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

The Chapter 5 Resource Masters includes the core materials needed for Chapter 5. 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 5–1. 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. If feasible, interview students in small groups, asking them the interview questions in the guide. 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 5 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.

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

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.

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.
## Graphic Organizer

Use this graphic organizer to take notes on Chapter 5: Adding and Subtracting Fractions. Fill in the missing information.

<table>
<thead>
<tr>
<th>How do I …</th>
<th>Instructions</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>… estimate the sum or difference of fractions?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>… estimate the sum or difference of mixed numbers?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>… add or subtract fractions with like denominators?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>… add or subtract fractions with unlike denominators?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>… add or subtract mixed numbers?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
This is an alphabetical list of new vocabulary terms you will learn in **Chapter 5: Adding and Subtracting Fractions**. 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>denominator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fraction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>like fractions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>numerator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
<td></td>
</tr>
<tr>
<td>-----------------------</td>
<td>------------</td>
<td></td>
</tr>
<tr>
<td>simplest form</td>
<td></td>
<td></td>
</tr>
<tr>
<td>unlike fractions</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Dear Family,

Today my class started Chapter 5: Adding and Subtracting Fractions. I will be learning to add and subtract fractions. I will also be learning to round fractions and mixed numbers. Here are my vocabulary words and an activity that we can do together.

Sincerely, ______________________

Key Vocabulary

like fractions Fractions that have the same denominator. Example: \( \frac{1}{5} \) and \( \frac{2}{5} \).

unlike fractions Fractions with different denominators. Example: \( \frac{2}{5} \) and \( \frac{1}{3} \).

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.

fraction A number that represents part of a whole or part of a set. Example: \( \frac{1}{2} \), \( \frac{1}{3} \), \( \frac{1}{4} \), and \( \frac{3}{4} \) are fractions.

numerator The number above the bar in a fraction; the part of the fraction that tells how many of the equal parts are being used. Example: \( \frac{2}{4} \), 2 is the numerator.

denominator The bottom number in a fraction. Example: \( \frac{5}{6} \), 6 is the denominator.

Activity

Sort marbles according to color. Create fractions, using the different marble colors to represent parts of the whole amount of marbles. Draw a pizza pie in the middle of a piece of poster paper and divide your pie into the number of marbles for each color. Practice adding together different sets of fractions.

Books to Read

*Polar Bear Math, Learning About Fractions* by Nagda and Bickel

*The Doorbell Rang* by Pat Hutchins

*Gator Pie* by Louise Mathews
Estimada familia:

Hoy mi clase comenzó el Capítulo 5: Suma y resta fracciones. Aprenderé a sumar y a restar fracciones. También aprenderé a redondear fracciones y números mixtos. A continuación, están mis palabras del vocabulario y una actividad que podemos realizar juntos.

Sinceramente, ______________________

Vocabulario clave

fracciones semejantes Fracciones que tienen el mismo denominador. Ejemplo: \( \frac{1}{5} \) y \( \frac{2}{5} \)

fracciones con distinto denominador Fracciones con diferentes denominadores. Ejemplo: \( \frac{2}{5} \) y \( \frac{1}{3} \)

forma reducida Fracción en que el numerador y el denominador no tienen un factor común mayor que 1. Ejemplo: \( \frac{5}{12} \) está en forma reducida porque 5 y 12 no tienen un factor común mayor que 1

fracción Número que representa parte de un todo o parte de un conjunto. Ejemplo: \( \frac{1}{2} \), \( \frac{1}{3} \), \( \frac{1}{4} \) y \( \frac{3}{4} \) son fracciones

numerador Número que está encima de la barra de fracción; la parte de la fracción que indica cuántas partes iguales se están usando. Ejemplo: \( \frac{2}{4} \); 2 es el numerador

denominador El número inferior en una fracción. Ejemplo: \( \frac{5}{6} \), 6 es el denominador

Actividad

Clasifiquen canicas según sus colores. Creen fracciones a partir de los colores (partes) y de la cantidad de canicas (todo). Dibujen una pizza redonda en el centro de una cartulina y dividanla según el número de canicas por color. Practiquen a sumar los distintos conjuntos de fracciones.

