answer.

5. Shelly washed 8 of 16 cars at the school car wash. Olivia washed 1 of the 2 cars her family owns. Both girls washed \(\frac{1}{2}\) of the cars being washed. Did they do the same amount of work? Explain your answer.

6. Sophia is going to plant part of a vegetable garden that was divided into 5 parts. She said that the fraction that shows the part she will plant cannot be simplified. How does she know that it cannot be simplified when she does not yet know how many parts she will plant?
Here is a set of mysteries that will help you sharpen your thinking skills. In each exercise, use the clues to discover the identity of the mystery fraction.

1. My numerator is 6 less than my denominator.
   I am equivalent to \( \frac{3}{4} \).
2. My denominator is 5 more than twice my numerator.
   I am equivalent to \( \frac{1}{3} \).
3. The GCF of my numerator and denominator is 3.
   I am equivalent to \( \frac{2}{5} \).
4. The GCF of my numerator and denominator is 5.
   I am equivalent to \( \frac{4}{6} \).
5. My numerator and denominator are prime numbers.
   My numerator is one less than my denominator.
6. My numerator is 2 less than my denominator.
   My numerator and denominator are prime numbers.
   The sum of my numerator and denominator is 24.
7. My numerator is divisible by 3.
   My denominator is divisible by 5.
   My denominator is 8 less than twice my numerator.
8. My numerator is divisible by 3.
   My denominator is divisible by 5.
   My denominator is 3 more than twice my numerator.
9. My numerator is a one-digit prime number.
   My denominator is a one-digit composite number.
   I am equivalent to \( \frac{8}{32} \).
10. My numerator is a prime number.
    The GCF of my numerator and denominator is 2.
    I am equivalent to \( \frac{1}{5} \).
11. **CHALLENGE** Make up your own mystery like the ones above. Be sure that there is only one solution. To check, have a classmate solve your mystery.
Mixed Numbers and Improper Fractions

A **mixed number** is made up of a whole number and a fraction. An **improper fraction** is a fraction in which the numerator is greater than or equal to the denominator.

**Write \(2\frac{2}{3}\) as an improper fraction.**

**Step 1**
Multiply the whole number by the denominator.

\[
2 \frac{2}{3} \rightarrow 2 \times 3 = 6
\]

**Step 2**
Add the numerator to the product.

\[
6 + 2 = 8
\]

**Step 3**
Write the sum over the denominator.

\[
2 \frac{2}{3} = \frac{8}{3}
\]

**Write \(\frac{13}{4}\) as a mixed number.**

**Step 1**
Divide the numerator by the denominator.

\[
\frac{13}{4} \rightarrow 3 \quad \text{with a remainder of} \quad 1
\]

**Step 2**
Write the quotient as the whole-number part of the mixed number.

\[
\frac{13}{4} \rightarrow 3 \frac{1}{4}
\]

**Step 3**
Write the remainder as the numerator of the fraction.

\[
\frac{13}{4} = 3 \frac{1}{4}
\]

**Write each mixed number as an improper fraction.**

1. \(2\frac{2}{7}\)  
2. \(5\frac{3}{4}\)  
3. \(6\frac{5}{8}\)

**Write each improper fraction as a mixed number.**

4. \(\frac{9}{8}\)  
5. \(\frac{7}{2}\)  
6. \(\frac{12}{5}\)
Skills Practice

Mixed Numbers and Improper Fractions

Write each mixed number as an improper fraction.

1. $2\frac{3}{4}$  
2. $5\frac{1}{6}$  
3. $8\frac{1}{2}$  
4. $3\frac{2}{3}$  
5. $7\frac{2}{5}$  
6. $1\frac{9}{10}$  
7. $4\frac{7}{8}$  
8. $6\frac{5}{7}$  
9. $1\frac{8}{9}$  
10. $3\frac{12}{17}$  
11. $2\frac{1}{10}$  
12. $5\frac{5}{13}$  
13. $2\frac{2}{7}$  
14. $5\frac{3}{4}$  
15. $6\frac{5}{8}$  
16. $3\frac{4}{10}$  
17. $9\frac{1}{3}$  
18. $4\frac{4}{5}$  
19. $9\frac{1}{2}$  
20. $4\frac{6}{9}$

Write each improper fraction as a mixed number or a whole number.

21. $\frac{18}{12}$  
22. $\frac{22}{3}$  
23. $\frac{27}{9}$  
24. $\frac{14}{4}$  
25. $\frac{28}{6}$  
26. $\frac{64}{8}$  
27. $\frac{13}{5}$  
28. $\frac{46}{8}$  
29. $\frac{21}{8}$  
30. $\frac{64}{35}$  
31. $\frac{19}{3}$  
32. $\frac{44}{8}$  
33. $\frac{10}{9}$  
34. $\frac{3}{1}$  
35. $\frac{4}{3}$  
36. $\frac{6}{5}$  
37. $\frac{7}{6}$  
38. $\frac{18}{4}$  
39. $\frac{20}{11}$  
40. $\frac{3}{2}$

Solve.

41. A shipment of boxes weighs 30 pounds. There are 8 boxes and each weighs the same number of pounds. How much does each box weigh?

42. Each box in another shipment weighs $3\frac{1}{6}$ pounds. There are 6 boxes in the shipment. What is the total weight of the shipment?
Write each mixed number as an improper fraction.

1. \(5 \frac{2}{3}\)  
2. \(6 \frac{1}{4}\)  
3. \(9 \frac{1}{3}\)  
4. \(5 \frac{4}{5}\)  
5. \(3 \frac{3}{4}\)

Write each improper fraction as a mixed number or a whole number.

6. \(\frac{16}{8}\)  
7. \(\frac{20}{5}\)  
8. \(\frac{5}{5}\)  
9. \(\frac{19}{6}\)  
10. \(\frac{27}{4}\)

Spiral Review

Replace each \(x\) with a number so the fractions are equivalent. (Lesson 4–3)

11. \(\frac{4}{12} = \frac{1}{x}\) \(\quad\) 12. \(\frac{9}{36} = \frac{3}{x}\)

13. \(\frac{8}{36} = \frac{x}{9}\) \(\quad\) 14. \(\frac{7}{14} = \frac{1}{x}\)

Write each fraction in simplest form. If the fraction is already in simplest form, write simplest form.

15. \(\frac{8}{12}\) \(\quad\) 16. \(\frac{2}{7}\)

17. \(\frac{7}{8}\) \(\quad\) 18. \(\frac{8}{38}\)
**4–4**

**Problem-Solving Practice**

*Mixed Numbers and Improper Fractions*

**Solve.**

1. During the holiday break, Anthony read one book, and half of another book. How many books did he read? Write the number as a mixed number.

2. Sam’s family ate 2 pizzas. Then they ate 5 of the 8 slices of another pizza. How many pizzas did his family eat? Write the number as an improper fraction.

3. Hans ran 3 miles on the track. He took a break, then ran another \(\frac{4}{5}\) mile. Write the number of miles Hans ran as an improper fraction.

4. Lindsey ran in a 10-kilometer race. This is equal to \(6\frac{2}{10}\) miles. Write the number of miles Lindsey ran as a mixed number in simplest form.

5. Keisha is running on an indoor track where 8 laps equals one mile. If she runs 19 laps, how many miles is this? Write your answer as a mixed number.

6. Doug found that it takes 20 minutes to do 8 math problems. If he has to do 28 problems, how long will it take him to do them?

7. April has 4 yards of fabric. Her aunt gave her \(\frac{2}{3}\) yard more fabric. How much fabric does she have in all? Write the answer as an improper fraction.

8. Austin bought 20 apples. How many dozen apples did he buy? Write the answer as a mixed number.
It is common to see mixed fractions in recipes. A recipe for a pizza crust may ask for \(1 \frac{1}{2}\) cups of flour. You could measure this amount in two ways. You could fill a one-cup measuring cup with flour and a one-half-cup measuring cup with flour or you could fill a half-cup measuring cup three times, because \(1 \frac{1}{2}\) is the same as \(\frac{3}{2}\).

In the following recipes, some mixed numbers have been changed to improper fractions and other fractions may not be written in simplest form. Rewrite each recipe as you would expect to find it in a cookbook.

<table>
<thead>
<tr>
<th>Quick Pizza Crust</th>
<th>Apple Crunch</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\frac{3}{2}) cups flour</td>
<td>(\frac{3}{2}) cups white sugar</td>
</tr>
<tr>
<td>(\frac{2}{4}) cup water</td>
<td>(\frac{3}{2}) cups brown sugar</td>
</tr>
<tr>
<td>(\frac{9}{4}) teaspoons yeast</td>
<td>(\frac{4}{2}) cups of flour</td>
</tr>
<tr>
<td>(\frac{2}{2}) teaspoon salt</td>
<td>(\frac{4}{2}) cups oatmeal</td>
</tr>
<tr>
<td>(\frac{4}{4}) teaspoon sugar</td>
<td>(\frac{8}{3}) sticks margarine</td>
</tr>
<tr>
<td>(\frac{8}{8}) tablespoon oil</td>
<td>(\frac{2}{2}) teaspoon salt</td>
</tr>
</tbody>
</table>
Reteach

Least Common Multiple

Find the least common multiple (LCM) of 12 and 18.
List the multiples of each number.

Multiples of 12: 12, 24, 36, 48, 60, 72, 84,…
Multiples of 18: 18, 36, 54,…

Name the least common multiple (LCM): 36

List the multiples of each number. Then find the least common
multiple (LCM) of each set of numbers.

1. 10 and 15

2. 14 and 21

3. 12 and 13

4. 15 and 25

5. 15 and 18

6. 9 and 21

7. 2 and 12

8. 4 and 9

9. 6 and 10

10. 3 and 5

11. 12 and 15

12. 12 and 20

13. 3, 6, and 8

14. 5, 6, and 10

Find the least common multiple (LCM) of each set of numbers.
Skills Practice

Least Common Multiple

Identify the first three common multiples of each set of numbers.

1. 2, 5
2. 1, 6
3. 2, 3, 4
4. 7, 14

Find the least common multiple (LCM) of the numbers.

5. 5 and 15
6. 2 and 9
7. 2 and 11
8. 6 and 9
9. 4 and 5
10. 8 and 12
11. 4 and 8
12. 10 and 25
13. 3 and 4
14. 2 and 3
15. 8 and 9
16. 4 and 10
17. 2, 4, and 16
18. 3, 5, and 6
19. 3, 6, and 8

Solve.

20. José and Sara are walking around the track at the same time. José walks one lap every 8 minutes. Sara walks a lap every 6 minutes. What is the least amount of time they would both have to walk for them to cross the starting point together?

21. Pamela and David walk on the same track. It takes Pamela 9 minutes and David 6 minutes to walk one lap. If they start walking at the same time, how many laps will each have walked when they cross the starting point together for the first time?
Identify the first three common multiples of each set of numbers.

1. 3, 15 ______
2. 2, 8, 12 ______
3. 6, 9, 10 ______
4. 3, 6, 18 ______

Find the LCM of each set of numbers.

5. 2, 5 ______
6. 6, 15 ______
7. 4, 16, 32 ______
8. 2, 16, 20 ______

Solve.

9. Find the two missing common multiples from the list of common multiples for 4 and 12.
   48, 60, ______, 84, ______, 108, 120

10. For the drama club picture, the students must line up in rows with the same number of students. Describe the arrangements for the least number of people needed to be able to line up in rows of 5 or 6.

Spiral Review

Write each mixed number as an improper fraction. (Lesson 4–4)

11. $7\frac{1}{3}$ ______
12. $9\frac{3}{5}$ ______

Write each improper fraction as a mixed number or a whole number.

13. $\frac{21}{8}$ ______
14. $\frac{30}{5}$ ______
Problem-Solving Practice

Least Common Multiple

Solve

1. List the first 10 multiples of 3 and 5 greater than zero.

   

   

What are the common multiples?

   

2. List the first 10 common multiples of 2 and 4 greater than zero.

   

   

4. Bonnie is baking a pie and a batch of cookies. She needs $\frac{3}{4}$ cup of flour for the cookies and $\frac{5}{6}$ cup of flour for the pie. Write the LCM of the denominators.

   

3. Noel started going to yoga class on November 3, and went every third day after that. Lana also started classes on November 3, and went every fourth day after that. In how many days will they be in class together again?

   

5. Since Carl has moved away for college, he calls his best friend every fifth day, his parents every third day, and his grandmother every fourth day. Carl made all three calls on October 8. In how many days will he make three calls again?

   

What will be the date?

6. Lora’s gymnastics class practices floor exercises every other day. The class practices on the balance beam every third day, and the uneven bars every fourth day. Today is March 10, and the class practiced all three events. How many more times, before June 1, will the class practice all three on the same day?
If someone asked you to name a fraction between $\frac{4}{7}$ and $\frac{6}{7}$, you would probably give the answer $\frac{5}{7}$ pretty quickly. But what if you were asked to name a fraction between $\frac{4}{7}$ and $\frac{5}{7}$? At the right, you can see how to approach the problem using “fraction sense.” So, one fraction between $\frac{4}{7}$ and $\frac{5}{7}$ is $\frac{9}{14}$.

Use your fraction sense to solve each problem.

1. Name a fraction between $\frac{1}{3}$ and $\frac{2}{3}$. ______
2. Name a fraction between $\frac{3}{5}$ and $\frac{4}{5}$. ______
3. Name five fractions between $\frac{1}{2}$ and 1. ______
4. Name five fractions between 0 and $\frac{1}{4}$. ______
5. Name a fraction between $\frac{1}{4}$ and $\frac{1}{2}$ whose denominator is 16. ______
6. Name a fraction between $\frac{2}{3}$ and $\frac{3}{4}$ whose denominator is 10. ______
7. Name a fraction between 0 and $\frac{1}{6}$ whose numerator is 1. ______
8. Name a fraction between 0 and $\frac{1}{10}$ whose numerator is not 1. ______
9. Name a fraction that is halfway between $\frac{2}{9}$ and $\frac{5}{9}$. ______
10. Name a fraction between $\frac{1}{4}$ and $\frac{3}{4}$ that is closer to $\frac{1}{4}$ than $\frac{3}{4}$. ______
11. Name a fraction between 0 and $\frac{1}{2}$ that is less than $\frac{3}{10}$. ______
12. Name a fraction between $\frac{1}{2}$ and 1 that is less than $\frac{3}{5}$. ______
13. Name a fraction between $\frac{1}{2}$ and $\frac{3}{4}$ that is greater than $\frac{4}{5}$. ______
14. How many fractions are there between $\frac{1}{4}$ and $\frac{1}{2}$? ______
Problem-Solving Investigation

Choose the Best Strategy

Saturday, the Stevensons went shopping and spent a total of $40 on meat for dinners for the week. They purchased chicken for $3 per pound and some hamburger for $2 per pound. They spent three times as much money on chicken as on hamburger. How many pounds of chicken and how many pounds of hamburger did the family purchase?

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Understand</th>
</tr>
</thead>
<tbody>
<tr>
<td>What do you know?</td>
<td>You know the Stevensons spent $40 on meat. You know chicken costs $3 per pound and hamburger costs $2 per pound. You also know the family spent three times as much on chicken as on hamburger.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 2</th>
<th>Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choose a strategy.</td>
<td></td>
</tr>
</tbody>
</table>

Will it help to make a table, list, or number line so you can see how numbers change?

You may need to guess and check a few times to find the information that you need. A table would help you compare the amount spent on chicken to the amount spent on hamburger.

<table>
<thead>
<tr>
<th>Step 3</th>
<th>Solve</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use a _____ for the number that’s missing.</td>
<td></td>
</tr>
</tbody>
</table>

$3 \times \text{____} + 2 \times \text{____} = 40.$

$($3 \times \text{____}$) + ($2 \times \text{____}$) = $40$

<table>
<thead>
<tr>
<th>Step 4</th>
<th>Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>$(3 \times 10) + (2 \times 5) = 40$</td>
<td></td>
</tr>
</tbody>
</table>

$30 + 10 = 40$
Use any strategy shown below to solve.

- Guess and check.  
- Make an organized list.  
- Make a table.

1. Marcie wants to sit by her three sisters at the school assembly. How many different ways can they sit together along one row?

2. A department store has the following options for jackets:

<table>
<thead>
<tr>
<th>Jacket</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>rain slicker</td>
<td>blue</td>
</tr>
<tr>
<td>windbreaker</td>
<td>black</td>
</tr>
<tr>
<td>spring jacket</td>
<td>green</td>
</tr>
<tr>
<td>jean jacket</td>
<td></td>
</tr>
</tbody>
</table>

How many combinations of style and color are possible?

3. Jennifer is taking a trip around the country. She wants to go to Oregon, Washington, and New Mexico. How many different ways can Jennifer take her trip?

4. Selena is making a pizza for dinner. She has mushrooms, onions, and pineapple to put on the pizza. How many different pizzas can Selena make with toppings?

5. Jenna is planning a birthday party for her brother. She needs to buy a gift, decorate the house, and make some punch. How many different ways can Jenna complete all of the tasks?
Choose any strategy shown below to solve.

- Guess and check.  
- Make an organized list.  
- Make a table.

1. The school basketball team scored enough points to win. They scored 10 points every 5 minutes. How many points did they score in 20 minutes?

2. Forty players tried out for the team. Half of them gave up after the first set of challenges. One-fourth of the remaining players lacked skills and quit. How many players were left?

3. Jerry made 42 baskets during the first season that he played. His team played 12 games. If he played in 2 games out of every 4 that the team played and he made an equal number of baskets each of these games, how many baskets did he make each game?

4. Patty’s goal was to make 40 baskets. She made 5 baskets in the first game she played, 5 baskets in the second game, and 10 baskets in the third game. What fraction of her goal did she make?

5. The coach gave each player points after each game for being a good sport. At the end of the season, the player with the most points gets a basketball to keep. Davina scored one point in the first game and one more each game than she had in the previous game for 5 games. Sally got 3 points each game for 4 games. Who had the most points?
Use any strategy shown below to solve.

- Guess and check.
- Make an organized list.
- Make a table.

1. Janet spent a total of $60 for summer clothes. At least 2 of the pairs of shorts she bought cost $10 each. Some of her T-shirts were purchased for $5 each. She also bought some sandals for $10. How many of each clothing item did Janet purchase?