Libros recomendados

Polar Bear Math, Learning about Fractions de Nagda and Bickel

The Doorbell Rang de Pat Hutchins

Gator Pie de Louise Mathews
Anticipation Guide

Adding and Subtracting Fractions

**STEP 1**

**Before you begin Chapter 5**

- 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><strong>STEP 1 A, D, or NS</strong></th>
<th><strong>Statement</strong></th>
<th><strong>STEP 2 A or D</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Like fractions have the same numerator.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Unlike fractions have different denominators.</td>
<td></td>
</tr>
<tr>
<td>3. $\frac{1}{5}$ and $\frac{2}{5}$ are like fractions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>$\frac{7}{12}$ is in simplest form.</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>A fraction is a number that represents part of a whole or part of a set.</td>
<td></td>
</tr>
<tr>
<td>6. $\frac{3}{4}$ and $\frac{6}{7}$ are unlike fractions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>$\frac{9}{10}$ and $\frac{7}{10}$ are like fractions.</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>In the fraction $\frac{6}{10}$, 10 is the denominator.</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>In the fraction $\frac{3}{12}$, 3 is the denominator.</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>In the fraction $\frac{3}{4}$, 3 is the numerator.</td>
<td></td>
</tr>
</tbody>
</table>

**STEP 2**

**After you complete Chapter 5**

- 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

ROLL IT UP!

Ready

You will need
• a pair of number cubes for each player
• paper and pencil

Set

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

GO!

1. Players toss their pair of number cubes twice and record the 4 numbers.

2. Players form two fractions from their numbers so that the fractions have the greatest sum possible. Players may move their numbers around to increase their sums.

3. The player with the greatest sum wins the first round. The first player to win 3 rounds is the winner of the game.

\[
\frac{2}{3} \quad \frac{5}{6}
\]
Rounding Fractions and Mixed Numbers

**Round Up**
If the numerator is almost as large as the denominator, round the number up to the next whole number.

Example: \( \frac{9}{10} \) rounds to 1.
9 is almost as large as 10.

**Round to \( \frac{1}{2} \)**
If the numerator is about half of the denominator, round the fraction to \( \frac{1}{2} \).

Example: \( \frac{3}{5} \) rounds to \( \frac{1}{2} \).
3 is about half of 5.

**Round Down**
If the numerator is much smaller than the denominator, round the number down to the previous whole number.

Example: \( \frac{1}{5} \) rounds to 0.
1 is much smaller than 5.

**Round each number to the nearest half.**

1. \( \frac{9}{10} \)
2. \( \frac{1}{10} \)
3. \( \frac{5}{8} \)

4. \( \frac{2}{7} \)
5. \( \frac{9}{16} \)
6. \( \frac{1}{3} \)

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

10. \( \frac{5}{11} \)
11. \( \frac{7}{8} \)
12. \( \frac{7}{8} \)
Skills Practice

Rounding Fractions and Mixed Numbers

Round each number to the nearest half.

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

Solve.

22. Mrs. Jones is putting up blinds to fit in a window opening that is $36\frac{5}{8}$ inches wide. Should she round $36\frac{5}{8}$ up or down when deciding on the size of blinds to purchase?

23. Marvin is mailing a copy of a document that is $12\frac{1}{8}$ inches long and $10\frac{1}{2}$ inches wide. Will the document fit in an envelope that is 12 inches long and $10\frac{1}{2}$ inches wide or in an envelope that is $12\frac{1}{2}$ inches long and 11 inches wide?
Homework Practice

Rounding Fractions and Mixed Numbers

Round each number to the nearest half.

1. \(2 \frac{1}{12}\) \(\quad\) 2. \(4 \frac{5}{11}\) \(\quad\) 3. \(7 \frac{3}{10}\)

4. \(\frac{8}{12}\) \(\quad\) 5. \(6 \frac{2}{9}\) \(\quad\) 6. \(\frac{14}{16}\)

7. \(8 \frac{6}{16}\) \(\quad\) 8. \(10 \frac{7}{12}\) \(\quad\) 9. \(\frac{3}{8}\)

Solve.

10. Your basement has an \(8 \frac{3}{12}\) foot ceiling. To the nearest half foot, how tall is the tallest cabinet that can fit in the basement?

11. Alice is giving a book as a gift that is \(8 \frac{3}{8}\) inches long and \(6 \frac{1}{12}\) inches wide. Will the book fit in a box that is \(8 \frac{1}{2}\) inches long and \(6 \frac{1}{2}\) inches wide or in a box that is 8 inches long and 6 inches wide?