2. Marge went on a trip to New York City and spent a total of $200 going to the theatre. She purchased 4 student tickets for Broadway plays that cost $25 each and five discount tickets. Find how much each discount ticket cost.

3. A radio station is giving every 3\textsuperscript{rd} caller a T-shirt and every 10\textsuperscript{th} caller a ceramic mug. Which caller will be the first to receive both prizes?

**Spiral Review**

Identify the first three common multiples of each set of numbers. (Lesson 4–5)

4. 2, 5 _____
5. 6, 9, 18 _____
6. 3, 6, 10 _____
7. 5, 7, 15 _____

Find the LCM of each set of numbers.

8. 8, 16 _____
9. 7, 10 _____
10. 6, 12, 24 _____
Enrich

Grid Pictures

You can write a decimal or a fraction for the shaded part of any 10-by-10 grid picture. Try to find a pattern in each grid to help you count the number of shaded squares. Write a decimal for the shaded part of each grid picture. Then write a fraction in simplest form that is equivalent to the decimal.

1. 

2. 

3. 

4. 

5. 

6. 

7. 

8. 

9. 

10. 

11. 

12. 

5MR2.6, 5SDAP1.2
Reteach

Comparing Fractions

To compare fractions, rewrite them with a common denominator. Then compare the numerators.

Compare: \( \frac{4}{9} \) \( \frac{5}{6} \)

**Step 1**
Find the LCD of 9 and 6.
- Multiples of 9: 9, 18, 27, 36
- Multiples of 6: 6, 12, 18
- LCD: 18

**Step 2**
Write equivalent fractions.
- \( \frac{4}{9} = \frac{4 \times 2}{9 \times 2} = \frac{8}{18} \)
- \( \frac{5}{6} = \frac{5 \times 3}{6 \times 3} = \frac{15}{18} \)

**Step 3**
Compare the numerators.
- 8 < 15
- Since \( \frac{8}{18} < \frac{15}{18} \), then \( \frac{4}{9} < \frac{5}{6} \).

Replace each \( \bigcirc \) with \( < \), \( > \), or \( = \) to make a true sentence.

1. \( \frac{3}{4} \bigcirc \frac{5}{6} \)
2. \( \frac{3}{8} \bigcirc \frac{1}{3} \)
3. \( \frac{1}{5} \bigcirc \frac{3}{10} \)
4. \( \frac{4}{5} \bigcirc \frac{2}{3} \)
5. \( \frac{1}{3} \bigcirc \frac{4}{21} \)
6. \( \frac{5}{8} \bigcirc \frac{11}{16} \)
Skills Practice
Comparing Fractions

Replace each \( \bigcirc \) with \( < \), \( > \), or \( = \) to make a true sentence.

1. \( \frac{3}{4} \bigcirc \frac{7}{12} \)
2. \( \frac{2}{5} \bigcirc \frac{3}{4} \)
3. \( \frac{1}{6} \bigcirc \frac{1}{3} \)
4. \( \frac{1}{2} \bigcirc \frac{7}{10} \)
5. \( \frac{15}{16} \bigcirc \frac{3}{8} \)
6. \( \frac{3}{8} \bigcirc \frac{5}{6} \)
7. \( \frac{7}{8} \bigcirc \frac{8}{9} \)
8. \( \frac{2}{10} \bigcirc \frac{1}{5} \)
9. \( \frac{11}{12} \bigcirc \frac{5}{8} \)
10. \( \frac{4}{5} \bigcirc \frac{17}{20} \)
11. \( \frac{1}{8} \bigcirc \frac{2}{5} \)
12. \( \frac{2}{3} \bigcirc \frac{4}{6} \)
13. \( \frac{1}{5} \bigcirc \frac{1}{4} \)
14. \( \frac{5}{8} \bigcirc \frac{3}{5} \)
15. \( \frac{1}{6} \bigcirc \frac{4}{18} \)
16. \( \frac{2}{5} \bigcirc \frac{3}{20} \)
17. \( \frac{1}{3} \bigcirc \frac{1}{9} \)
18. \( \frac{3}{8} \bigcirc \frac{3}{4} \)
19. \( \frac{7}{8} \bigcirc \frac{4}{5} \)
20. \( \frac{5}{9} \bigcirc \frac{5}{8} \)
21. \( \frac{5}{8} \bigcirc \frac{7}{10} \)

Solve.

22. Visitors to an art museum were asked to name a favorite type of art. Pottery was named by \( \frac{9}{40} \) of the visitors, painting was named by \( \frac{2}{5} \), and sculpture was named by \( \frac{3}{8} \). What was the favorite type of art of most visitors?
Replace each \( \bigcirc \) with <, >, or = to make each statement true.

1. \( \frac{1}{2} \bigcirc \frac{3}{5} \)
2. \( \frac{3}{4} \bigcirc \frac{7}{8} \)
3. \( \frac{7}{8} \bigcirc \frac{7}{9} \)
4. \( 5\frac{1}{3} \bigcirc 5\frac{7}{8} \)
5. \( 8\frac{1}{8} \bigcirc 8\frac{2}{3} \)

Solve.

6. Which fraction is the greatest?

\[
\frac{1}{5}, \frac{5}{8}, \frac{1}{4}, \frac{1}{2}
\]

7. Andrea is using three frames, each with a different width to frame her photographs. The sizes are \(8\frac{1}{2}, 8\frac{1}{3}, \) and \(8\frac{5}{6}\). She has decided to put the smallest in the center when she hangs them beside each other on the wall. What size frame will be in the center?

Spiral Review

Use any strategy shown below to solve. (Lesson 4–6)

- Make a table.
- Guess and check.
- Make an organized list.

8. For a yearbook picture, the 20 baseball team members must line up with an equal number of people in each row. Describe the possible arrangements in which the players could be lined up.

9. Mark needs to mow the grass, trim the hedges, and sweep the front steps before his mother gets home from work. How many different ways can Mark order these activities?
Solve.

1. During gym class, Alicia ran \( \frac{1}{2} \) mile and Nguyen ran \( \frac{2}{3} \) mile. Who ran farther?

2. Juanita practiced piano for \( \frac{1}{2} \) hour. Her brother, Miguel, then practiced for \( \frac{5}{6} \) hour. Who practiced less?

3. Lucy and Randall were supposed to spend 1 hour after school practicing their soccer skills. Lucy practiced for \( \frac{7}{8} \) hour and Randall practiced for \( \frac{4}{5} \) hour. Who practiced closer to a full hour?

4. Sasha, Tony, and Michael are reading the same book. Sasha has read \( \frac{3}{4} \) of the book, Tony has read \( \frac{3}{5} \), and Michael has read \( \frac{2}{3} \). Who has read the most? Who has read the least?

5. At Morris Elementary, there are 45 students in each grade, four through six. In the fourth grade, 19 participate in sports after school. Two out of every six fifth graders play sports after school. In the sixth-grade class, seven of every ten students are not playing sports. Which grade has the most students playing sports after school?

6. In the fourth-grade class at Baker Elementary, 9 students are left-handed. The fifth grade has 7 left-handed students and the sixth grade has 6. The number of students in the fourth grade is 3 times the number of left-handed students in the class. The sixth grade has 3 more students than the fourth grade, and the fifth grade has two fewer students than the sixth grade. Which grade has the greatest fraction of left-handed students?
Enrich

Use a Diagram

Draw a diagram to solve.

1. A window design is made of a rectangle divided by two diagonals. How many sections are there and what are their shapes?

2. Sandra draws a regular hexagon. She divides the hexagon into sections by drawing a line from one vertex of the hexagon to the opposite vertex. How many sections are there and what are their shapes?

3. Harold divides a triangle into sections by drawing a line from one vertex of the triangle to the center of the opposite line. How many sections are there and what are their shapes?

4. A tile is shaped like a hexagon. A design on the tile uses 3 lines to divide the hexagon into sections by connecting all the opposite vertices on the hexagon. How many sections are there and what are their shapes?

5. A student divides a pentagon into sections by drawing a line from one vertex to the center of the opposite line. How many sections are there and what are their shapes?
Reteach

Writing Decimals as Fractions

You can write a decimal as a fraction. Think of place value. Then simplify the fraction if necessary.

Write 0.12 as a fraction. Think: 12 hundredths
Write: \( \frac{12}{100} \)
Simplify: \( \frac{12}{100} = \frac{12 \div 4}{100 \div 4} = \frac{3}{25} \) So, 0.12 = \( \frac{3}{25} \).

Write 0.25 as a fraction. Think: 25 hundredths
Write: \( \frac{25}{100} \)
Simplify: \( \frac{25}{100} = \frac{25 \div 25}{100 \div 25} = \frac{1}{4} \)

Write each decimal as a fraction in simplest form.

1. 0.65
   Think: 65
   Write: \( \frac{65}{100} \)
   Simplify: \( \frac{65}{100} = \frac{65 \div 25}{100 \div 25} = \frac{6}{25} \)

2. 0.6
   Think: 6
   Write: \( \frac{6}{10} \)
   Simplify: \( \frac{6}{10} = \frac{6 \div 2}{10 \div 2} = \frac{3}{5} \)

3. 0.86
4. 0.57
5. 0.5
6. 0.68
7. 0.25
8. 0.15
9. 0.40
10. 0.9
11. 0.33
12. 0.10
13. 0.75
14. 0.98
15. 0.20
16. 0.50
17. 0.12
18. 0.78
19. 0.4
20. 0.70
21. 0.05
22. 0.67
23. 0.3
24. 0.11
Skills Practice

Writing Decimals as Fractions

Write each decimal as a fraction in simplest form.

1. 0.3  
2. 0.49  
3. 0.7  
4. 0.50  
5. 0.94  
6. 0.80  
7. 0.72  
8. 0.2  
9. 0.55  
10. 0.1  
11. 0.25  
12. 0.03  
13. 0.77  
14. 0.6  
15. 0.26  
16. 0.99  
17. 0.36  
18. 0.75  
19. 0.70  
20. 0.4

Write each decimal as a mixed number in simplest form.

21. 8.9  
22. 12.1  
23. 14.5  
24. 17.03  
25. 9.35  
26. 42.96  
27. 7.425  
28. 50.60  
29. 8.43  
30. 3.25  
31. 2.25  
32. 1.33  
33. 4.10  
34. 7.75  
35. 8.60  
36. 16.03

Solve.

37. The largest butterfly in the world is found in Papua, New Guinea. The female of the species weighs about 0.9 ounce. Use a fraction to write the female’s weight.

38. The shortest recorded fish is the dwarf goby found in the Indo-Pacific. The female of this species is about thirty-five hundredths inch long. Use the decimal to write the female’s length.
Homework Practice

Writing Decimals as Fractions

Write each decimal as a fraction or mixed number in simplest form.

1. 0.2 ______ 2. 6.12 ______

3. 0.375 ______ 4. 0.32 ______

5. 0.125 ______

6. The newspaper reported that it rained 2.20 inches last month. Express this amount as a mixed number in simplest form.

7. 6.3 ______ 8. 32.50 ______

9. 40.330 ______ 10. 24.500 ______

Spiral Review

Replace each \( \bigcirc \) with \(<\), \(>\), or \(=\) to make each statement true. (Lesson 4–7)

11. \( \frac{4}{9} \) \( \bigcirc \) \( \frac{1}{2} \)

12. \( \frac{3}{4} \) \( \bigcirc \) \( \frac{7}{9} \)

13. \( 6 \frac{1}{3} \) \( \bigcirc \) \( 6 \frac{4}{9} \)

14. \( 9 \frac{8}{9} \) \( \bigcirc \) \( 9 \frac{1}{4} \)
Problem-Solving Practice

Writing Decimals as Fractions

Solve.

1. One cup is equal to 0.5 pint. Write this decimal as a fraction in simplest form.

2. Aimee needs 0.25 cup of vegetable oil to make muffins. Write this decimal as a fraction in simplest form.

3. Trudy is making a picture frame and needs nails that measure 0.375 of an inch. At the hardware store, nails are measured in fractions of an inch: \( \frac{1}{8} \) inch, \( \frac{1}{4} \) inch, and \( \frac{3}{8} \) inch. Which of these nails should she buy?

4. At Richardson Elementary, 0.35 of the buses were late because of a snowstorm. Write the decimal as a fraction in simplest form.

5. Neil needs about 0.33 cup of sugar for his recipe. Which of these fractions is closest to the correct measure, \( \frac{1}{3} \), \( \frac{1}{4} \), or \( \frac{2}{3} \)?

6. A vitamin contains sixty-two thousandths gram of vitamin E and thirty-three thousandths gram of vitamin A. Does the vitamin contain at least twice the amount of vitamin E than vitamin A?

7. Three flowers have stem widths of 0.5 inch, 0.625 inch, and 0.3 inch. What is the measure of the flower with the greatest stem width? Write the answer as a fraction.
Enrich

Fractional Estimates

Often you only need to give a fractional estimate for a decimal. To make fractional estimates, it helps to become familiar with the fraction-decimal equivalents shown in the chart at the right. You also should be able to identify the fraction as an overestimate or underestimate. Here’s how.

The decimal 0.789 is a little less than 0.8, so it is a little less than \(\frac{4}{5}\). Write \(\frac{4}{5}\).

The decimal 1.13 is a little more than 1.125, so it is a little more than \(1\frac{1}{8}\). Write \(1\frac{1}{8}\).

Write a fractional estimate for each decimal. Be sure to identify your estimate as an overestimate or an underestimate.

1. 0.243
2. 0.509
3. 0.429
4. 0.741
5. 0.88
6. 0.63
7. 0.09
8. 0.57
9. 1.471
10. 2.76
11. 1.289
12. 5.218

13. The scale in the delicatessen shows 0.73 pound. Write a fractional estimate for this weight.

14. Darnell ordered a quarter pound of cheese. The scale shows 0.23 pound. Is this more or less than he ordered?

15. In a recent year, the precipitation of Sacramento, California, was 23.63 inches. Write a fractional estimate for this amount.

16. Charlotte used a calculator to figure out how many yards of ribbon she needed for a craft project. The display shows 2.53125. Write a fractional estimate for this length.
Reteach

Writing Fractions as Decimals

You can write a fraction as a decimal. Think of the fraction as a division problem.

Write \(\frac{3}{5}\) as a decimal. Think: 3 divided by 5

\[
\begin{align*}
0.6 \\
\text{Write: } 5\overline{3.0} \\
\text{So, } \frac{3}{5} = 0.6.
\end{align*}
\]

Write \(\frac{51}{4}\) as a decimal.

Think: 1 divided by 4

\[
\begin{align*}
0.25 \\
\text{Write: } 4\overline{1.0} \\
5 + \frac{1}{4} = 5 + 0.25 \\
\text{So, } \frac{51}{4} = 5.25.
\end{align*}
\]

Write each fraction as a decimal.

1. \(\frac{2}{25}\)  
   Think: 2 divided by ______ 
   Write: \(\overline{0.08}\) 

2. \(\frac{7}{10}\)  
   Think: ______ divided by ______ 
   Write: \(\overline{0.7}\) 

3. \(\frac{11}{25}\)  

4. \(\frac{31}{100}\)  

5. \(\frac{19}{20}\)  

6. \(\frac{3}{4}\)  

7. \(\frac{3}{10}\)  

8. \(\frac{29}{50}\)  

9. \(\frac{4}{5}\)  

10. \(\frac{7}{8}\)  

11. \(\frac{9}{10}\)  

12. \(\frac{4}{5}\)  

13. \(\frac{8}{10}\)  

14. \(\frac{9}{25}\)
Skills Practice

Writing Decimals as Fractions

Write each fraction as a decimal.

1. \( \frac{13}{20} \)  
2. \( \frac{3}{20} \)  
3. \( \frac{1}{2} \)  
4. \( \frac{4}{5} \)  
5. \( \frac{6}{12} \)  
6. \( \frac{1}{4} \)  
7. \( \frac{1}{20} \)  
8. \( \frac{1}{5} \)  
9. \( \frac{1}{25} \)  
10. \( \frac{9}{25} \)  
11. \( \frac{21}{25} \)  
12. \( \frac{3}{25} \)  
13. \( \frac{47}{50} \)  
14. \( \frac{49}{50} \)  
15. \( \frac{12}{25} \)  
16. \( \frac{19}{20} \)  
17. \( \frac{33}{50} \)  
18. \( \frac{11}{25} \)  
19. \( \frac{3}{10} \)  
20. \( \frac{1}{8} \)  
21. \( \frac{8}{25} \)  
22. \( \frac{1}{10} \)  
23. \( \frac{2}{5} \)  
24. \( \frac{9}{20} \)  
25. \( \frac{3}{16} \)  
26. \( \frac{7}{25} \)  
27. \( \frac{21}{50} \)  
28. \( \frac{89}{100} \)  
29. \( \frac{4}{25} \)  
30. \( \frac{3}{5} \)  
31. \( \frac{23}{25} \)  
32. \( \frac{17}{20} \)  
33. \( \frac{11}{100} \)  
34. \( \frac{7}{10} \)  
35. \( \frac{3}{8} \)  
36. \( \frac{3}{4} \)  
37. \( \frac{35}{8} \)  
38. \( 10 \frac{3}{50} \)  
39. \( 14 \frac{9}{10} \)  
40. \( 6 \frac{7}{20} \)

Solve.

41. A bread dough recipe calls for \( 4 \frac{1}{2} \) cups flour and \( \frac{3}{4} \) cup water. Write how much water is needed as a decimal.

   ________________________________

42. Casey had a 10-inch pencil. She sharpened 2 inches off. Write a decimal for how much pencil was shaved off.

   ________________________________
Write each fraction or mixed number as a decimal.

1. \( \frac{7}{8} \)  
2. \( \frac{3}{40} \)  
3. \( \frac{15}{200} \)  
4. \( \frac{29}{40} \)  
5. \( 3 \frac{3}{10} \)  
6. \( 2 \frac{13}{20} \)  
7. \( 3 \frac{1}{5} \)  
8. \( 9 \frac{9}{20} \)  
9. \( 12 \frac{1}{16} \)  
10. \( \frac{37}{200} \)  

11. A snake kept in a tank can grow up to 25\( \frac{9}{10} \) feet long. Express this length as a decimal.

---

Spiral Review

Write each decimal as a fraction in simplest form. (Lesson 4–8)

12. 0.28  
13. 0.3  
14. 0.875  
15. 0.020  

Write each decimal as a mixed number in simplest form.