Spiral Review

Graph each ordered pair on the coordinate plane at the right.

12. \(M(4, 3)\) \(\quad\) 13. \(N\left(1 \frac{1}{2}, 2\right)\) \(\quad\) 14. \(P\left(3, 2.5\right)\)

15. \(Q\left(4 \frac{3}{4}, 5\right)\) \(\quad\) 16. \(T\left(2, 2 \frac{1}{4}\right)\) \(\quad\) 17. \(V\left(1, 3 \frac{1}{2}\right)\)
Solve.

1. A recipe for cookies calls for \( \frac{3}{4} \) of a cup of chocolate chips. Should you buy a package with \( \frac{1}{2} \) cup or a package with 1 cup?

2. The cookie recipe also calls for \( \frac{3}{8} \) of a cup of walnuts. Should you buy a package with 1 cup or a package with \( \frac{1}{2} \) cup of walnuts?

3. To the nearest half foot, what is the tallest refrigerator that can fit in a kitchen with a space that is \( 6 \frac{3}{4} \) feet tall?

4. Russ is putting his photographs in an album that is \( 12 \frac{1}{8} \) inches long and \( 10 \frac{1}{2} \) inches wide. Should he trim the edges of the photographs to \( 12 \frac{1}{4} \) inches long and 10 inches wide or to \( 12 \frac{1}{4} \) inches long and \( 10 \frac{1}{4} \) inches wide?

5. A farmer is planting squash plants that need \( 2 \frac{3}{8} \) feet to spread out. Round the amount of space the squash plants need to the nearest \( \frac{1}{2} \) foot.

6. Based on the area of his flowerbed, a gardener calculates that he needs \( 6 \frac{8}{14} \) gallons of fertilizer. Should he round \( 6 \frac{8}{14} \) up or down when deciding on the amount of fertilizer he should purchase?
When you measure a quantity, your measurement is more precise when you use a smaller unit of measure. But no measurement is ever exact—there is always some amount of error. The greatest possible error (GPE) of a measurement is one half the unit of measure.

length of line segment: \( \frac{3}{8} \) inches

GPE: half of \( \frac{1}{8} \) inch, or \( \frac{1}{16} \) inch

Since \( \frac{3}{8} = \frac{6}{16} = \frac{5}{16} \), the actual measure of the line segment may range anywhere from \( \frac{5}{16} \) inches to \( \frac{7}{16} \) inches.

Use the GPE to give a range for the measure of each line segment.

1.

2.

3.

4.

5. Using this scale, the weight of a bag of potatoes is measured as 3 pounds. What is the range for the actual weight of the potatoes?

6. Using this container, the amount of a liquid is measured as 20 milliliters. What is the range for the actual amount of the liquid?
You can round mixed numbers to the nearest half to estimate sums and differences of mixed numbers. Use number lines to help you.

Estimate $5 \frac{5}{8} - 2 \frac{1}{5}$

$5 \frac{5}{8}$ is closer to $5 \frac{1}{2}$ than to 5.

$2 \frac{1}{5}$ is closer to 2 than to 3.

$5 \frac{5}{8} - 2 \frac{1}{5} = 3 \frac{1}{2}$ So, $5 \frac{5}{8} - 2 \frac{1}{5}$ is about $3 \frac{1}{2}$.

Show each mixed number on a number line and round it to the nearest half. Then estimate the sum or difference.

1. $3 \frac{2}{5} + 4 \frac{9}{10}$

$3 \frac{2}{5}$ is closer to than to .

$4 \frac{9}{10}$ is closer to than to .

$3 \frac{2}{5} + 4 \frac{9}{10} = \ldots$ 

Estimate the sum or difference. You may draw number lines.

2. $8 \frac{9}{16} - 4 \frac{1}{6}$

$7 \frac{9}{10} + 6 \frac{7}{10}$

$9 \frac{7}{12} - 1 \frac{3}{8}$
Skills Practice

Estimating Sums and Differences

Round to the nearest half.

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

Estimate the sum or difference.