16. 4.5  
17. 9.35  
18. 27.03  
19. 71.006
Problem-Solving Practice

Writing Fractions as Decimals

Solve.

1. One cup is equal to \( \frac{1}{2} \) pint. Write this fraction as a decimal in simplest form.

2. Carla needs \( \frac{3}{4} \) cup of canola oil to make tortillas. Write this fraction as a decimal.

3. Hugo is making a picture frame and needs screws that measure \( \frac{1}{4} \) of an inch. At the hardware store, screws are measured as 0.25, 0.75, and 0.33 inch. Which of these screws should he buy?

4. At Cromwell Elementary, 8 out of 9 of the buses were late because of a snowstorm. Write the number of late buses as a fraction and as a decimal.

5. Ned needs several pieces of wood measuring 0.33 feet. The lumber store will cut pieces only in increments of \( \frac{1}{4} \) feet: \( \frac{1}{4} \) feet, \( \frac{1}{2} \) feet, \( \frac{3}{4} \) feet, and so on. Ned agrees to have the lumber store cut the pieces, but he will have to trim some off once he gets home. He wants to trim the least amount off each piece. Which measurement should the lumber store use to cut the pieces?

6. Out of 1,000 grains of sand on a beach, Kathy estimates that 40 grains are black and 760 grains are beige. Write the fraction of beige grains of sand as a decimal.
Enrich

Tagging Along

Which of $\frac{2}{3}$, $\frac{3}{4}$, $\frac{4}{5}$, and $\frac{9}{10}$ belongs in the “tag” on the number line at the right? The tag is to the right of 0.75, so the fraction must be greater than 0.75.
Express each fraction as a decimal.

$\frac{2}{3} = 0.6$, $\frac{3}{4} = 0.75$, $\frac{4}{5} = 0.8$, $\frac{9}{10} = 0.9$

Only 0.8 and 0.9 are greater than 0.75, and 0.9 is much closer to 1 than to 0.75. Choose 0.8, which is equal to $\frac{4}{5}$.

On each number line, fill in the tags using the given fractions.

1. $\frac{3}{8}$, $\frac{1}{2}$, $\frac{2}{3}$, $\frac{1}{9}$, $\frac{7}{8}$

2. $\frac{4}{3}$, $\frac{3}{4}$, $\frac{6}{5}$, $\frac{5}{8}$, $\frac{15}{16}$

3. $\frac{7}{4}$, $\frac{6}{5}$, $\frac{15}{8}$, $\frac{3}{2}$, $\frac{4}{3}$

4. $\frac{9}{5}$, $\frac{7}{3}$, $\frac{8}{5}$, $\frac{13}{6}$, $\frac{8}{4}$

5. Write a fraction in simplest form for each tag on this number line. Use only the denominators 2, 3, 4, 5, 8, and 10. Express numbers greater than 1 as improper fractions.
Algebra: Ordered Pairs and Functions

You can find points on a coordinate plane by using ordered pairs. An example of an ordered pair is (2, 5).

The first number is the $x$-coordinate and corresponds to the $x$-axis. The second number is the $y$-coordinate and corresponds to the $y$-axis.

Name the ordered pair for each point.

1. $A$ __________

2. $B$ __________

3. $C$ __________

Name the point for each ordered pair.

4. $(1, 1)$ __________

5. $(6, 0)$ __________

6. $(3, 6)$ __________
Name the ordered pair for each point.

1. A _________
2. B _________
3. C _________
4. D _________
5. E _________
6. F _________

Name the point for each ordered pair.

7. (6, 3) _________
8. (6, 6) _________
9. (4, 4) _________
10. (2, 4) _________
11. (1, 7) _________
12. (6, 2) _________

For Exercises 13–16, use the map of the city square at the right.

13. What is located at (3, 6)?
   ______________________________________

14. Write the ordered pair for the bookstore.
   ______________________________________

15. If the y-coordinate of the grocery store was moved up 4 units, what would be the ordered pair of the grocery store?
   ______________________________________

16. Suppose point (4, 2) was moved 2 units to the left and moved 3 units up. Write the new ordered pair.
   ______________________________________
Homework Practice

Algebra: Ordered Pairs and Functions

Use the coordinate plane at the right to name the ordered pair for each point.

1. P _______  
   2. B _______  
   3. S _______  
   4. T _______  
   5. J _______

Graph and label each point on a coordinate plane.

6. M (5, 2)  
   7. N \( \left( \frac{1}{2}, 4 \right) \)  
   8. P (5, 2.5)  
   9. Q \( \left( \frac{3}{4}, 2 \right) \)  
10. T \( \left( 0, \frac{1}{4} \right) \)  

Spiral Review

Write each fraction or mixed number as a decimal. (Lesson 4–9)

1. \( \frac{13}{25} \) _______  
   2. \( \frac{81}{200} \) _______  
3. \( \frac{5}{8} \) _______  
   4. \( \frac{6}{50} \) _______  
5. \( \frac{3}{40} \) _______  
   6. \( \frac{18}{25} \) _______  
7. \( \frac{3}{4} \) _______  
   8. \( \frac{5}{8} \) _______  
9. \( \frac{41}{50} \) _______  
10. \( \frac{3}{10} \) _______
Problem-Solving Practice
Algebra: Ordered Pairs and Functions

For Exercises 1–5, use the map of the zoo below to solve.

1. What is located at (5, 5)? (6, 8)?

2. Write the ordered pair for the aquarium.

3. Write the ordered pair for the monkeys.

4. Suppose point (4, 1) was moved 2 units to the left and 6 units up. Write the new ordered pair.

5. The zookeeper would like to include gorillas in the zoo. Would the ordered pair (7, 3) be a good location for the gorillas? Explain.

6. Create a map of an amusement park. Include the ordered pairs for the location of 5 rides.
Investigating Coordinate Grids

You can use coordinate grids to display sets of ordered pairs. You can also find new ordered pairs by looking at the line that the plotted ordered pairs make.

The table below lists the cost of tickets to a play. The data from the table are plotted on the grid.

<table>
<thead>
<tr>
<th>Number of Tickets</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>$10.00</td>
</tr>
<tr>
<td>4</td>
<td>$20.00</td>
</tr>
<tr>
<td>6</td>
<td>$30.00</td>
</tr>
<tr>
<td>8</td>
<td>$40.00</td>
</tr>
</tbody>
</table>

The table shows the cost of 2, 4, 6, and 8 tickets. To find the cost of 5 tickets, you can use the grid to find the ordered pair that fits the table. Start at the origin and move to 5 on the x-axis. This is the x-coordinate. Move up until you meet the line. Then follow across to the left to the y-axis to find the corresponding y-coordinate. The value is 25. The ordered pair is (5, 25). This ordered pair means 5 tickets cost $25.

**EXERCISES** Use the data plotted on the coordinate grid to answer the questions.

<table>
<thead>
<tr>
<th>Time (in hours)</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>240</td>
</tr>
<tr>
<td>3</td>
<td>360</td>
</tr>
<tr>
<td>5</td>
<td>600</td>
</tr>
<tr>
<td>8</td>
<td>960</td>
</tr>
</tbody>
</table>

1. How many miles did the airplane travel in 1 hour? ______
2. How many miles did the airplane travel in 2 hours? ______
3. How many miles did the airplane travel in 5 hours? ______
4. How long did it take the airplane to travel 720 miles? ______
### Individual Progress Checklist

<table>
<thead>
<tr>
<th>B</th>
<th>D</th>
<th>M</th>
<th>Goal</th>
<th>Progress</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td>Find the greatest common factor and least common multiple of two or more numbers.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Express fractions in simplest form.</td>
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<td></td>
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<td></td>
<td>Write mixed numbers as improper fractions.</td>
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<td></td>
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<td></td>
<td>Compare fractions.</td>
<td></td>
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<td></td>
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<td></td>
<td>Write decimals as fractions and fractions as decimals.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Use ordered pairs to locate points and organize data.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Solve problems by making an organized list.</td>
<td></td>
</tr>
</tbody>
</table>

### Notes

__________________________________________________________________
__________________________________________________________________
__________________________________________________________________
__________________________________________________________________
__________________________________________________________________
__________________________________________________________________
Tell whether each number is divisible by 2, 3, 4, 5, 6, 9, 10, or none of the above.

1. 77
2. 81
3. 45
4. 12
5. Is it possible to divide 36 marbles evenly among 6 players? Explain.

Find the prime factorization of each number.

6. 150
7. 80
8. 140
9. 90
10. Amy read 32 pages in one day. Find the prime factorization for that number.

Write each decimal in standard form.

11. six and two tenths
12. sixty-eight hundredths
13. nine tenths
14. fifty-eight thousandths
Chapter Pretest

Find the GCF of each set of numbers.

1. $36, 64 = \quad 2. 15, 45, 75 = \quad 3. 18, 12, 3 =$

Write the fraction in its simplest form.

4. $\frac{35}{70} = \quad 5. \frac{18}{27} =$

Write each mixed number as an improper fraction.

6. $6 \frac{2}{5} = \quad 7. 7 \frac{3}{4} =$

Find the LCM of each set of numbers.

8. $14, 7 \quad 9. 3, 6, 15$

Write each decimal as a fraction or mixed number in simplest form.

10. 3.875
11. 5.425

Use the coordinate plane to name the ordered pair for each point.

12. F
13. A
14. C
Identify the common factors of each set of numbers.

1. 4, 16, 40, 44
2. 7, 14, 21, 49

Find the GCF of each set of numbers.

3. 6, 36
4. 12, 24, 36
5. 9, 18, 27
6. 40, 50, 60

Replace each X with a number so the fractions are equivalent.

7. \( \frac{4}{8} = \frac{1}{x} \)
8. \( \frac{15}{25} = \frac{3}{x} \)
9. \( \frac{42}{49} = \frac{x}{7} \)

Write each fraction in simplest form. If the fraction is already in simplest form, write simplest form.

10. \( \frac{8}{16} \)
11. \( \frac{1}{2} \)
12. \( \frac{4}{16} \)
13. \( \frac{7}{21} \)

Solve using the make an organized list strategy.

14. Courtney needs to go to the library, the doctor’s office, and her friend’s house. How many different ways can she make the stops?
Write each mixed number as an improper fraction.
1. $3\frac{3}{7}$
2. $5\frac{8}{9}$

Write each improper fraction as a mixed number or a whole number.
3. $\frac{17}{6}$
4. $\frac{33}{8}$

Identify the first three common multiples of each set of numbers.
5. 6, 12
6. 4, 16, 24

Find the LCM of each set of numbers.
7. 7, 14
8. 3, 15, 35

Solve.
9. Find the three missing common multiples from the list of common multiples for 3 and 9. 9, 18, __, 36, __, 54, __
10. Alison visits her grandparents every 3 months. Her friend Marcie visits her grandparents every 5 months. If Alison visits her grandparents at the same time Marcie visits her grandparents, how many months will it be before they visit their grandparents at the same time again?
Quiz 3  (Lessons 4–7 through 4–10)

Replace each  with <, >, or = to make a true sentence.

1. \( \frac{3}{4} \)  \( \bigcirc \) \( \frac{8}{12} \)
2. \( 1 \frac{7}{8} \)  \( \bigcirc \) \( \frac{3}{4} \)
3. \( \frac{2}{5} \)  \( \bigcirc \) \( \frac{6}{7} \)

Write each decimal as a fraction or mixed number in simplest form.

4. 0.05
5. 0.8
6. 24.66
7. 5.10

Write each fraction or mixed number as a decimal.

8. \( 12 \frac{1}{2} \)
9. \( \frac{11}{4} \)
10. \( \frac{32}{1,000} \)

Graph and label each point on a coordinate plane.

11. A (1, 3)
12. B (2.25, 1.5)
13. C (3 \( \frac{1}{3} \), 2)
1. What fraction is equivalent to $\frac{1}{2}$?
   A. $\frac{5}{10}$  B. $\frac{1}{3}$  C. $\frac{2}{6}$  D. $\frac{7}{10}$

2. What fraction is in simplest form?
   F. $\frac{5}{15}$  G. $\frac{4}{12}$  H. $\frac{8}{10}$  J. $\frac{7}{10}$

3. What are the common factors for the set of numbers below? 12, 16, 24
   A. 1, 2, 4  B. 1, 3, 8  C. 2, 8, 6  D. 2, 3, 4, 6

4. What is the greatest common factor of 9 and 81?
   F. 50  G. 3, 9  H. 2, 6  J. 9

5. Marty has 24 cherries and 18 grapes. If Marty gives each friend an equal number of each type of fruit, what is the greatest number of friends with whom he can share his fruit?
   A. 12  B. 6  C. 3  D. 2

6. What are common factors?

7. Melissa, Marianne, and Melinda all call each other every day after school. List all the possible orders in which the girls can telephone each other.

8. What is the multiple of a number?

9. What is a mixed number? Give an example.
Vocabulary Test

Match each word to its definition. Write your answers on the lines provided.

<table>
<thead>
<tr>
<th></th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. equivalent fractions</td>
<td>A. A fraction in which the numerator and the denominator have no common factor greater than 1.</td>
</tr>
<tr>
<td>2. greatest common factor</td>
<td>B. A number that represents part of a whole or part of a set.</td>
</tr>
<tr>
<td>3. least common multiple</td>
<td>C. The number above the bar in a fraction; the part of the fraction that tells how many of the equal parts are being used.</td>
</tr>
<tr>
<td>4. simplest form</td>
<td>D. Fractions that represent the same number.</td>
</tr>
<tr>
<td>5. fraction</td>
<td>E. The largest number that divides evenly into two or more numbers.</td>
</tr>
<tr>
<td>6. numerator</td>
<td>F. The smallest whole number greater than 0 that is a common multiple of each of two or more numbers.</td>
</tr>
<tr>
<td>7. denominator</td>
<td>G. The bottom number in a fraction.</td>
</tr>
<tr>
<td>8. rational number</td>
<td>H. The sum of a whole number and a fraction.</td>
</tr>
<tr>
<td>9. mixed number</td>
<td>I. The numerator is greater than or equal to the denominator.</td>
</tr>
<tr>
<td>10. improper fraction</td>
<td>J. Any number that can be written as a fraction.</td>
</tr>
</tbody>
</table>
Draw a picture of a square on the board. Divide the square into four equal parts, shading in one section. Read each question aloud to the student. Then write the student’s answers on the lines below the question.

1. How many parts are shaded in?

________________________________________________________

2. What is the fraction that represents the amount of parts shaded in?

________________________________________________________

Shade in another section.

3. How many parts are shaded in?

________________________________________________________

4. What is the fraction that represents the amount of parts shaded in?

________________________________________________________

5. Tell how you got your answer.

________________________________________________________
6. Mario read $\frac{4}{8}$ of his summer reading book. What other students(s) read the same amount?

7. Who read the most of their book?

8. Tell how you got your answer.

9. What 2 students in the chart read the same amount?

10. Tell how you got your answer.

11. Who read the least amount of their book?

12. Tell how you got your answer.
# Chapter Project Rubric

<table>
<thead>
<tr>
<th>Score</th>
<th>Explanation</th>
</tr>
</thead>
</table>
| 3     | Student successfully completed the chapter project.  
       | Student demonstrated appropriate use of chapter information in completing the chapter project. |
| 2     | Student completed the chapter project with partial success.  
       | Student partially demonstrated appropriate use of chapter information in completing the chapter project. |
| 1     | Student did not complete the chapter project or completed it with little success.  
       | Student demonstrated very little appropriate use of chapter information in completing the chapter project. |
| 0     | Student did not complete the chapter project.  
       | Student demonstrated inappropriate use of chapter information in completing the chapter project. |
## Foldables Rubric

### Fractions and Decimals

**Shutter Fold Foldable**

<table>
<thead>
<tr>
<th>Score</th>
<th>Explanation</th>
</tr>
</thead>
</table>
| **3** | Student properly assembled Foldables graphic organizer according to instructions.  
Student recorded information related to the chapter in the manner directed by the Foldables graphic organizer.  
Student used the Foldables graphic organizer as a study guide and organizational tool. |
| **2** | Student exhibited partial understanding of proper Foldables graphic organizer assembly.  
Student recorded most but not all information related to the chapter in the manner directed by the Foldables graphic organizer.  
Student demonstrated partial use of the Foldables graphic organizer as a study guide and organizational tool. |
| **1** | Student showed little understanding of proper Foldables graphic organizer assembly.  
Student recorded only some information related to the chapter in the manner directed by the Foldables graphic organizer.  
Student demonstrated little use of the Foldables graphic organizer as a study guide and organizational tool. |
| **0** | Student did not assemble Foldables graphic organizer according to instructions.  
Student recorded little or no information related to the chapter in the manner directed by the Foldables graphic organizer.  
Student did not use the Foldables graphic organizer as a study guide and organizational tool. |
Chapter Test, Form 1

Read each question carefully. Write your answer on the line provided.

Find the greatest common factor (GCF) of each set of numbers.

1. 6, 15
   A. 2   B. 3   C. 5   D. 7
   1. _____________

2. 16, 24
   F. 3   G. 4   H. 6   J. 8
   2. _____________

Express each fraction in simplest form. If the fraction is already in simplest form, choose simplest form.

3. \(\frac{4}{16}\)
   A. \(\frac{2}{8}\)   B. \(\frac{1}{4}\)   C. \(\frac{1}{8}\)   D. simplest form
   3. _____________

4. \(\frac{6}{26}\)
   F. \(\frac{3}{13}\)   G. \(\frac{1}{4}\)   H. \(\frac{6}{13}\)   J. simplest form
   4. _____________

Replace x with a number so that the fractions are equivalent.

5. \(\frac{4}{5} = \frac{x}{15}\)
   A. 10   B. 12   C. 8   D. 2
   5. _____________
Express each improper fraction as a whole number or mixed number in simplest form.

6. \( \frac{68}{9} \)
   F. \( 6 \frac{8}{9} \)  
   G. \( 7 \frac{1}{3} \)  
   H. \( 7 \frac{5}{9} \)  
   J. \( 8 \frac{1}{9} \)  
   6. ____________

7. \( \frac{42}{7} \)
   A. \( 6 \frac{5}{6} \)  
   B. 6  
   C. 7  
   D. 35  
   7. ____________

Find the least common multiple (LCM) of each set of numbers.

8. 5, 6
   F. 24  
   G. 30  
   H. 32  
   J. 60  
   8. ____________

9. 3, 6, 8
   A. 3  
   B. 6  
   C. 17  
   D. 24  
   9. ____________

Use the number line for problems 10 and 11.

10. What is the value of Point G on the number line?
   F. \( 2 \frac{1}{5} \)  
   G. \( \frac{12}{5} \)  
   H. 2.2  
   J. \( \frac{23}{4} \)  
   10. ____________

11. What is the value of Point H on the number line?
   A. 0.06  
   B. 0.35  
   C. \( \frac{3}{5} \)  
   D. \( \frac{1}{2} \)  
   11. ____________

Replace \( \bigcirc \) with <, >, or = to make a true statement.

12. 0.07 \( \bigcirc \) \( \frac{7}{10} \)
   F. <  
   G. >  
   H. =  
   J. not enough information  
   12. ____________
Chapter Test, Form 2A

Read each question carefully. Write your answer on the line provided.

Find the greatest common factor (GCF) of each set of numbers.

1. 8, 12
   A. 4   B. 8   C. 6   D. 12
   1. _____________

2. 18, 27
   F. 3   G. 6   H. 9   J. 36
   2. _____________

Express each fraction in simplest form. If the fraction is already in simplest form, choose simplest form.

3. \( \frac{3}{24} \)
   A. \( \frac{2}{8} \)   B. \( \frac{1}{4} \)   C. \( \frac{1}{8} \)   D. simplest form
   3. _____________

4. \( \frac{6}{29} \)
   F. \( \frac{3}{13} \)   G. \( \frac{1}{5} \)   H. \( \frac{3}{29} \)   J. simplest form
   4. _____________

Replace \( x \) with a number so that the fractions are equivalent.

5. \( \frac{4}{6} = \frac{x}{30} \)
   A. 9   B. 20   C. 5   D. 2
   5. _____________

Express each improper fraction as a whole number or mixed number in simplest form.

6. \( \frac{53}{7} \)
   F. \( 6 \frac{4}{7} \)   G. \( 7 \frac{1}{2} \)   H. \( 7 \frac{4}{7} \)   J. \( 7 \frac{5}{7} \)
   6. _____________

7. \( \frac{36}{6} \)
   A. 5   B. \( 5 \frac{5}{6} \)   C. 6   D. 30
   7. _____________
Find the least common multiple (LCM) of each set of numbers.

8. 12, 18  
   F. 28  
   G. 36  
   H. 60  
   J. 72  

9. 4, 5, 6  
   A. 20  
   B. 30  
   C. 60  
   D. 120

Use the number line for problems 10 and 11.

10. What is the value of Point Z on the number line?
    F. 2 \frac{2}{5}  
    G. \frac{9}{4}  
    H. 2.2  
    J. \frac{23}{4}  

11. What is the value of Point W on the number line?
    A. 0.06  
    B. 0.35  
    C. \frac{3}{5}  
    D. \frac{1}{2}

Replace \( \circ \) with \(<\), \( >\), or \( =\) to make a true statement.

12. 5.3 \( \circ \) \( \frac{27}{5} \)
    F. <  
    G. >  
    H. =  
    J. not enough information

13. \( \frac{44}{5} \) \( \circ \) \( \frac{44}{5} \)
    A. <  
    B. >  
    C. =  
    D. not enough information

Express each decimal as a fraction or mixed number in simplest form.

14. 8.6
    F. \( \frac{87}{10} \)  
    G. \( \frac{83}{5} \)  
    H. \( \frac{3}{4} \)  
    J. \( 8 \frac{1}{5} \)

15. 6.25
    A. \( 6 \frac{25}{100} \)  
    B. \( 6 \frac{2}{5} \)  
    C. \( 6 \frac{1}{4} \)  
    D. \( 6 \frac{1}{5} \)
Read each question carefully. Write your answer on the line provided.

Find the simplest form.

1. \( \frac{2}{36} \)
   A. \( \frac{2}{8} \)  B. \( \frac{1}{4} \)  C. \( \frac{1}{18} \)
   1. _____________

2. \( \frac{5}{40} \)
   F. \( \frac{3}{13} \)  G. \( \frac{1}{5} \)  H. \( \frac{1}{8} \)
   2. _____________

Find the GCF.

3. 3, 18
   A. 3  B. 8  C. 12  
   3. _____________

4. 9, 27
   F. 3  G. 36  H. 9
   4. _____________

Change to a mixed number or whole number in simplest form.

5. \( \frac{44}{9} \)
   A. \( 8 \frac{4}{7} \)  B. \( 7 \frac{1}{2} \)  C. \( 4 \frac{8}{9} \)
   5. _____________

6. \( \frac{36}{6} \)
   F. \( 5 \frac{5}{6} \)  G. 6  H. 5
   6. _____________

Find the LCM.

7. 12, 18
   A. 36  B. 60  C. 28
   7. _____________

8. 4, 5, 6
   F. 20  G. 30  H. 60
   8. _____________
Choose <, >, or =.

9. \(5.3 \bigcirc \frac{27}{5}\)
   A. <  B. >  C. =

10. \(\frac{44}{5} \bigcirc 4\frac{4}{5}\)
    F. <  G. >  H. =

Change to a fraction in simplest form.

11. 8.6
   A. \(\frac{81}{5}\)  B. \(\frac{87}{10}\)  C. \(\frac{83}{5}\)

12. 6.25
   F. \(\frac{625}{100}\)  G. \(\frac{62}{5}\)  H. \(\frac{61}{4}\)

Use the number line for problems 13 and 14.

13. Point \(Z =\)
    A. \(2\frac{2}{5}\)  B. \(\frac{9}{4}\)  C. 2.2

14. Point \(W =\)
    F. 0.06  G. 0.35  H. \(\frac{1}{2}\)
Read each question carefully. Write your answer on the line provided.

Find the greatest common factor (GCF) of each set of numbers.

1. 6, 8
2. 27, 18

Replace $x$ with a number so the fractions are equivalent.

3. \( \frac{4}{6} = \frac{x}{30} \)
4. \( \frac{2}{3} = \frac{6}{x} \)

Write each improper fraction as a whole number or mixed number in simplest form.

5. \( \frac{53}{7} \)
6. \( \frac{36}{6} \)

Find the least common multiple (LCM) of each set of numbers.

7. 12, 18
8. 4, 5, 6
Use the number line for problems 9 and 10.

9. What is the value of Point Z on the number line?  
10. What is the value of Point W on the number line?

Express each fraction in simplest form. If the fraction is already in simplest form, write simplest form.

11. \( \frac{3}{24} \)  
12. \( \frac{6}{29} \)

Replace \( \bigcirc \) with \(<\), \(>\), or \(=\) to make a true sentence.

13. \( 5.3 \, \bigcirc \, \frac{27}{5} \)  
14. \( \frac{44}{5} \, \bigcirc \, 4 \frac{4}{5} \)

Write each decimal as a fraction or mixed number in simplest form.

15. 8.6  
16. 6.25

Solve.

17. Marisol makes 3 dozen buns. She puts raisins in 18 of the buns and berries in 6. What fraction of the buns have raisins?
Read each question carefully. Write your answer on the line provided.

Find the GCF.

1. 8, 12
2. 18, 27

Find the simplest form.

3. \( \frac{3}{24} \)
4. \( \frac{6}{28} \)

Make the fractions equal.

5. \( \frac{4}{6} = \frac{x}{30} \)
6. \( \frac{2}{3} = \frac{6}{x} \)

Write as a mixed number or whole number in simplest form.

7. \( \frac{53}{7} \)
8. \( \frac{36}{6} \)

Find the LCM.

9. 12, 18
10. 4, 5, 6
Use the number line for problems 11 and 12.

11. Point $Z =$
12. Point $W =$

Write $<, >$, or $=$.

13. $5.3 \bigcirc \frac{27}{5}$
14. $\frac{44}{5} \bigcirc 4 \frac{4}{5}$

Write as a fraction or mixed number in simplest form.

15. $8.6$
16. $6.25$
17. Marisol makes 36 buns. She puts raisins in 18 of the buns. What fraction of the buns has raisins?
Read each question carefully. Write your answer on the line provided.

Find the greatest common factor (GCF) of each set of numbers.

1. 34, 51, 102
2. 18, 27, 63

Express each fraction in simplest form. If the fraction is already in simplest form, write simplest form.

3. \( \frac{12}{96} \)
4. \( \frac{28}{185} \)

Substitute the variable \( n \) with a number so the fractions are equivalent.

5. \( \frac{12}{68} = \frac{n}{17} \)
6. \( \frac{32}{n} = \frac{16}{16} \)

Express each improper fraction as a whole number or mixed number in simplest form.

7. \( \frac{64}{6} \)
8. \( \frac{42}{3} \)
Find the least common multiple (LCM) of each set of numbers.

9. 10, 16, 32
10. 2, 6, 36

Use the number line for problems 11 and 12.

11. What is the value of Point M on the number line? Express your answer as a mixed number, an improper fraction, and a decimal.

12. Plot a point on the number line with the value \( \frac{14}{10} \). Label it Point A.

Substitute \( \circ \) with \(<\), \(>\), or \(=\) to make a true sentence.

13. 0.068 \( \circ \) \( \frac{17}{250} \)
14. \( \frac{112}{110} \) \( \circ \) \( 2 \frac{1}{3} \)

Express each decimal as a fraction or mixed number in simplest form.

15. 5.35
16. 6.9

Solve.

17. Mercedes makes 2 dozen cookies. She adds chocolate chips to 13 of the cookies and peanuts to 6 other cookies. What fraction of the cookies does not have chocolate chips or peanuts?
Chapter Extended-Response Test

Demonstrate your knowledge by giving a clear, concise solution to each problem. Be sure to include all relevant drawings and justify your answers. You may show your solution in more than one way or investigate beyond the requirements of the problem. If necessary, record your answer on another piece of paper.

1. a. What is the greatest common factor?

b. Identify the greatest common factor of 12 and 24. Show your work.

2. a. What are equivalent fractions? Give an example that includes a diagram.

b. What is the difference between a mixed number and an improper fraction?

c. Is \( \frac{7}{5} \) a mixed number, a proper fraction or an improper fraction?


4. Explain how to write a decimal as a fraction.
Use this recording sheet with pages 226–227 of the Student Edition.

Read each question. Then fill in the correct answer.

1. A B C D

2. F G H J

3. A B C D

4. F G H J

5. A B C D

6. F G H J

7. A B C D

8. F G H J

9. A B C D
Example

Ali answered \( \frac{6}{7} \) of the questions correctly on her science quiz. Which of the following best represents \( \frac{6}{7} \) as a rounded decimal?

A. 0.85  
B. 0.86  
C. 1.16  
D. 1.17

Read the Question

You need to convert \( \frac{6}{7} \) to a decimal.

Solve the Question

\[
\begin{array}{c}
\frac{6}{7} \rightarrow 7)6.000 \ldots \\
-56 \\
\underline{40} \\
-35 \\
\underline{50} \\
-49 \\
\underline{1} \ldots \\
\end{array}
\]

0.857\ldots \text{ is approximately } 0.86.

The answer is B.

Read each question carefully. Write your answer on the line provided.

1. What is the decimal 0.3 written as a fraction?

A. \( \frac{1}{3} \)  
B. \( \frac{2}{3} \)  
C. \( \frac{3}{10} \)  
D. \( \frac{3}{100} \)  

1. __________________
Cumulative Standardized Test Practice (continued)

2. What is \( \frac{7}{8} \) written as a decimal?
   
   F. 0.875  
   G. 8.75  
   H. 0.114  
   J. 1.14

3. Find the greatest common factor of 20, 24, and 48.
   
   A. 16  
   B. 12  
   C. 8  
   D. 4

4. Manny, Sean, Jessica, and Maricruz all walk to school. Manny walks \( \frac{1}{2} \) mile, Sean walks \( \frac{3}{4} \) mile, Jessica walks \( \frac{5}{8} \) mile, and Maricruz walks \( \frac{7}{12} \) mile. Who lives farthest from school?
   
   F. Manny  
   G. Sean  
   H. Jessica  
   J. Maricruz

5. What point on the grid below corresponds to the ordered pair (7, 0)?
   
   A. A  
   B. B  
   C. C  
   D. D

6. What is 4,462.0466 rounded to the nearest hundredth?
   
   F. 4,462.05  
   G. 4,462.04  
   H. 4,500  
   J. 4,400
7. Which situation could be described by the expression $k - 6.20$?
   A. Kellee had $k$ dollars, and then she got $6.20$ more.
   B. Kellee had $6.20$, and then she spent $k$ dollars on art supplies.
   C. Kellee had $k$ dollars, and then she spent $6.20$ on art supplies.
   D. Kellee had $6.20$, and then she got $k$ dollars more.

8. To surprise her parents, Laura decided to clean the kitchen. She spent 15 minutes washing dishes, 8 minutes wiping the counters, 28 minutes scrubbing the refrigerator, and 21 minutes organizing the silverware. How much time did Laura spend cleaning the kitchen?
   F. 1.5 hours   G. 1.4 hours   H. 1.3 hours   J. 1.2 hours

9. Jean is making a fruit salad. She buys an apple for $0.75, a pound of grapes for $2.30, and a bunch of bananas for $1.11. About how much money did Jean spend?
   A. $3   B. $4   C. $5   D. $6

10. Write $\frac{1}{4}$ as a decimal.

11. Write 0.09 as a fraction.

12. Find the least common multiple of 8, 12, and 36.

13. What is 4.004 rounded to the nearest hundredth?

14. Emily is 57.86 centimeters tall, Rosa is 57.48 centimeters tall, Patricia is 57.09 centimeters tall, and Elena is 57.8 centimeters tall. Who is the tallest?

15. Write $\frac{8}{20}$ in simplest form.

16. Find the value of $x$ to make the fractions equivalent.
   \[\frac{2}{3} = \frac{x}{15}\]

17. Find the greatest common factor of 3, 33, and 36.
Use this graphic organizer to take notes on Chapter 4: Fractions and Decimals. Fill in the missing information.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>greatest common factor (GCF)</td>
<td>the largest number that divides evenly into two or more numbers</td>
<td>The GCF of 10, 15, and 20 is 5.</td>
</tr>
<tr>
<td>equivalent fractions</td>
<td>fractions that represent the same number</td>
<td>( \frac{1}{4} = \frac{2}{8} = \frac{3}{12} )</td>
</tr>
<tr>
<td>least common multiple (LCM)</td>
<td>the smallest whole number greater than 0 that is a common multiple of each of two or more numbers</td>
<td>The LCM of 4 and 3 is 12.</td>
</tr>
<tr>
<td>least common denominator (LCD)</td>
<td>the least common multiple of the denominators of two or more fractions, used as a denominator</td>
<td>The LCD of ( \frac{1}{2} ), ( \frac{3}{8} ), and ( \frac{3}{16} ) is 16.</td>
</tr>
<tr>
<td>ordered pair</td>
<td>a pair of numbers that are the coordinates of a point in a coordinate plane or grid in this order: (horizontal coordinate, vertical coordinate)</td>
<td>(2, 5)</td>
</tr>
</tbody>
</table>

**STEP 1 Before you begin Chapter 4**
- Read each statement.
- Decide whether you agree (A) or disagree (D) with the statement.
- Write A or D in the first column OR if you are not sure whether you agree or disagree, write NS (not sure).

<table>
<thead>
<tr>
<th>Statement</th>
<th>STEP 2 A or D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Equivalent fractions represent the same number.</td>
<td>A</td>
</tr>
<tr>
<td>2. The greatest common factor is the smallest number that divides evenly into two or more numbers.</td>
<td>D</td>
</tr>
<tr>
<td>3. The greatest common factor of 12, 18, and 30 is 6.</td>
<td>A</td>
</tr>
<tr>
<td>4. The least common multiple is the smallest whole number greater than 0 that is a common multiple of each of two or more numbers.</td>
<td>A</td>
</tr>
<tr>
<td>5. A fraction in which the numerator and the denominator have no common factor greater than 1 is in simplest form.</td>
<td>A</td>
</tr>
<tr>
<td>6. ( \frac{5}{12} ) is in simplest form.</td>
<td>D</td>
</tr>
<tr>
<td>7. In the fraction ( \frac{2}{5} ), 2 is the numerator.</td>
<td>A</td>
</tr>
<tr>
<td>8. In the fraction ( \frac{15}{12} ), 12 is the denominator.</td>
<td>A</td>
</tr>
<tr>
<td>9. ( \frac{5}{6} ) and ( \frac{9}{12} ) are equivalent fractions.</td>
<td>A</td>
</tr>
<tr>
<td>10. ( \frac{3}{4} ) and ( \frac{3}{2} ) are equivalent fractions.</td>
<td>D</td>
</tr>
</tbody>
</table>

**STEP 2 After you complete Chapter 4**
- Reread each statement and complete the last column by entering an A (agree) or a D (disagree).
- Did any of your opinions about the statements change from the first column?
- For those statements that you mark with a D, use a separate sheet of paper to explain why you disagree. Use examples, if possible.
Reteach

Greatest Common Factor

The GCF (greatest common factor) of two numbers is the greatest number that is a factor of both.

Find the GCF of 12 and 16.
Factors of 12: 1, 2, 3, 4, 6, 12
Factors of 16: 1, 2, 4, 8, 16
The GCF of 12 and 16 is 4.

Find the GCF of 20 and 24.
Factors of 20: 1, 2, 4, 5, 10, 20
Factors of 24: 1, 2, 3, 4, 6, 8, 12, and 24
The GCF of 20 and 24 is 4.

List all the factors of each number. Circle each set of common factors. Then identify the GCF.

1. 8: 1, 2, 4, 8
   32: 1, 2, 4, 8, 16, 32
   GCF: 8

2. 9: 1, 3, 9
   15: 1, 3, 5, 15
   GCF: 3

3. 6: 1, 2, 3, 6
   42: 1, 2, 3, 6, 7, 14, 42
   GCF: 6

Find the greatest common factor (GCF) of each set of numbers.

4. 28 and 40
   7

5. 10 and 25
   5

6. 18 and 24
   6

7. 14 and 21
   7

8. 35 and 42
   7

9. 15, 25, 30
   5

Skills Practice

Greatest Common Factor

Identify the common factors of each set of numbers.