9. \(\frac{7}{8} + 2\frac{1}{6}\)  
10. \(\frac{5}{6} - \frac{2}{3}\)  
11. \(\frac{1}{8} - \frac{7}{8}\)  
12. \(\frac{7}{10} + \frac{3}{4}\)  
13. \(\frac{1}{4} + \frac{3}{8}\)  
14. \(\frac{14}{5} - \frac{3}{5}\)  
15. \(18\frac{5}{16} - 9\frac{13}{16}\)  
16. \(6\frac{11}{12} + 4\frac{5}{12}\)  
17. \(7\frac{1}{3} + 7\frac{7}{12}\)  
18. \(15\frac{3}{8} - 7\frac{7}{16}\)  
19. \(9\frac{4}{5} + 6\frac{2}{3}\)  
20. \(6\frac{11}{12} - 6\frac{1}{5}\)  
21. \(8\frac{2}{5} + 8\frac{11}{16}\)  
22. \(17\frac{7}{10} - 9\frac{1}{3}\)  
23. \(7\frac{1}{3} + 9\frac{3}{8}\)  
24. \(30\frac{7}{12} + 30\frac{1}{12}\)  
25. \(58\frac{4}{5} - 29\frac{7}{8}\)  
26. \(50\frac{5}{16} - 30\frac{1}{3}\)

Solve.

27. Beth walks 10\(\frac{7}{8}\) miles in one week. She walks 2\(\frac{1}{2}\) fewer miles the following week. About how many miles does she walk the second week?

28. Jon wants to walk at least 8 miles by the end of the week. He walks 5\(\frac{3}{4}\) miles by Thursday. If he walks another 2\(\frac{5}{8}\) miles on Friday, will he meet his goal? Explain.
5–2
Homework Practice
Estimating Sums and Differences

Estimate the sum or difference.

1. \(4 \frac{1}{3} + \frac{8}{9}\)

2. \(7 \frac{1}{6} + \frac{7}{15}\)

3. \(\frac{9}{10} + 3 \frac{2}{3}\)

4. \(8 \frac{7}{8} - 1 \frac{6}{9}\)

5. \(1 \frac{2}{10} + 3 \frac{1}{9}\)

6. \(7 \frac{1}{3} + 7 \frac{1}{8}\)

7. \(3 \frac{5}{8} + 6 \frac{3}{5}\)

8. \(\frac{7}{15} + 2 \frac{5}{9}\)

9. \(6 \frac{7}{8} - \frac{4}{7}\)

10. \(10 \frac{7}{8} - \frac{5}{9}\)

Spiral Review
Round to the nearest half. (Lesson 5–1)

11. \(5 \frac{2}{3}\)

12. \(8 \frac{2}{13}\)

13. \(9 \frac{10}{10}\)

14. \(\frac{6}{12}\)

15. \(4 \frac{1}{9}\)

16. \(\frac{14}{18}\)

17. \(7 \frac{9}{15}\)

18. \(11 \frac{7}{24}\)

19. \(\frac{5}{6}\)

20. \(18 \frac{1}{12}\)
5–2
Problem-Solving Practice
Estimating Sums and Differences

Solve.

1. Abdul works \( \frac{3}{4} \) hour one day and \( \frac{1}{3} \) hour the next day. Estimate the total number of hours he works on both days combined.

   about _______ hours

3. Rachel sings in a chorus at a concert. The songs are \( 4 \frac{3}{10} \) minutes, \( 7 \frac{1}{12} \) minutes, and \( 10 \frac{3}{4} \) minutes long. Estimate the amount of time the chorus spends singing.

   about _______ minutes

5. Carol wants to make a picture frame for an 8 × 10 inch photo. The long pieces of the frame need to be 12 \( \frac{1}{8} \) inches long. The short pieces should be 10 \( \frac{1}{4} \) inches long. Estimate the length of wood Carol must buy to make the frame.

   about _______ inches

   Would this length be the actual amount she should buy? Explain.

   __________________________________________
   __________________________________________

2. Anna is making cookies for the school bake sale. If she uses \( 1 \frac{1}{8} \) pounds of flour per batch, what is the amount of flour she needs for four batches?

   _______ pounds

4. Kathy rides her bicycle to her aunt’s house. It takes her \( 20 \frac{2}{3} \) minutes to get there. She is tired when she leaves, and it takes her \( 24 \frac{1}{6} \) minutes to ride home. What is the approximate difference in the two times?