1. 36, 40
   1, 2, 4

2. 55, 77
   1, 11

3. 8, 20, 36
   1, 2, 4

4. 15, 30, 40
   1, 5

Find the GCF of each set of numbers.

5. 10 and 15
   5

6. 6 and 24
   6

7. 16 and 36
   4

8. 24 and 30
   6

9. 9 and 21
   3

10. 12 and 40
    4

11. 8 and 28
    4

12. 12 and 24
    12

13. 12 and 60
    12

14. 14 and 18
    2

15. 20 and 30
    10

16. 24 and 45
    3

17. 15 and 27
    3

18. 10 and 22
    2

19. 17 and 30
    5

20. 11 and 15
    1

21. 4, 12, and 30
    2

22. 12, 18, and 36
    6

23. 9, 16, and 25
    1

24. 9, 15, and 21
    3

25. 12, 15, and 21
    3

26. 9, 36, and 45
    9

Solve.

27. Thirty people at the nature center signed up for hiking, and 18 signed up for bird watching. They will be divided up into smaller groups. What is the greatest number of people that can be in each group and have all groups the same size?

   6 people

28. Rosa found 8 different wildflowers and 20 different leaves on her hike. She plans to display them in 7 equal rows on a poster. What is the greatest number of flowers or leaves she can put in each row?

   4 flowers or leaves
Identify the common factors of each set of numbers.

1. 4, 6, 8, 32 $\frac{1}{2}$, $\frac{1}{3}$
2. 3, 6, 12, 24 $1$, $\frac{1}{3}$

Find the GCF of each set of numbers.

3. 5, 45 $\underline{5}$
4. 6, 42 $\underline{6}$
5. 12, 24, 60 $\underline{12}$
6. 4, 16, 32 $\underline{4}$
7. 15, 30, 60 $\underline{15}$
8. 9, 18, 27 $\underline{9}$

Solve.

9. Janice has three CD storage cases that can hold 18, 36, and 64 CDs. The cases have sections holding the same number of CDs. What is the greatest number of CDs in a section? $\underline{2}$

10. Packages of cheese are sold in sealed containers that have sections holding the same number of slices. The containers can hold 6, 12, and 24 sections. What is the greatest number of sections in each container? $\underline{6}$

Spiral Review

Find each sum or difference. (Lesson 3–7)

11. 6.2 + 8.5 = 14.7
12. 1.23 + 3 = 4.23
13. 65.2 + 38.11 = 103.31
14. 58.617 + 28.75 = 87.36
15. 0.856 + 14 = 14.856
16. 6.7 – 2.4 = 4.3
17. 18.4 – 3.44 = 15.43
18. 56 – 12.38 = 43.62
19. 76 – 44.92 = 31.08
20. 24.33 – 3.88 = 20.45

1. Aaron played 24 softball games, and Marianne played 20 games. What is the greatest common factor of these numbers?

2. Ellen is making flower arrangements. She has 48 carnations and 40 roses. What is the greatest number of identical arrangements she can make using all the flowers?

3. Mrs. Ellis' class contains 30 students. Mr. Hernandez' class contains 25 students. They want equal-sized science groups, so that they can share supplies. What is the largest number of students that can be in a group?

4. Kendall is making holiday cookies. He made 48 sugar cookies and 36 chocolate chip cookies. What is the greatest number of bags of cookies he can make if each bag has the same amount of each kind of cookie?

5. John placed 128 beads in equal rows to make an art project. His friend Mark used 125 beads to make a similar project. Is it possible for their projects to contain the same number of beads in a row? Explain your answer.

6. Erin's parents are starting an orchard. They bought 250 apple trees, 125 peach trees, and 175 pear trees. They want to plant the same number of trees in each row. They want only one type of tree in a row, and they want to plant all the trees. What is the greatest number of trees they can plant in a row?
Enrich

GCFs by Successive Division

Here is a different way to find the greatest common factor (GCF) of two numbers. This method works well for large numbers.

Find the GCF of 848 and 1,325.

Step 1
Divide the smaller number into the larger.

1 R 477

848) 1,325

848

477

Step 2
Divide the remainder into the divisor.

Repeat this step until you get a remainder of 0.

371 477

477 106

106 53

53 0

371 106 53 0

Step 3
The last divisor is the GCF of the two original numbers. The GCF of 848 and 1,325 is 53.

Use the method above to find the GCF for each pair of numbers.

1. 187; 578

2. 161; 943

3. 215; 1,849

4. 453; 484

5. 432; 588

6. 279; 403

7. 1,325; 3,498

8. 9,840; 1,751

9. 3,484; 5,963

10. 1,802; 106

11. 45,787; 69,875

12. 35,811; 102,070

GCFs by Successive Division

Reteach

Problem-Solving Strategy

Make an Organized List

Otto plays a game. He spins two spinners and finds the sum of the numbers he lands on. What sums can Otto make?

Step 1
Understand

What do you know? Spinner A is marked 3 and 2 and Spinner B is marked 5, 3, and 4.

What do you need to find? What sums Otto can make.

Step 2
Plan

Make a plan.

You can make an organized list to solve the problem.

Remember: A sum is the answer to an addition problem.

Step 3
Solve

Carry out your plan

Make a list of possible sums.

<table>
<thead>
<tr>
<th>Spinner A</th>
<th>Spinner B</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>7</td>
</tr>
</tbody>
</table>
**Problem-Solving Strategy (continued)**

**Step 3**

**Solve**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>+</td>
</tr>
<tr>
<td>3</td>
<td>=</td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>+</td>
</tr>
<tr>
<td>4</td>
<td>=</td>
</tr>
<tr>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

What sums can Otto make? 8, 6, 7, 5, 6

**Step 4**

**Check**

Is the solution reasonable? Have you answered the question? How can you check your answer?

Sample answer: Check each of the sums in the list to make sure each one has a number from Spinner A and a number from Spinner B.

**Solve using the make an organized list strategy.**

1. A spinner has 3 equal sections that are white, yellow, and green. Another spinner has 3 equal sections that are blue, purple, and red. How many different combinations of colors are possible if you spin each spinner once? 9 combinations

2. Liz has 4 different rings and 3 different bracelets. If she wears one ring and one bracelet, how many different combinations can she make? 12 combinations

3. Allie has square beads that are red, blue, and green. She has round beads that are yellow and white. If she chooses one color from each shape of beads, how many combinations of colors can she have? 6 combinations

4. Health Ms. Dawson eats a fruit and a vegetable for lunch each day. She selects an apple, a banana, an orange, or a pear for her fruit. She chooses carrot sticks, celery sticks, or green-pepper slices for her vegetable. How many combinations of 1 fruit and 1 vegetable can she make? 12 combinations

5. There are three girls, Jackie, Janey, and Janelle. How many different ways can the girls be lined up? 6 ways

6. Greta orders stickers that come with 12 sheets per package. Each sheet has 10 rows of stickers and each row has 8 stickers. How many stickers are in each package? 960 stickers
4-2

Homework Practice

Problem-Solving Strategy

Make an organized list.

Solve. Use the make an organized list strategy.

1. Andy only knows three people in the study hall. Desks are arranged in pairs. How many possible ways can Andy sit next to someone he knows?

   6 ways

2. Russ has to go to the office, the school store, and the water fountain. How many different ways can Russ make the stops?

   6 ways

3. Linda has black pants and a pair of jeans, black and red shoes, a red striped jersey and a white jersey. How many outfits can she make if she always wears a jersey, pants, and shoes?

   8 outfits

4. How many different ways you can write the product of the prime factors of 24?

   4 ways

Spiral Review

Identify the common factors of each set of numbers. (Lesson 4-1)

5. 5, 25, 35 1, 5

6. 18, 32, 36, 44 1, 2

Find the GCF of each set of numbers.

7. 8, 72 8

8. 7, 56 7

9. 3, 9, 12 3

10. 9, 18, 27 9

11. 4, 18, 24 2

Answers

4-2

Enrich

LCD Fraction Riddles

A conjecture is an educated guess or an opinion. Mathematicians and scientists often make conjectures when they observe patterns in a collection of data. On this page, you will be asked to make a conjecture about polygons. A polygon is a closed two-dimensional figure with at least three sides.

Use a protractor to measure the angles of each polygon. Then find the sum of the measures. (Use the quadrilateral at the right as an example.)

1. sum = 180°

2. sum = 360°

3. sum = 360°

4. sum = 540°

5. Make a conjecture. How is the sum of the angle measures of a polygon related to the number of sides?

   Answers will vary. When the number of sides increases by 1, the sum of the angle measures increases by 180°.

6. Test your conjecture. On a clean sheet of paper, use a straightedge to draw a hexagon. What do you guess is the sum of the angle measures? Measure each angle and find the sum. Was your conjecture true?

   Conjectures will vary. The sum of the angle measures is 720°.
Name ______________________ Date ____________

4–3

Reteach

Simplifying Fractions

When a fraction is in simplest form, 1 is the only common factor of its numerator and denominator.

Write in simplest form: \( \frac{16}{40} \)

Step 1
Find the GCF of the numerator and the denominator.
Factors of 16: 1, 2, 4, 8, 16
Factors of 40: 1, 2, 4, 5, 8, 10, 20, 40
GCF: 8

The only common factor of 2 and 5 is 1, so \( \frac{2}{5} \) is in simplest form.

Write each fraction in simplest form.

1. \( \frac{6}{10} \)
   Factors of 6: 1, 2, 3, 6
   Factors of 10: 1, 2, 5, 10
   Simplest Form: \( \frac{3}{5} \)

2. \( \frac{9}{36} \)
   Factors of 9: 1, 3, 9
   Factors of 36: 1, 2, 3, 4, 6, 9, 12, 18, 36
   Simplest Form: \( \frac{1}{4} \)

3. \( \frac{12}{30} \)
   Factors of 12: 1, 2, 3, 4, 6, 12
   Factors of 30: 1, 2, 3, 5, 6, 10, 15, 30
   Simplest Form: \( \frac{2}{5} \)

4. \( \frac{20}{25} \)
   Factors of 20: 1, 2, 4, 5, 10, 20
   Factors of 25: 1, 5, 25
   Simplest Form: \( \frac{4}{5} \)

5. \( \frac{6}{18} \)
   Factors of 6: 1, 2, 3, 6
   Factors of 18: 1, 2, 3, 6, 9, 18
   Simplest Form: \( \frac{3}{9} = \frac{1}{3} \)

6. \( \frac{15}{40} \)
   Factors of 15: 1, 3, 5, 15
   Factors of 40: 1, 2, 4, 5, 8, 10, 20, 40
   Simplest Form: \( \frac{3}{8} \)

7. \( \frac{8}{30} \)
   Factors of 8: 1, 2, 4, 8
   Factors of 30: 1, 2, 3, 5, 6, 10, 15, 30
   Simplest Form: \( \frac{4}{15} \)

8. \( \frac{24}{27} \)
   Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24
   Factors of 27: 1, 3, 9, 27
   Simplest Form: \( \frac{8}{9} \)

9. \( \frac{16}{28} \)
   Factors of 16: 1, 2, 4, 8, 16
   Factors of 28: 1, 2, 4, 7, 14, 28
   Simplest Form: \( \frac{4}{7} \)

10. \( \frac{20}{24} \)
    Factors of 20: 1, 2, 4, 5, 10, 20
    Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24
    Simplest Form: \( \frac{5}{6} \)

11. \( \frac{20}{24} \)
    Factors of 20: 1, 2, 4, 5, 10, 20
    Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24
    Simplest Form: \( \frac{5}{6} \)

12. \( \frac{21}{28} \)
    Factors of 21: 1, 3, 7, 21
    Factors of 28: 1, 2, 4, 7, 14, 28
    Simplest Form: \( \frac{3}{4} \)

Write in simplest form: \( \frac{16}{20} \)

Step 2
Divide the numerator and the denominator by their GCF.
\( \frac{16}{40} = \frac{16 ÷ 8}{40 ÷ 8} = \frac{2}{5} \)

Check that \( \frac{2}{5} \) is in simplest form.
Factors of 2: 1, 2
Factors of 5: 1, 5

Step 3
Divide the numerator and the denominator by their GCF.
\( \frac{9}{36} = \frac{9 ÷ 9}{36 ÷ 9} = \frac{1}{4} \)

Factors of 9: 1, 3, 9
Factors of 36: 1, 2, 3, 4, 6, 9, 12, 18, 36

Simplest Form: \( \frac{1}{4} \)

Step 4
Divide the numerator and the denominator by their GCF.
\( \frac{20}{25} = \frac{20 ÷ 5}{25 ÷ 5} = \frac{4}{5} \)

Factors of 20: 1, 2, 4, 5, 10, 20
Factors of 25: 1, 5, 25

Simplest Form: \( \frac{4}{5} \)

Step 5
Divide the numerator and the denominator by their GCF.
\( \frac{8}{30} = \frac{8 ÷ 2}{30 ÷ 2} = \frac{4}{15} \)

Factors of 8: 1, 2, 4, 8
Factors of 30: 1, 2, 3, 5, 6, 10, 15, 30

Simplest Form: \( \frac{4}{15} \)

Step 6
Divide the numerator and the denominator by their GCF.
\( \frac{24}{27} = \frac{24 ÷ 3}{27 ÷ 3} = \frac{8}{9} \)

Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24
Factors of 27: 1, 3, 9, 27

Simplest Form: \( \frac{8}{9} \)

Step 7
Divide the numerator and the denominator by their GCF.
\( \frac{20}{24} = \frac{20 ÷ 4}{24 ÷ 4} = \frac{5}{6} \)

Factors of 20: 1, 2, 4, 5, 10, 20
Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24

Simplest Form: \( \frac{5}{6} \)

Step 8
Divide the numerator and the denominator by their GCF.
\( \frac{21}{28} = \frac{21 ÷ 7}{28 ÷ 7} = \frac{3}{4} \)

Factors of 21: 1, 3, 7, 21
Factors of 28: 1, 2, 4, 7, 14, 28

Simplest Form: \( \frac{3}{4} \)

Step 9
Divide the numerator and the denominator by their GCF.
\( \frac{20}{24} = \frac{20 ÷ 4}{24 ÷ 4} = \frac{5}{6} \)

Factors of 20: 1, 2, 4, 5, 10, 20
Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24

Simplest Form: \( \frac{5}{6} \)

Step 10
Divide the numerator and the denominator by their GCF.
\( \frac{21}{28} = \frac{21 ÷ 7}{28 ÷ 7} = \frac{3}{4} \)

Factors of 21: 1, 3, 7, 21
Factors of 28: 1, 2, 4, 7, 14, 28

Simplest Form: \( \frac{3}{4} \)

Step 11
Divide the numerator and the denominator by their GCF.
\( \frac{20}{24} = \frac{20 ÷ 4}{24 ÷ 4} = \frac{5}{6} \)

Factors of 20: 1, 2, 4, 5, 10, 20
Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24

Simplest Form: \( \frac{5}{6} \)

Step 12
Divide the numerator and the denominator by their GCF.
\( \frac{21}{28} = \frac{21 ÷ 7}{28 ÷ 7} = \frac{3}{4} \)

Factors of 21: 1, 3, 7, 21
Factors of 28: 1, 2, 4, 7, 14, 28

Simplest Form: \( \frac{3}{4} \)

Solve.

25. Of the 27 students in Jarrod’s class, 18 receive an allowance each week. What fraction of the students, in simplest form, receive an allowance?

26. Of the 20 students who receive an allowance, 14 do chores around the house. What fraction of these students, in simplest form, do chores around the house?

Answers
**Simplifying Fractions**

**Homework Practice**

Replace each $x$ with a number so the fractions are equivalent.

1. $\frac{6}{16} = \frac{3}{x} \quad 8$

2. $\frac{5}{15} = \frac{1}{x} \quad 3$

3. $\frac{10}{35} = \frac{x}{2}$

4. $\frac{20}{25} = \frac{4}{x} \quad 5$

Write each fraction in simplest form. If the fraction is already in simplest form, write simplest form.

5. $\frac{2}{4} \quad \frac{1}{2}$

6. $\frac{1}{3}$

7. $\frac{12}{16} \quad \frac{3}{4}$

8. $\frac{9}{10}$

9. $\frac{4}{15}$

10. $\frac{2}{10} \quad \frac{1}{5}$

**Spiral Review**

Solve these using the make an organized list strategy. (Lesson 4–2)

11. How many different arrangements are possible for the prime factors of 12? 3 arrangements

12. Mr. and Mrs. Garcia have three children: Maria, Paul, and Jon. They would like to have a family picture taken. If Mr. and Mrs. Garcia stand in the back, how many different ways can their children stand in front of them? 6 ways

13. Eric needs to go to the shoe store, the grocery store, and the library. How many different ways can Eric make the stops? 6 ways

**Problem-Solving Practice**

Simplify the fractions and solve.

1. Alex walked $\frac{4}{6}$ of the 6 blocks to school. Write this fraction in its simplest form.

2. Jennifer played $\frac{3}{9}$ of 9 innings in the ball game. Write this fraction in its simplest form.

3. Mali is baby-sitting her neighbor’s children for an hour a day. She earned $100 in 4 weeks. Use a simplified fraction to show how much of the total she earned in one week.

4. Casey fed $\frac{9}{24}$ of the animals at a veterinarian’s office. His brother Tim fed $\frac{6}{16}$ of animals at the animal shelter. Did the brothers feed an equivalent fraction of animals? Explain your answer.

5. Shelly washed $\frac{8}{16}$ of 16 cars at the school car wash. Olivia washed $\frac{1}{2}$ of the 2 cars her family owns. Both girls washed $\frac{1}{4}$ of the cars being washed. Did they do the same amount of work? Explain your answer.

6. Sophia is going to plant part of a vegetable garden that was divided into 5 parts. She said that the fraction that shows the part she will plant cannot be simplified. How does she know that it cannot be simplified when she does not yet know how many parts she will plant?

The number 5 is a prime number, so it cannot be divided by any other whole number.

---

**Answers**

- **Homework Practice**
  - 1. $\frac{6}{16} = \frac{3}{8}$
  - 2. $\frac{5}{15} = \frac{1}{3}$
  - 3. $\frac{10}{35} = \frac{2}{7}$
  - 4. $\frac{20}{25} = \frac{4}{5}$
  - 5. $\frac{2}{4} = \frac{1}{2}$
  - 6. $\frac{1}{3}$
  - 7. $\frac{12}{16} = \frac{3}{4}$
  - 8. $\frac{9}{10}$
  - 9. $\frac{4}{15}$
  - 10. $\frac{2}{10} = \frac{1}{5}$

- **Problem-Solving Practice**
  - 1. Alex walked $\frac{4}{6} = \frac{2}{3}$
  - 2. Jennifer played $\frac{3}{9} = \frac{1}{3}$
  - 3. Mali earned $\frac{25}{100} = \frac{1}{4}$
  - 4. Casey and Tim fed $\frac{3}{8}$ and $\frac{3}{8}$ of the animals, respectively.
  - 5. Shelly and Olivia washed $\frac{1}{4}$ of the cars being washed.
  - 6. Sophia said it cannot be simplified because the number 5 is a prime number.
Mixed Numbers and Improper Fractions

A **mixed number** is made up of a whole number and a fraction.

An **improper fraction** is a fraction in which the numerator is greater than or equal to the denominator.

**Write** \( \frac{2}{3} \) **as an improper fraction**.

**Step 1**
Multiply the whole number by the denominator.

\[
2 \times 3 = 6
\]

**Step 2**
Add the numerator to the product.

\[
6 + 2 = 8
\]

**Step 3**
Write the sum over the denominator.

\[
\frac{2}{3} \quad \Rightarrow \quad \frac{8}{3}
\]

**Write** \( \frac{13}{4} \) **as a mixed number**.

**Step 1**
Divide the numerator by the denominator.

\[
13 \div 4 = 3 \frac{1}{4}
\]

**Step 2**
Write the quotient as the whole-number part of the mixed number.

\[
\frac{13}{4} \quad \Rightarrow \quad 3 \frac{1}{4}
\]

**Step 3**
Write the remainder as the numerator of the fraction.

\[
\frac{13}{4} = 3 \frac{1}{4}
\]

**Write each mixed number as an improper fraction**.

1. \( 2 \frac{2}{7} \)  
2. \( 5 \frac{3}{4} \)  
3. \( 6 \frac{5}{8} \)

**Write each improper fraction as a mixed number**.

4. \( \frac{9}{8} \)  
5. \( \frac{3}{2} \)  
6. \( \frac{12}{5} \)
## Skills Practice

### Mixed Numbers and Improper Fractions

#### Write each mixed number as an improper fraction.

<table>
<thead>
<tr>
<th>Mixed Number</th>
<th>Improper Fraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 2 3/4</td>
<td>11/4</td>
</tr>
<tr>
<td>2. 5 1/6</td>
<td>31/6</td>
</tr>
<tr>
<td>3. 8 1/2</td>
<td>17/2</td>
</tr>
<tr>
<td>4. 3 2/3</td>
<td>11/3</td>
</tr>
<tr>
<td>5. 7 5/9</td>
<td>77/9</td>
</tr>
<tr>
<td>6. 1 9/10</td>
<td>19/10</td>
</tr>
<tr>
<td>7. 4 7/8</td>
<td>43/8</td>
</tr>
<tr>
<td>8. 6 5/7</td>
<td>71/7</td>
</tr>
<tr>
<td>9. 1 8/9</td>
<td>17/9</td>
</tr>
<tr>
<td>10. 3 12/17</td>
<td>63/17</td>
</tr>
<tr>
<td>11. 2 1/10</td>
<td>21/10</td>
</tr>
<tr>
<td>12. 5 5/13</td>
<td>65/13</td>
</tr>
<tr>
<td>13. 2 2/7</td>
<td>16/7</td>
</tr>
<tr>
<td>14. 5 3/4</td>
<td>23/4</td>
</tr>
<tr>
<td>15. 6 5/8</td>
<td>53/8</td>
</tr>
<tr>
<td>16. 3 4/10</td>
<td>34/10 or 3 4/5</td>
</tr>
<tr>
<td>17. 9 1/3</td>
<td>28/3</td>
</tr>
<tr>
<td>18. 4 4/5</td>
<td>24/5</td>
</tr>
<tr>
<td>19. 9 1/2</td>
<td>19/2</td>
</tr>
<tr>
<td>20. 6 3/9</td>
<td>42/9</td>
</tr>
</tbody>
</table>

#### Write each improper fraction as a mixed number or a whole number.

<table>
<thead>
<tr>
<th>Improper Fraction</th>
<th>Mixed Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>21. 18/12</td>
<td>1 1/2</td>
</tr>
<tr>
<td>22. 22/3</td>
<td>7 1/3</td>
</tr>
<tr>
<td>23. 27/9</td>
<td>3</td>
</tr>
<tr>
<td>24. 14/4</td>
<td>3 1/2</td>
</tr>
<tr>
<td>25. 28/6</td>
<td>4 2/3</td>
</tr>
<tr>
<td>26. 64/8</td>
<td>8</td>
</tr>
<tr>
<td>27. 13/5</td>
<td>2 3/5</td>
</tr>
<tr>
<td>28. 46/8</td>
<td>5 3/4</td>
</tr>
<tr>
<td>29. 21/8</td>
<td>2 5/8</td>
</tr>
<tr>
<td>30. 64/35</td>
<td>1 29/35</td>
</tr>
<tr>
<td>31. 19/3</td>
<td>1 1/3</td>
</tr>
<tr>
<td>32. 44/8</td>
<td>5 1/2</td>
</tr>
<tr>
<td>33. 10/9</td>
<td>1 1/9</td>
</tr>
<tr>
<td>34. 3/1</td>
<td>3</td>
</tr>
<tr>
<td>35. 4/3</td>
<td>1 1/3</td>
</tr>
<tr>
<td>36. 6/5</td>
<td>1 1/5</td>
</tr>
<tr>
<td>37. 7/6</td>
<td>1 1/6</td>
</tr>
<tr>
<td>38. 18/4</td>
<td>4 1/2</td>
</tr>
<tr>
<td>39. 20/11</td>
<td>1 9/11</td>
</tr>
<tr>
<td>40. 3/2</td>
<td>1 1/2</td>
</tr>
</tbody>
</table>

#### Solve.

41. A shipment of boxes weighs 30 pounds. There are 8 boxes and each weighs the same number of pounds. How much does each box weigh?

- **3 3/4 pounds**

42. Each box in another shipment weighs 3 1/2 pounds. There are 6 boxes in the shipment. What is the total weight of the shipment?

- **19 pounds**

## Homework Practice

### Mixed Numbers and Improper Fractions

#### Write each mixed number as an improper fraction.

<table>
<thead>
<tr>
<th>Mixed Number</th>
<th>Improper Fraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 5 1/3</td>
<td>17/3</td>
</tr>
<tr>
<td>2. 6 1/4</td>
<td>25/4</td>
</tr>
<tr>
<td>3. 9 1/3</td>
<td>28/3</td>
</tr>
<tr>
<td>4. 5 2/5</td>
<td>29/5</td>
</tr>
<tr>
<td>5. 3 3/4</td>
<td>17/4</td>
</tr>
</tbody>
</table>

#### Write each improper fraction as a mixed number or a whole number.

<table>
<thead>
<tr>
<th>Improper Fraction</th>
<th>Mixed Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. 16/8</td>
<td>2</td>
</tr>
<tr>
<td>7. 20/5</td>
<td>4</td>
</tr>
<tr>
<td>8. 5/5</td>
<td>1</td>
</tr>
<tr>
<td>9. 19/6</td>
<td>3 1/6</td>
</tr>
<tr>
<td>10. 27/4</td>
<td>6 3/4</td>
</tr>
</tbody>
</table>

#### Spiral Review

Replace each x with a number so the fractions are equivalent. (Lesson 4-3)

11. 4/12 = 1/3 x 3
12. 9/36 = 3/12 x 3
13. 6/36 = x/9 = 2
14. 7/14 = 1/2 x 2

Write each fraction in simplest form. If the fraction is already in simplest form, write simplest form.

15. 8/12 simplest form = 2/3
16. 7/12 simplest form = 7/12
17. 7/8 simplest form = 7/8
18. 8/38 simplest form = 4/19
In the following recipes, some mixed numbers have been changed to simplest form. Rewrite each recipe as you would expect to find it in a cookbook.

### Quick Pizza Crust
- 3 \(\frac{1}{2}\) cups flour
- 1 \(\frac{1}{2}\) cups brown sugar
- 2 \(\frac{3}{4}\) cups water
- 1 \(\frac{1}{2}\) teaspoon salt
- 4 \(\frac{1}{2}\) cups flour

### Apple Crunch
- 2 \(\frac{2}{3}\) cups white sugar
- 1 \(\frac{1}{2}\) cup water
- 9 \(\frac{3}{4}\) teaspoons yeast
- 1 \(\frac{1}{2}\) cups oakmeal
- 4 tablespoons sugar
- 2 \(\frac{2}{3}\) sticks margarine
- 1 teaspoon salt
- 2 tablespoons oil

---

### Problem-Solving Practice

**Mixed Numbers and Improper Fractions**

1. During the holiday break, Anthony read one book and half of another book. How many books did he read?
   - 1 \(\frac{1}{2}\) books

2. Sam's family ate 2 pizzas. Then they ate 5 \(\frac{5}{6}\) of the 8 slices of another pizza. How many slices of pizza do they have eaten?
   - 8 \(\frac{5}{6}\) slices

3. Hans ran 3 miles on the track. He took a break, then ran another \(\frac{5}{6}\) mile. Write the number of miles Hans ran as an improper fraction.
   - \(\frac{23}{6}\) miles

4. Lindsay ran in a 10-kilometer race. This is equal to 6 \(\frac{2}{3}\) miles. Write the number of miles Lindsay ran as a mixed number.
   - 6 \(\frac{2}{3}\) miles

5. Keisha is running on an indoor track where 8 laps equal one mile. If she runs 19 laps, how many miles is this?
   - 2 \(\frac{3}{8}\) miles

6. Doug found that it takes 20 minutes to do 8 math problems. How long will it take him to do 28 problems?
   - 1 hour and 10 minutes

7. April has 4 yards of fabric. Her aunt gave her \(\frac{3}{4}\) yard more fabric. How much fabric does she have in all?
   - 4 \(\frac{3}{4}\) yards

8. Austin bought 20 apples. How many dozens apples did he buy? Write the answer as a mixed number.
   - 2 \(\frac{2}{3}\) dozens
**Skills Practice**

**Least Common Multiple**

Identify the first three common multiples of each set of numbers.

1. 2, 5
   - 10, 20, 30

2. 1, 6
   - 6, 12, 18

3. 2, 3, 4
   - 12, 24, 36

4. 7, 14
   - 14, 28, 42

Find the least common multiple (LCM) of the numbers.

5. 5 and 15
   - 15

6. 2 and 9
   - 18

7. 2 and 11
   - 22

8. 6 and 9
   - 18

9. 4 and 5
   - 20

10. 8 and 12
    - 24

11. 4 and 8
    - 8

12. 10 and 25
    - 50

13. 3 and 4
    - 12

14. 2 and 3
    - 6

15. 8 and 9
    - 72

16. 4 and 10
    - 20

17. 2, 4, and 16
    - 16

18. 3, 5, and 6
    - 30

19. 3, 6, and 8
    - 24

20. José and Sara are walking around the track at the same time. José walks one lap every 8 minutes. Sara walks a lap every 6 minutes. What is the least amount of time they would both have to walk for them to cross the starting point together?
    - 24 minutes

21. Pamela and David walk on the same track. It takes Pamela 9 minutes and David 6 minutes to walk one lap. If they start walking at the same time, how many laps will each have walked when they cross the starting point together for the first time?
    - Pamela: 2 laps; David: 3 laps
Problem-Solving Practice
Least Common Multiple

Solve

1. List the first 10 multiples of 3 and 5 greater than zero.
   Multiples of 3: 3, 6, 9, 12, 15, 18, 21, 24, 27, 30; Multiples of 5: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50

2. List the first 10 common multiples of 2 and 4 greater than zero.
   4, 8, 12, 16, 20, 24, 28, 32, 36, 40

3. Noel started going to yoga class on November 3, and went every third day after that. Lana also started classes on November 3, and went every fourth day after that. In how many days will they be in class together again?
   Common multiples: 15 and 30
   What are the common multiples?
   common multiples: 15 and 30

4. Bonnie is baking a pie and a batch of cookies. She needs \(\frac{3}{4}\) cup of flour for the cookies and \(\frac{5}{6}\) cup of flour for the pie. Write the LCM of the denominators.
   12

5. Since Carl has moved away for college, he calls his best friend every fifth day, his parents every third day, and his grandmother every fourth day. Carl made all three calls on October 8. In how many days will he make three calls again?
   12 days

6. Lori's gymnastics class practices floor exercises every other day. The class practices on the balance beam every third day, and the uneven bars every fourth day. Today is March 10, and the class practiced all three events. How many more times, before June 1, will the class practice all three on the same day?
   6 times

What will be the date?
December 7
**Choose the Best Strategy**

Saturday, the Stevensons went shopping and spent a total of $40 on meat for dinners for the week. They purchased chicken for $3 per pound and some hamburger for $2 per pound. They spent three times as much money on chicken as on hamburger. How many pounds of chicken and how many pounds of hamburger did the family purchase?

**Step 1** Understand

What do you know?
You know the Stevensons spent $40 on meat. You know chicken costs $3 per pound and hamburger costs $2 per pound. You also know the family spent three times as much on chicken as on hamburger.

What do you need to find?
How many pounds of chicken and hamburger the family purchased.

**Step 2** Plan

Choose a strategy.

Will it help to make a table, list, or number line so you can see how numbers change?

You may need to guess and check a few times to find the information that you need. A table would help you compare the amount spent on chicken to the amount spent on hamburger.

**Step 3** Solve

Use a _____ for the number that's missing.

$3 \times _____ + 2 \times _____ = 40.

\((3 \times \_\_\_) + (2 \times \_\_\_) = 40\)

**Step 4** Check

$(3 \times 10) + (2 \times 5) = 40$

$30 + 10 = 40$
Problem-Solving Investigation

Choose any strategy shown below to solve.

• Guess and check. • Make an organized list. • Make a table.

1. The school basketball team scored enough points to win. They scored 10 points every 5 minutes. How many points did they score in 20 minutes?

2. Forty players tried out for the team. Half of them gave up after the first set of challenges. One-fourth of the remaining players lacked skills and quit. How many players were left?

3. Jerry made 42 baskets during the first season that he played. His team played 12 games. If he played in 2 games out of every 4 that the team played and he made an equal number of baskets each of these games, how many baskets did he make each game?

4. Patty’s goal was to make 40 baskets. She made 5 baskets in the first game she played, 5 baskets in the second game, and 10 baskets in the third game. What fraction of her goal did she make?

5. The coach gave each player points after each game for being a good sport. At the end of the season, the player with the most points gets a basketball to keep. Davina scored one point in the first game and one more each game than she had in the previous game for 5 games. Sally got 3 points each game for 4 games. Who had the most points?
Homework Practice

Problem-Solving Investigation

Use any strategy shown below to solve.

• Guess and check
• Make an organized list
• Make a table.

1. Janet spent a total of $60 for summer clothes. At least 2 of the pairs of shorts she bought cost $10 each. Some of her T-shirts were purchased for $5 each. She also bought some sandals for $10. How many of each clothing item did Janet purchase?

   Sample answer: 2 pairs of shorts, 4 T-shirts, 2 pairs of sandals

2. Marge went on a trip to New York City and spent a total of $200 going to the theatre. She purchased 4 student tickets for Broadway plays that cost $25 each and five discount tickets. Find how much each discount ticket cost.

   $20

3. A radio station is giving every 3rd caller a T-shirt and every 10th caller a ceramic mug. Which caller will be the first to receive both prizes?

   the 30th caller

Spiral Review

Identify the first three common multiples of each set of numbers. (Lesson 4–5)

4. 2, 5  10, 20, 30
5. 6, 9, 18  18, 36, 54
6. 3, 6, 10  30, 60, 90
7. 5, 7, 15  105, 210, 315

Find the LCM of each set of numbers.

8. 8, 16  16
9. 7, 10  70
10. 6, 12, 24  24
11. 36, 72  36, 72
12. 0.36, 0.72  0.36, 0.72
13. 0.28, 0.56  0.28, 0.56
14. 0.8, 1.6  0.8, 1.6
15. 0.6, 1.2  0.6, 1.2
16. 0.32, 0.64  0.32, 0.64
17. 0.44, 0.88  0.44, 0.88
18. 0.65, 1.30  0.65, 1.30

Enrich

Grid Pictures

You can write a decimal or a fraction for the shaded part of any 10-by-10 grid picture. Try to find a pattern in each grid to help you count the number of shaded squares. Write a decimal for the shaded part of each grid picture. Then write a fraction in simplest form that is equivalent to the decimal.

1. 0.5, 1/2
2. 0.2, 1/5
3. 0.28, 7/25
4. 0.4, 2/5
5. 0.16, 4/25
6. 0.29, 11/4
7. 0.32, 8/25
8. 0.8, 4/5
9. 0.6, 3/5
10. 0.36, 9/25
11. 0.44, 11/25
12. 0.65, 13/20
Reteach
Comparing Fractions

To compare fractions, rewrite them with a common denominator. Then compare the numerators.

Step 1
Find the LCD of 9 and 6.
Multiples of 9: 9, 18, 27, 36
Multiples of 6: 6, 12, 18
LCD: 18

Step 2
Write equivalent fractions.
\[
\begin{align*}
\frac{5}{9} & = \frac{5 \times 2}{9 \times 2} = \frac{10}{18} \\
\frac{4}{6} & = \frac{4 \times 3}{6 \times 3} = \frac{12}{18}
\end{align*}
\]

Step 3
Compare the numerators.
8 < 15
Since 8 < 15, then \(\frac{5}{9} < \frac{4}{6}\).

Replace each \(\bigcirc\) with <, >, or = to make a true sentence.

1. \(\frac{3}{4} < \frac{5}{6}\)
2. \(\frac{3}{8} > \frac{1}{3}\)
3. \(\frac{1}{5} < \frac{3}{10}\)
4. \(\frac{4}{5} > \frac{2}{3}\)
5. \(\frac{1}{3} > \frac{4}{21}\)
6. \(\frac{5}{8} < \frac{11}{16}\)

Skills Practice
Comparing Fractions

Replace each \(\bigcirc\) with <, >, or = to make a true sentence.