   _______ minutes

6. Justin plays football. On one play, he ran the ball \( 24 \frac{1}{3} \) yards. The following play, he was tackled and lost \( 3 \frac{2}{3} \) yards. The next play, he ran for \( 5 \frac{1}{4} \) yards. Estimate how much farther the ball is down the field after the three plays.

   about _______ yards
**5-2**

**Enrich**

**Using 1 as a Benchmark**

When you estimate sums of proper fractions, it often helps to use the number 1 as a *benchmark*, like this:

Two halves make a whole, so \( \frac{1}{2} + \frac{1}{2} = 1 \).

If two fractions are each less than \( \frac{1}{2} \), their sum is less than 1.

If two fractions are each greater than \( \frac{1}{2} \), their sum is greater than 1.

\[
\frac{3}{8} + \frac{4}{9} < 1 \quad \quad \quad \frac{5}{8} + \frac{7}{9} > 1
\]

**Fill in each \( \square \) with < or > to make a true statement.**

1. \( \frac{2}{3} + \frac{5}{8} \square 1 \)
2. \( \frac{2}{5} + \frac{3}{7} \square 1 \)
3. \( \frac{3}{10} + \frac{5}{11} \square 1 \)
4. \( \frac{27}{50} + \frac{7}{10} \square 1 \)
5. \( \frac{50}{99} + \frac{38}{75} \square 1 \)
6. \( \frac{24}{49} + \frac{32}{65} \square 1 \)

**Fill in each \( \square \) with one of the given fractions to make a true statement.**

7. \( \frac{2}{7} \quad \frac{3}{7} \quad \frac{4}{7} \quad \frac{5}{7} \)
   \( \frac{1}{2} + \square > 1 \)
   \( \frac{1}{2} + \square < 1 \)

8. \( \frac{8}{11} \quad \frac{7}{11} \quad \frac{6}{11} \quad \frac{5}{11} \)
   \( \frac{1}{2} + \square > 1 \)
   \( \frac{1}{2} + \square < 1 \)

9. \( \frac{1}{5} \quad \frac{2}{5} \quad \frac{3}{5} \quad \frac{4}{5} \quad \frac{5}{5} \)
   \( \frac{9}{16} + \square > 1 \)
   \( \frac{9}{16} + \square < 1 \)

10. \( \frac{1}{25} \quad \frac{12}{25} \quad \frac{13}{25} \quad \frac{24}{25} \)
    \( \frac{6}{13} + \square > 1 \)
    \( \frac{6}{13} + \square < 1 \)

**Fill in each with < or > to make a true statement.**

11. \( 1\frac{5}{8} - 1\frac{1}{2} \square \frac{1}{2} \)
12. \( 1 - \frac{5}{11} \square \frac{1}{2} \)
13. \( 1 - \frac{10}{19} \square \frac{1}{2} \)
14. \( 1 - \frac{49}{99} \square \frac{1}{2} \)
15. \( 4\frac{3}{7} + \frac{1}{3} \square \frac{1}{2} \)
16. \( 3 - \frac{4}{7} \square 2\frac{1}{2} \)
Follow these steps to add or subtract fractions with like denominators.

Add \( \frac{3}{8} + \frac{1}{8} \)

**Step 1**

Add the numerators.
Use the like denominator.
\[
\frac{3}{8} + \frac{1}{8} = \frac{4}{8}
\]
So, \( \frac{3}{8} + \frac{1}{8} = \frac{4}{8} = \frac{1}{2} \)

**Step 2**

Write the sum in simplest form.
Divide the numerator and denominator by their greatest common factor.
\[
\frac{4}{8} = \frac{4 \div 4}{8 \div 4} = \frac{1}{2}
\]

**Step 1**

Subtract the numerators.
Use the like denominator.
\[
\frac{8}{9} - \frac{2}{9} = \frac{6}{9}
\]
So, \( \frac{8}{9} - \frac{2}{9} = \frac{6}{9} = \frac{2}{3} \)

**Step 2**

Write the difference in simplest form.
Divide the numerator and denominator by their greatest common factor.
\[
\frac{6}{9} = \frac{6 \div 3}{9 \div 3} = \frac{2}{3}
\]

Add or subtract. Write in simplest form.