1. \(\frac{3}{4} > \frac{7}{12}\)
2. \(\frac{2}{5} < \frac{3}{4}\)
3. \(\frac{1}{6} < \frac{1}{3}\)
4. \(\frac{1}{2} < \frac{7}{10}\)
5. \(\frac{15}{16} < \frac{3}{8}\)
6. \(\frac{3}{8} < \frac{5}{6}\)
7. \(\frac{7}{8} < \frac{8}{9}\)
8. \(\frac{2}{10} = \frac{1}{5}\)
9. \(\frac{11}{12} > \frac{5}{8}\)
10. \(\frac{4}{5} < \frac{17}{20}\)
11. \(\frac{1}{8} < \frac{2}{5}\)
12. \(\frac{2}{3} = \frac{4}{6}\)
13. \(\frac{1}{5} < \frac{1}{4}\)
14. \(\frac{5}{8} > \frac{3}{5}\)
15. \(\frac{1}{6} < \frac{4}{18}\)
16. \(\frac{2}{5} > \frac{3}{20}\)
17. \(\frac{1}{3} > \frac{1}{9}\)
18. \(\frac{3}{8} < \frac{3}{4}\)
19. \(\frac{7}{8} > \frac{4}{5}\)
20. \(\frac{5}{8} < \frac{5}{8}\)
21. \(\frac{5}{8} > \frac{7}{10}\)

Solve.

22. Visitors to an art museum were asked to name a favorite type of art. Pottery was named by \(\frac{3}{20}\) of the visitors, painting was named by \(\frac{7}{8}\), and sculpture was named by \(\frac{2}{5}\). What was the favorite type of art of most visitors?

painting
**Homework Practice**

**Comparing Fractions**

Replace each \( \frac{1}{2} \) with \(<\), \(>, \) or \(=\) to make each statement true.

1. \( \frac{1}{2} \) \(_<\) \( \frac{3}{5} \)
2. \( \frac{3}{4} \) \(_<\) \( \frac{7}{8} \)
3. \( \frac{7}{8} \) \(_>\) \( \frac{7}{9} \)
4. \( \frac{5}{3} \) \(_<\) \( \frac{7}{8} \)
5. \( \frac{1}{8} \) \(_<\) \( \frac{8}{3} \)

**Solve.**

6. Which fraction is the greatest?
   \[ \frac{5}{8} \]

7. Andrea is using three frames, each with a different width to frame her photographs. The sizes are \( \frac{1}{2}, \frac{1}{3}, \) and \( \frac{5}{6} \). She has decided to put the smallest in the center when she hangs them beside each other on the wall. What size frame will be in the center?
   \( \frac{8}{3} \)

---

**Problem-Solving Practice**

**Comparing Fractions**

**Solve.**

1. During gym class, Alicia ran \( \frac{1}{2} \) mile and Nguyen ran \( \frac{2}{3} \) mile. Who ran farther?
   **Nguyen**

2. Juanita practiced piano for \( \frac{1}{2} \) hour. Her brother, Miguel, then practiced for \( \frac{5}{6} \) hour. Who practiced less?
   **Miguel**

3. Lucy and Randall were supposed to spend 1 hour after school practicing their soccer skills. Lucy practiced for \( \frac{7}{8} \) hour and Randall practiced for \( \frac{4}{5} \) hour. Who practiced closer to a full hour?
   **Lucy**

4. Sasha, Tony, and Michael are reading the same book. Sasha has read \( \frac{3}{4} \) of the book, Tony has read \( \frac{3}{5} \), and Michael has read \( \frac{2}{3} \). Who has read the most?
   **Sasha**

5. At Morris Elementary, there are 45 students in each grade, four through six. In the fourth grade, 19 participate in sports after school. Two out of every six fifth graders play sports after school. In the sixth-grade class, seven of every ten students are not playing sports. Which grade has the most students playing sports after school?
   **the fourth grade**

6. In the fourth-grade class at Baker Elementary, 9 students are left-handed. The fifth grade has 7 left-handed students and the sixth grade has 6. The number of students in the fourth grade is \( \frac{3}{4} \) times the number of left-handed students in the class. The sixth grade has 3 more students than the fourth grade, and the fifth grade has two fewer students than the sixth grade. Which grade has the greatest fraction of left-handed students?
   **the fourth grade**

---

**Spiral Review**

Use any strategy shown below to solve. (Lesson 4–6)

- Make a table.
- Guess and check.
- Make an organized list.

8. For a yearbook picture, the 20 baseball team members must line up with an equal number of people in each row. Describe the possible arrangements in which the players could be lined up.
   **2 rows of 10, 10 rows of 2, 4 rows of 5, or 5 rows of 4**

9. Mark needs to mow the grass, trim the hedges, and sweep the front steps before his mother gets home from work. How many different ways can Mark order these activities?
   **6 ways**

---

**Answers (Lessons 4–7)**
Name ______________________ Date ____________________  

4-7 Enrich

Use a Diagram

Draw a diagram to solve. Check Students’ drawings.

1. A window design is made of a rectangle divided by two diagonals. How many sections are there and what are their shapes?

   **4 sections; triangles**

2. Sandra draws a regular hexagon. She divides the hexagon into sections by drawing a line from one vertex of the hexagon to the opposite vertex. How many sections are there and what are their shapes?

   **2 sections; trapezoids**

3. Harold divides a triangle into sections by drawing a line from one vertex of the triangle to the center of the opposite line. How many sections are there and what are their shapes?

   **2 sections; triangles**

4. A tile is shaped like a hexagon. A design on the tile uses 3 lines to divide the hexagon into sections by connecting all the opposite vertices on the hexagon. How many sections are there and what are their shapes?

   **6 sections; triangles**

5. A student divides a pentagon into sections by drawing a line from one vertex to the center of the opposite line. How many sections are there and what are their shapes?

   **2 sections; quadrilaterals**

4-8 Reteach

Writing Decimals as Fractions

You can write a decimal as a fraction. Think of place value. Then simplify the fraction if necessary.

Write 0.12 as a fraction.  
Think: 12 hundredths  
Write: \( \frac{12}{100} \)  
Simplify: \( \frac{12}{100} = \frac{12 \div 4}{100 \div 4} = \frac{3}{25} \)  
So, \( 0.12 = \frac{3}{25} \)

Write 0.25 as a fraction.  
Think: 25 hundredths  
Write: \( \frac{25}{100} \)  
Simplify: \( \frac{25}{100} = \frac{25 \div 25}{100 \div 25} = \frac{1}{4} \)

Write each decimal as a fraction in simplest form.

1. 0.65  
   Think: 65 hundredths  
   Write: \( \frac{65}{100} \)  
   Simplify: \( \frac{65}{100} = \frac{65 \div 5}{100 \div 5} = \frac{13}{20} \)

2. 0.6  
   Think: 6 tenths  
   Write: \( \frac{6}{10} \)  
   Simplify: \( \frac{6}{10} = \frac{6 \div 2}{10 \div 2} = \frac{3}{5} \)

3. 0.86  
   Write: \( \frac{86}{100} \)  

4. 0.57  
   Write: \( \frac{57}{100} \)  

5. 0.5  
   Write: \( \frac{5}{10} \)  

6. 0.68  
   Write: \( \frac{68}{100} \)  

7. 0.25  
   Write: \( \frac{25}{100} \)  

8. 0.15  
   Write: \( \frac{15}{100} \)  

9. 0.40  
   Write: \( \frac{40}{100} \)  

10. 0.9  
    Write: \( \frac{9}{10} \)  

11. 0.33  
    Write: \( \frac{33}{100} \)  

12. 0.10  
    Write: \( \frac{10}{100} \)  

13. 0.75  
    Write: \( \frac{75}{100} \)  

14. 0.98  
    Write: \( \frac{98}{100} \)  

15. 0.20  
    Write: \( \frac{20}{100} \)  

16. 0.50  
    Write: \( \frac{50}{100} \)  

17. 0.12  
    Write: \( \frac{12}{100} \)  

18. 0.78  
    Write: \( \frac{78}{100} \)  

19. 0.4  
    Write: \( \frac{4}{10} \)  

20. 0.70  
    Write: \( \frac{70}{100} \)  

21. 0.05  
    Write: \( \frac{5}{100} \)  

22. 0.67  
    Write: \( \frac{67}{100} \)  

23. 0.3  
    Write: \( \frac{3}{10} \)  

24. 0.11  
    Write: \( \frac{11}{100} \)  

Grade 5 42 Chapter 4
## Skills Practice

### Writing Decimals as Fractions

Write each decimal as a fraction in simplest form.

<p>| | | | | | | | | | | | | | | | |</p>
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<td>8</td>
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</tbody>
</table>

Write each decimal as a mixed number in simplest form.

<p>| | | | | | | | | | | | | | | | |</p>
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<tr>
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<td>100</td>
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<td>12.1</td>
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<td>17.03</td>
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<td>7.425</td>
<td>17</td>
<td>40</td>
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<td>42.96</td>
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<td>7.425</td>
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<td>7.75</td>
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<td>8.60</td>
<td>8</td>
<td>5</td>
<td>36</td>
<td>16.03</td>
<td>100</td>
<td></td>
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</tr>
<tr>
<td>5</td>
<td>0.35 inch</td>
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<td></td>
<td></td>
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</tbody>
</table>

Solve.

37. The largest butterfly in the world is found in Papua, New Guinea. The female of the species weighs about 0.9 ounce. Use a fraction to write the female’s weight.

38. The shortest recorded fish is the dwarf goby found in the Indo-Pacific. The female of this species is about thirty-five hundredths inch long. Use the decimal to write the female’s length.

## Homework Practice

### Writing Decimals as Fractions

Write each decimal as a fraction or mixed number in simplest form.

<p>| | | | | | | | | | | | | | | | |</p>
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<td>8</td>
<td>0.32</td>
<td>25</td>
<td>0.125</td>
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<td>2</td>
<td>6.3</td>
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<td>24</td>
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<td>0.35 inch</td>
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</tbody>
</table>

6. The newspaper reported that it rained 2.20 inches last month. Express this amount as a mixed number in simplest form.

2 \(\frac{1}{5}\) inches

Write each decimal as a mixed number in simplest form.

|   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|
| 7 | 6.3 | 3 | 10 | 8 | 32.50 | 32 | 2 | 2 |
| 8 | 40 | 33 | 100 | 10 | 24 | 50 | 100 |

### Spiral Review

Replace each \(\bigcirc\) with \(<\), \(>\), or \(=\) to make each statement true. (Lesson 4–7)

11. \(\frac{4}{9} \bigcirc \frac{1}{2}\)
12. \(\frac{3}{4} \bigcirc \frac{7}{9}\)
13. \(\frac{6}{3} \bigcirc \frac{6}{4}\)
14. \(\frac{9}{8} \bigcirc \frac{9}{4}\)
4–8

Name ______________________ Date ________________

Problem-Solving Practice

Writing Decimals as Fractions

5NS1.2

Solve.

1. One cup is equal to 0.5 pint. Write this decimal as a fraction in simplest form.

\[ \frac{1}{2} \] pint

2. Aimee needs 0.25 cup of vegetable oil to make muffins. Write this decimal as a fraction in simplest form.

\[ \frac{1}{4} \] cup

3. Trudy is making a picture frame and needs nails that measure 0.375 of an inch. At the hardware store, nails are measured in fractions of an inch: \( \frac{1}{16} \) inch, \( \frac{1}{8} \) inch, and \( \frac{3}{8} \) inch. Which of these nails should she buy?

\( \frac{3}{8} \) inch

4. At Richardson Elementary, 0.35 of the buses were late because of a snowstorm. Write the decimal as a fraction in simplest form.

\( \frac{7}{20} \) buses

5. Neil needs about 0.33 cup of sugar for his recipe. Which of these fractions is closest to the correct measure, \( \frac{1}{3} \), \( \frac{1}{4} \), or \( \frac{2}{5} \)?

\( \frac{1}{3} \) cup

6. A vitamin contains sixty-two thousandths gram of vitamin E and thirty-three thousandths gram of vitamin A. Does the vitamin contain at least twice the amount of vitamin E than vitamin A?

no

7. Three flowers have stem widths of 0.5 inch, 0.625 inch, and 0.3 inch. What is the measure of the flower with the greatest stem width? Write the answer as a fraction.

\( \frac{5}{8} \) inch

4–8

Name ______________________ Date ________________

Enrich

Fractional Estimates

5NS1.2

Often you only need to give a fractional estimate for a decimal. To make fractional estimates, it helps to become familiar with the fraction-decimal equivalents shown in the chart at the right. You also should be able to identify the fraction as an overestimate or underestimate. Here’s how.

The decimal 0.789 is a little less than 0.8, so it is a underestimate.

\[ 0.789 = \frac{8}{10} = \frac{789}{1000} \]

The decimal 1.13 is a little more than 1.125, so it is an overestimate.

\[ 1.13 = 1 + \frac{13}{100} = \frac{113}{100} \]

Write a fractional estimate for each decimal. Be sure to identify your estimate as an overestimate or an underestimate.

1. 0.243

\( \frac{1}{4} \)

2. 0.509

\( \frac{1}{2} \)

3. 0.429

\( \frac{2}{5} \)

4. 0.741

\( \frac{3}{4} \)

5. 0.88

\( \frac{7}{8} \)

6. 0.63

\( \frac{5}{8} \)

7. 0.09

\( \frac{1}{10} \)

8. 0.57

\( \frac{3}{5} \)

9. 1.471

\( 1\frac{1}{2} \)

10. 2.76

\( 2\frac{3}{4} \)

11. 1.289

\( 1\frac{3}{10} \)

12. 5.218

\( 5\frac{1}{5} \)

13. The scale in the delicatessen shows 0.73 pound. Write a fractional estimate for this weight.

\[ \frac{3}{4} \] lb

14. Darnell ordered a quarter pound of cheese. The scale shows 0.23 pound. Is this more or less than he ordered?

less

15. In a recent year, the precipitation of Sacramento, California, was 23.63 inches. Write a fractional estimate for this amount.

\[ 23\frac{5}{8} \] in.

16. Charlotte used a calculator to figure out how many yards of ribbon she needed for a craft project. The display shows 2.53125. Write a fractional estimate for this length.

\[ 2\frac{1}{2} \] yd
You can write a fraction as a decimal. Think of the fraction as a division problem.

Write \(\frac{3}{4}\) as a decimal. Think: 3 divided by 4

Write \(\frac{5}{4}\) as a decimal. Think: 1 divided by 4

Write each fraction as a decimal.

1. \(\frac{2}{25}\) Think: 2 divided by 25
   Write: \(0.08\)

2. \(\frac{7}{10}\) Think: 7 divided by 10
   Write: \(0.7\)

3. \(\frac{11}{25}\) \(0.44\)

4. \(\frac{31}{100}\) \(0.31\)

5. \(\frac{19}{20}\) \(0.95\)

6. \(\frac{3}{4}\) \(0.75\)

7. \(\frac{3}{10}\) \(0.3\)

8. \(\frac{29}{50}\) \(0.58\)

9. \(\frac{4}{5}\) \(0.8\)

10. \(\frac{7}{8}\) \(0.875\)

11. \(\frac{39}{10}\) \(3.9\)

12. \(\frac{42}{5}\) \(8.4\)

13. \(\frac{81}{8}\) \(10.125\)

14. \(\frac{29}{25}\) \(2.24\)

Solve.

41. A bread dough recipe calls for \(\frac{3}{4}\) cups flour and \(\frac{1}{3}\) cup water. Write how much water is needed as a decimal.

   \(0.75\) cups

42. Casey had a 10-inch pencil. She sharpened 2 inches off. Write a decimal for how much pencil was shaved off.

   \(0.20\) inches
**Homework Practice**

**Writing Fractions as Decimals**

Write each fraction or mixed number as a decimal.

1. \( \frac{7}{8} = 0.88 \)
2. \( \frac{3}{40} = 0.08 \)
3. \( \frac{15}{200} = 0.08 \)
4. \( \frac{29}{40} = 0.725 \)
5. \( \frac{3}{10} = 0.30 \)
6. \( \frac{13}{20} = 0.65 \)
7. \( \frac{3}{5} = 0.60 \)
8. \( \frac{9}{20} = 0.45 \)
9. \( \frac{121}{16} = 7.56 \)
10. \( \frac{37}{200} = 0.185 \)

11. A snake kept in a tank can grow up to \( \frac{257}{10} \) feet long. Express this length as a decimal.

\[ 25.7 \]

**Spiral Review**

Write each decimal as a fraction in simplest form. (Lesson 4–8)

12. \( 0.28 = \frac{7}{25} \)
13. \( 0.3 = \frac{3}{10} \)
14. \( 0.875 = \frac{7}{8} \)
15. \( 0.020 = \frac{1}{50} \)

Write each decimal as a mixed number in simplest form.

16. \( 4.5 = 4 \frac{1}{2} \)
17. \( 9.35 = 9 \frac{7}{20} \)
18. \( 27.03 = 27 \frac{3}{100} \)
19. \( 71.006 = 71 \frac{3}{500} \)

**Problem-Solving Practice**

**Writing Fractions as Decimals**

Solve.

1. One cup is equal to \( \frac{1}{2} \) pint. Write this fraction as a decimal in simplest form.
   
   \[ 0.5 \text{ pint} \]

2. Carla needs \( \frac{3}{4} \) cup of canola oil to make tortillas. Write this fraction as a decimal.
   
   \[ 0.75 \text{ cup} \]

3. Hugo is making a picture frame and needs screws that measure \( \frac{1}{4} \) of an inch. At the hardware store, screws are measured as 0.25, 0.75, and 0.33 inch. Which of these screws should he buy?

4. At Cromwell Elementary, 8 out of 9 of the buses were late because of a snowstorm. Write the number of late buses as a fraction and as a decimal.

   \( \frac{8}{9} ; 0.89 \text{ buses} \)

5. Ned needs several pieces of wood measuring 0.33 feet. The lumber store will cut pieces only in increments of \( \frac{1}{4} \) feet, \( \frac{1}{2} \) feet, \( \frac{3}{4} \) feet, and so on. Ned agrees to have the lumber store cut the pieces, but he will have to trim some off once he gets home. He wants to trim the least amount off each piece. Which measurement should the lumber store use to cut the pieces?