1. \( \frac{5}{7} - \frac{4}{7} = \) ______
2. \( \frac{1}{4} + \frac{1}{4} = \) ______
3. \( \frac{3}{10} + \frac{1}{10} = \) ______
4. \( \frac{7}{8} - \frac{5}{8} = \) ______
5. \( \frac{11}{12} - \frac{7}{12} = \) ______
6. \( \frac{3}{10} + \frac{2}{10} = \) ______
Add or subtract. Write in simplest form.

1. $\frac{7}{10} + \frac{1}{10} = \underline{\hspace{1cm}}$
2. $\frac{13}{16} + \frac{7}{16} = \underline{\hspace{1cm}}$
3. $\frac{4}{5} + \frac{1}{5} = \underline{\hspace{1cm}}$

4. $\frac{7}{12} + \frac{5}{12} = \underline{\hspace{1cm}}$
5. $\frac{4}{5} + \frac{3}{5} = \underline{\hspace{1cm}}$
6. $\frac{5}{6} + \frac{5}{6} = \underline{\hspace{1cm}}$

7. $\frac{7}{15} - \frac{2}{15} = \underline{\hspace{1cm}}$
8. $\frac{9}{20} - \frac{3}{20} = \underline{\hspace{1cm}}$
9. $\frac{3}{8} - \frac{1}{8} = \underline{\hspace{1cm}}$

10. $\frac{3}{8} + \frac{1}{8} = \underline{\hspace{1cm}}$
11. $\frac{2}{3} + \frac{1}{3} = \underline{\hspace{1cm}}$
12. $\frac{5}{6} - \frac{1}{6} = \underline{\hspace{1cm}}$

13. $\frac{7}{16} + \frac{3}{16} = \underline{\hspace{1cm}}$
14. $\frac{3}{10} + \frac{9}{10} = \underline{\hspace{1cm}}$
15. $\frac{7}{8} + \frac{7}{8} = \underline{\hspace{1cm}}$

16. $\frac{7}{12} + \frac{11}{12} = \underline{\hspace{1cm}}$
17. $\frac{19}{20} + \frac{5}{20} = \underline{\hspace{1cm}}$
18. $\frac{11}{20} - \frac{7}{20} = \underline{\hspace{1cm}}$

19. $\frac{9}{16} - \frac{7}{16} = \underline{\hspace{1cm}}$
20. $\frac{4}{5} - \frac{3}{5} = \underline{\hspace{1cm}}$
21. $\frac{7}{9} - \frac{4}{9} = \underline{\hspace{1cm}}$

22. In Mr. Jane’s homeroom, $\frac{8}{25}$ of the students brought a lunch from home, $\frac{15}{25}$ of the students will buy a lunch, and $\frac{2}{25}$ of the students will go home for lunch. What fraction of the class will eat lunch at school?
Add or subtract. Write in simplest form.

1. \( \frac{2}{5} + \frac{8}{5} = _____ \)

2. \( \frac{5}{9} - \frac{1}{9} = _____ \)

3. \( \frac{6}{8} - \frac{5}{8} = _____ \)

4. \( \frac{3}{4} + \frac{2}{4} = _____ \)

5. \( \frac{9}{9} + \frac{3}{9} = _____ \)

6. \( \frac{7}{8} + \frac{2}{8} = _____ \)

7. \( \frac{1}{2} + \frac{2}{2} = _____ \)

8. \( \frac{4}{5} - \frac{3}{5} = _____ \)

9. \( \frac{12}{15} + \frac{3}{15} = _____ \)

10. \( \frac{6}{7} - \frac{1}{7} = _____ \)

Spiral Review

Estimate. (Lesson 5–2)

11. \( 2\frac{1}{2} + \frac{5}{9} = _____ \)

12. \( 5\frac{4}{6} + \frac{1}{2} = _____ \)

13. \( \frac{2}{3} + 6\frac{1}{5} = _____ \)

14. \( 3\frac{7}{8} - 1\frac{2}{9} = _____ \)

15. \( 8\frac{2}{10} + 3\frac{1}{9} = _____ \)

16. \( 1\frac{1}{3} + 7\frac{6}{7} = _____ \)

17. \( 8\frac{5}{8} + 6\frac{3}{5} = _____ \)

18. \( \frac{5}{15} + 7\frac{5}{7} = _____ \)

19. \( \frac{7}{8} - \frac{1}{7} = _____ \)

20. \( 1\frac{1}{8} - 5\frac{9}{9} = _____ \)

21. \( \frac{5}{8} + \frac{11}{2} = _____ \)

22. \( 3\frac{6}{7} - 1\frac{2}{3} = _____ \)
Problem-Solving Practice

Adding and Subtracting Fractions with Like Denominators

Solve. Write your answer in simplest form.