6. Out of 1,000 grains of sand on a beach, Kathy estimates that 40 grains are black and 760 grains are beige. Write the fraction of beige grains of sand as a decimal.

   \( 0.76 \text{ beige grains} \)
5SDAP1.5

You can find points on a coordinate plane by using ordered pairs. An example of an ordered pair is (2, 5).

Name the ordered pair for each point.

1. A
2. B
3. C

The first number is the x-coordinate and corresponds to the x-axis.

The second number is the y-coordinate and corresponds to the y-axis.

On each number line, fill in the tags using the given fractions.

1. \(\frac{3}{4}, \frac{5}{8}, \frac{3}{2}, \frac{1}{3}, \frac{7}{8}\)
2. \(\frac{4}{3}, \frac{6}{5}, \frac{15}{16}, \frac{4}{3}, \frac{8}{5}, \frac{10}{16}\)
3. \(\frac{7}{6}, \frac{15}{4}, \frac{3}{8}, \frac{4}{2}, \frac{15}{3}\)
4. \(\frac{9}{7}, \frac{8}{3}, \frac{13}{8}, \frac{8}{5}, \frac{9}{8}, \frac{4}{6}, \frac{6}{3}\)

Write a fraction in simplest form for each tag on this number line. Use only the denominators 2, 3, 4, 5, 8, and 10. Express numbers greater than 1 as improper fractions.

Name the ordered pair for each point.

1. A (3, 1)
2. B (2, 3)
3. C (4, 7)

Name the point for each ordered pair.

4. (1, 1) D
5. (6, 0) G
6. (3, 6) H
4–10 Skills Practice

Algebra: Ordered Pairs and Functions

Name the ordered pair for each point.

1. A (1, 3)
2. B (3, 5)
3. C (5, 7)
4. D (7, 8)
5. E (2, 0)
6. F (3, 1)

Name the point for each ordered pair.

7. (6, 3) H
8. (6, 6) K
9. (4, 4) G
10. (2, 4) L
11. (1, 7) I
12. (6, 2) J

For Exercises 13–16, use the map of the city square at the right.

13. What is located at (3, 6)?
   Bank
14. Write the ordered pair for the bookstore.
   (5, 2)
15. If the y-coordinate of the grocery store was moved up 4 units, what would be the ordered pair of the grocery store?
   (1, 7)
16. Suppose point (4, 2) was moved 2 units to the left and moved 3 units up. Write the new ordered pair.
   (2, 5)

4–10 Homework Practice

Algebra: Ordered Pairs and Functions

Use the coordinate plane at the right to name the ordered pair for each point.

1. P (3, 1)
2. B (1.5, 3.5)
3. S (2.4)
4. T (0.25)
5. J (4, 0)

Graph and label each point on a coordinate plane.

6. M (5, 2)
7. N (2, 5)
8. P (5, 2.5)
9. Q (3.5, 2)
10. T (0, 4)

Spiral Review

Write each fraction or mixed number as a decimal. (Lesson 4–9)

1. \( \frac{13}{25} = 0.52 \)
2. \( \frac{81}{200} = 0.41 \)
3. \( \frac{5}{8} = 0.625 \)
4. \( \frac{63}{50} = 1.26 \)
5. \( \frac{19}{40} = 0.475 \)
6. \( \frac{187}{25} = 7.48 \)
7. \( \frac{73}{4} = 18.25 \)
8. \( \frac{35}{8} = 4.375 \)
9. \( \frac{41}{50} = 0.82 \)
10. \( \frac{3}{10} = 0.3 \)
Investigating Coordinate Grids

You can use coordinate grids to display sets of ordered pairs. You can also find new ordered pairs by looking at the line that the plotted ordered pairs make.

The table below lists the cost of tickets to a play. The data from the table are plotted on the grid.

<table>
<thead>
<tr>
<th>Number of Tickets</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>$10.00</td>
</tr>
<tr>
<td>4</td>
<td>$20.00</td>
</tr>
<tr>
<td>6</td>
<td>$30.00</td>
</tr>
<tr>
<td>8</td>
<td>$40.00</td>
</tr>
</tbody>
</table>

The table shows the cost of 2, 4, 6, and 8 tickets. To find the cost of 5 tickets, you can use the grid to find the ordered pair that fits the table. Start at the origin and move to 5 on the x-axis. This is the x-coordinate. Move up until you meet the line. Then follow across to the left to the y-axis to find the corresponding y-coordinate. The value is 25. The ordered pair is (5, 25). This ordered pair means 5 tickets cost $25.

EXERCISES Use the data plotted on the coordinate grid to answer the questions.

1. How many miles did the airplane travel in 1 hour? [120 miles]
2. How many miles did the airplane travel in 2 hours? [240 miles]
3. How many miles did the airplane travel in 5 hours? [600 miles]
4. How long did it take the airplane to travel 720 miles? [6 hours]
Match each word to its definition. Write your answers on the lines provided.

1. equivalent fractions **D**
2. greatest common factor **E**
3. least common multiple **F**
4. simplest form **A**
5. fraction **B**
6. numerator **C**
7. denominator **G**
8. rational number **J**
9. mixed number **H**
10. improper fraction **I**

**D** A fraction in which the numerator and the denominator have no common factor greater than 1.

**E** A number that represents part of a whole or part of a set.

**F** The number above the bar in a fraction; the part of the fraction that tells how many of the equal parts are being used.

**A** Fractions that represent the same number.

**B** The largest number that divides evenly into two or more numbers.

**C** The smallest whole number greater than 0 that is a common multiple of each of two or more numbers.

**G** The bottom number in a fraction.

**J** The sum of a whole number and a fraction.

**H** The numerator is greater than or equal to the denominator.

**I** Any number that can be written as a fraction.

---

**Oral Assessment**

Draw a picture of a square on the board. Divide the square into four equal parts, shading in one section. Read each question aloud to the student. Then write the student's answers on the lines below the question.

1. How many parts are shaded in?
   
   
   1

2. What is the fraction that represents the amount of parts shaded in?
   
   
   \( \frac{1}{4} \)

Shade in another section.

3. How many parts are shaded in?
   
   
   2

4. What is the fraction that represents the amount of parts shaded in?
   
   
   \( \frac{1}{2} \) or \( \frac{2}{4} \)

5. Tell how you got your answer.
   
   **Answers will vary; accept reasonable answers**
Name ___________________________ Date ________________

**Oral Assessment (continued)**

<table>
<thead>
<tr>
<th>Student</th>
<th>Amount Read</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alberto</td>
<td>1/2</td>
</tr>
<tr>
<td>Alma</td>
<td>2/4</td>
</tr>
<tr>
<td>Marta</td>
<td>3/4</td>
</tr>
<tr>
<td>Hugo</td>
<td>1/4</td>
</tr>
</tbody>
</table>

6. Mario read \(\frac{4}{8}\) of his summer reading book. What other students(s) read the same amount?

**Alberto and Alma**

7. Who read the most of their book?

**Marta**

8. Tell how you got your answer.

\(\frac{3}{4}\) is greater than \(\frac{1}{2}\) or \(\frac{1}{4}\)

9. What 2 students in the chart read the same amount?

**Alberto and Alma**

10. Tell how you got your answer.

\(\frac{1}{2}\) and \(\frac{2}{4}\) are equivalent fractions

11. Who read the least amount of their book?

**Hugo**

12. Tell how you got your answer.

\(\frac{1}{4}\) is less than \(\frac{2}{4}\) or \(\frac{3}{4}\)
Chapter 4 Assessment Answer Key

Chapter Diagnostic Assessment
Page 59

none of the above

1. 3, 9
2. 3, 5, 9
3. 2, 3, 4, 6

yes, 36 is divisible by 6

5. yes, 36 is divisible by 6

6. $2 \times 3 \times 5^2$
7. $2^4 \times 5$
8. $2^2 \times 5 \times 7$
9. $2 \times 5 \times 3 \times 3$

10. $2^5$

Chapter Pretest
Page 60

1. 4
2. 15
3. 3
4. $1 \over 2$
5. $2 \over 3$
6. $32 \over 5$
7. $31 \over 4$
8. 14
9. 30
10. $3 \over 8$
11. $5 \over 17 \over 40$
12. (2, 9)
13. (7, 3)
14. (4, 4)

Quiz 1 (4–1 through 4–3)
Page 61

1. 1, 2, 4
2. 1, 7
3. 6
4. 12
5. 9
6. 10
7. 2
8. 5
9. 6

10. $1 \over 2$
11. simplest form
12. $1 \over 4$
13. $1 \over 3$

14. 6 ways
**Quiz 2 (4–4 through 4–6)**

Page 62

1. \( \frac{24}{7} \)
2. \( \frac{53}{9} \)
3. \( \frac{25}{6} \)
4. \( \frac{1}{8} \)
5. 12, 24, 36
6. 48, 96, 144
7. 14
8. 105
9. 27, 45, 63
10. 15 months

**Quiz 3 (4–7 through 4–10)**

Page 63

1. >
2. >
3. <
4. \( \frac{1}{20} \)
5. \( \frac{4}{5} \)
6. \( \frac{24}{100} \)
7. \( \frac{5}{10} \)
8. 12.50
9. 2.75
10. 0.032

11.–13.

**Mid-Chapter Review (4–1 through 4–4)**

Page 64

1. A
2. J
3. A
4. J
5. B

Factors that are shared by two or more numbers

Student list should show 6 possible arrangements

The product of the number and any whole number

The sum of a whole number and a fraction; \( 1 \frac{1}{2} \)
Chapter 4 Assessment Answer Key

<table>
<thead>
<tr>
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<th>Page 70</th>
<th>Chapter Test, Form 2A</th>
<th>Page 72</th>
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<tr>
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<td>1. <strong>A</strong></td>
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<td></td>
<td>3. <strong>C</strong></td>
<td></td>
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<td>4. <strong>F</strong></td>
<td></td>
<td>4. <strong>J</strong></td>
<td></td>
</tr>
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<td></td>
<td>5. <strong>B</strong></td>
<td></td>
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<td>6. <strong>H</strong></td>
<td></td>
<td>6. <strong>H</strong></td>
<td></td>
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<td></td>
<td>7. <strong>C</strong></td>
<td></td>
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<td>8. <strong>G</strong></td>
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<td></td>
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<td>9. <strong>D</strong></td>
<td></td>
<td>9. <strong>D</strong></td>
<td></td>
</tr>
<tr>
<td>10. <strong>G</strong></td>
<td></td>
<td>10. <strong>C</strong></td>
<td></td>
</tr>
<tr>
<td>11. <strong>C</strong></td>
<td></td>
<td>11. <strong>C</strong></td>
<td></td>
</tr>
<tr>
<td>12. <strong>F</strong></td>
<td></td>
<td>12. <strong>F</strong></td>
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(continued on the next page)
## Chapter 4 Assessment Answer Key

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<tbody>
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<td>9. <strong>C</strong></td>
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<tr>
<td>10. <strong>G</strong></td>
</tr>
<tr>
<td>11. <strong>D</strong></td>
</tr>
<tr>
<td>12. <strong>F</strong></td>
</tr>
<tr>
<td>13. <strong>B</strong></td>
</tr>
<tr>
<td>14. <strong>G</strong></td>
</tr>
<tr>
<td>15. <strong>C</strong></td>
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</table>

### Chapter Test, Form 2B

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<th>Page 74</th>
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<tbody>
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<td>1. <strong>C</strong></td>
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<td>2. <strong>H</strong></td>
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<td>3. <strong>A</strong></td>
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<td>4. <strong>H</strong></td>
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<tr>
<td>5. <strong>C</strong></td>
</tr>
<tr>
<td>6. <strong>G</strong></td>
</tr>
<tr>
<td>7. <strong>A</strong></td>
</tr>
<tr>
<td>8. <strong>H</strong></td>
</tr>
<tr>
<td>9. <strong>A</strong></td>
</tr>
<tr>
<td>10. <strong>G</strong></td>
</tr>
<tr>
<td>11. <strong>C</strong></td>
</tr>
<tr>
<td>12. <strong>H</strong></td>
</tr>
<tr>
<td>13. <strong>B</strong></td>
</tr>
<tr>
<td>14. <strong>H</strong></td>
</tr>
</tbody>
</table>

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Chapter 4 Assessment Answer Key

Chapter Test, Form 2C
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1. \( \frac{2}{4} \) or \( 2 \frac{1}{4} \)
2. \( \frac{9}{4} \) or \( 2 \frac{1}{4} \)
3. \( 20 \)
4. \( 9 \)
5. \( \frac{7}{4} \) or \( 1 \frac{3}{4} \)
6. \( 6 \)
7. \( 36 \)
8. \( 60 \)

Chapter Test, Form 2D
Page 77

1. \( \frac{1}{8} \)
2. \( 9 \)
3. \( \frac{1}{4} \) or \( 2 \frac{1}{4} \)
4. \( \frac{3}{14} \)
5. \( 20 \)
6. \( 9 \)
7. \( \frac{7}{4} \) or \( 1 \frac{3}{4} \)
8. \( 6 \)
9. \( \frac{36}{4} \) or \( 9 \frac{3}{4} \)
10. \( \frac{1}{2} \) or \( 1 \frac{1}{2} \)

11. \( \frac{1}{8} \)
12. simplest form
13. \( < \)
14. \( > \)
15. \( \frac{8}{5} \) or \( 1 \frac{3}{5} \)
16. \( \frac{6}{4} \) or \( 1 \frac{1}{4} \)

(continued on the next page)
Chapter 4 Assessment Answer Key

Chapter Test, Form 2D
Page 79

11. \( \frac{2\frac{1}{4}}{4} \) or \( \frac{9}{4} \)

12. \( \frac{2}{4} \) or \( \frac{1}{2} \)

13. \( < \)

14. \( > \)

15. \( 8\frac{3}{5} \)

16. \( 6\frac{1}{4} \)

17. \( \frac{1}{2} \)

Chapter Test, Form 3
Page 80

1. \( 17 \)

2. \( 9 \)

3. \( \frac{1}{8} \)

4. **Simplest form**

5. \( 3 \)

6. \( 8 \)

7. \( 10\frac{2}{3} \)

8. \( 14 \)

9. \( 160 \)

10. \( 36 \)

11. \( 3\frac{4}{5}, 19, 3.8 \)

12. The point should be plotted at \( 1\frac{2}{5} \) on the number line.

13. \( = \)

14. \( < \)

15. \( \frac{5}{20} \)

16. \( \frac{6}{9} \)

17. \( \frac{5}{24} \)

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## Chapter 4 Assessment Answer Key

Page 82, Extended-Response Test

### Scoring Rubric

<table>
<thead>
<tr>
<th>Level</th>
<th>Specific Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>The student demonstrates a <strong>thorough understanding</strong> of the mathematics concepts and/or procedures embodied in the task. The student has responded correctly to the task, used mathematically sound procedures, and provided clear and complete explanations and interpretations. The response may contain minor flaws that do not detract from the demonstration of a thorough understanding.</td>
</tr>
<tr>
<td>3</td>
<td>The student demonstrates an <strong>understanding</strong> of the mathematics concepts and/or procedures embodied in the task. The student’s response to the task is essentially correct with the mathematical procedures used and the explanations and interpretations provided demonstrating an essential but less than thorough understanding. The response may contain minor errors that reflect inattentive execution of the mathematical procedures or indications of some misunderstanding of the underlying mathematics concepts and/or procedures.</td>
</tr>
<tr>
<td>2</td>
<td>The student has demonstrated only a <strong>partial understanding</strong> of the mathematics concepts and/or procedures embodied in the task. Although the student may have used the correct approach to obtaining a solution or may have provided a correct solution, the student’s work lacks an essential understanding of the underlying mathematical concepts. The response contains errors related to misunderstanding important aspects of the task, misuse of mathematical procedures, or faulty interpretations of results.</td>
</tr>
<tr>
<td>1</td>
<td>The student has demonstrated a <strong>very limited understanding</strong> of the mathematics concepts and/or procedures embodied in the task. The student’s response to the task is incomplete and exhibits many flaws. Although the student has addressed some of the conditions of the task, the student reached an inadequate conclusion and/or provided reasoning that was faulty or incomplete. The response exhibits many errors or may be incomplete.</td>
</tr>
<tr>
<td>0</td>
<td>The student has provided a <strong>completely incorrect</strong> solution or uninterpretable response, or no response at all.</td>
</tr>
</tbody>
</table>
Chapter 4 Assessment Answer Key

Page 82, Extended-Response Test
Sample Answers

In addition to the scoring rubric found on page A35, the following sample answers may be used as guidance in evaluating open-ended assessment items.

1. **a.** Factors that are shared by two or more numbers are called common factors. The greatest common factors of two or more numbers is the greatest common factor of the numbers.

   **b.**
   
   \[
   \begin{array}{cc}
   12 & 24 \\
   1 \times 12 & 1 \times 24 \\
   2 \times 6 & 2 \times 12 \\
   3 \times 4 & 3 \times 8 \\
   4 \times 6 & \\
   \end{array}
   \]

   The greatest common factor of 12 and 24 is 12.

2. **a.** Equivalent fractions are fractions that share the same relationship between part and whole.

   Example of equivalent fractions:

   \[
   \begin{array}{c}
   \frac{1}{3} \\
   \frac{1}{12} \frac{1}{12} \frac{1}{12} \\
   \frac{1}{12} \frac{1}{12} \frac{1}{12} \frac{1}{12} \\
   \end{array}
   \]

   **b.** A mixed number indicates the sum of a whole number and a fraction. For an improper fraction, the numerator is greater than or equal to the denominator. An improper fraction can be written as a mixed number.

   **c.** It is an improper fraction.

3. 25 is not a multiple of 4 because 4 cannot divide evenly into 25.

4. To write a decimal as a fraction, you have to identify the place value of the last decimal place. Then you can write the decimal as a fraction using the place value as the denominator.
Chapter 4 Assessment Answer Key

Cumulative Standardized Test Practice

1. C
2. F
3. D
4. G
5. B
6. F
7. C
8. J
9. B
10. 0.25
11. $\frac{9}{100}$
12. 72
13. 4.00
14. Emily
15. $\frac{2}{5}$
16. 10
17. 3