1. Debbie helped her mother with the laundry. She did \( \frac{1}{8} \) of it on Monday and another \( \frac{3}{8} \) of it on Tuesday. What fraction of the laundry has she done?

2. Laureano worked \( \frac{1}{4} \) hour one day and \( \frac{3}{4} \) hour the next day. How many hours did he work on the two days?

3. Mindy likes to order fresh meat and vegetable wraps from a local restaurant. One cook can roll \( \frac{1}{3} \) wraps in 5 minutes. Another cook can roll \( \frac{2}{3} \) wraps in the same amount of time. What is the difference in the number of wraps the two cooks can prepare in 5 minutes?

4. John went to a museum to see model trains. He saw \( \frac{2}{5} \) mile of track on the first floor of the museum. He saw \( \frac{4}{5} \) mile of track on the second floor. How much more track did John see on the second floor than the first?

5. Sherry was in charge of distributing 250 food items that were donated to the local food pantry. On Monday she distributed 87 items. On Tuesday, she distributed 63 more items. Fifty more items were distributed on Wednesday. What fraction of the food items was distributed by the end of the day on Wednesday?

6. Laura and her sister Katie swim every day. Laura can swim \( \frac{3}{7} \) mile in 10 minutes. Katie can swim \( \frac{2}{7} \) mile in the same amount of time. If they swim for 20 minutes and their speeds stay the same, how much farther does Laura swim than her sister?
Enrich

Fraction Puzzles

In the puzzles below, the sum of the fractions in each row is the same as the sum of the fractions in each column. Use your knowledge of adding and subtracting fractions to find the missing fractions. **Hint**: Remember to check the fractions for like denominators before adding.

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</table>

**CHALLENGE** Create your own fraction puzzle using a box of 5 rows and 5 columns.
Akio and Mei began the project of repainting and covering the seats of old dining room chairs. To recover one seat, they need \(\frac{2}{3}\) of a yard of fabric. How much fabric do they need to buy to recover the seats of 4 chairs?

<table>
<thead>
<tr>
<th>Understand</th>
<th>What facts do you know?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>There are 4 chairs to recover. (\frac{2}{3}) of a yard of fabric is needed to cover the seat of each chair.</td>
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<tr>
<td></td>
<td><strong>What do you need to find?</strong></td>
</tr>
<tr>
<td></td>
<td>How much fabric is needed to recover the seats of 4 chairs?</td>
</tr>
</tbody>
</table>

| Plan | Act out the problem by marking the floor to show a length of \(\frac{2}{3}\) of a yard. Then, continue to mark \(\frac{2}{3}\) of a yard of fabric until you have done this 4 times. |

| Solve | \(\frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} = \frac{8}{3} = 2\frac{2}{3}\) yards of fabric |

| Check | You can estimate by rounding \(\frac{2}{3}\) to 1. Then, you have each chair needs about 1 yard of fabric. \(1 + 1 + 1 + 1 = 4\), which is close to your answer of \(2\frac{2}{3}\). |
Solve. Use the act it out strategy.

1. The girls need $\frac{1}{4}$ can of paint to paint each chair. How many cans of paint will they need to paint all 4 chairs?

2. The girls found 6 more chairs that each need $\frac{2}{3}$ yard of fabric to cover the seats. How much more fabric do they need to buy?

3. Since each of the 6 chairs needs $\frac{1}{4}$ can of paint, how much more paint will they need?

4. Jean reads $\frac{1}{7}$ of her book each day. If she starts reading on Monday, on what day will she complete her book?

5. Robert lives $\frac{3}{10}$ mile from school. Al lives $\frac{7}{10}$ mile from school. Who lives farther from school? How much farther?

6. A puppy eats $\frac{1}{3}$ of a can of food at each meal. If he eats two times a day, how long will it take him to eat 4 cans of food?
**Skills Practice**

*Problem-Solving Strategy*

Solve. Use the *act it out* strategy.

1. The ceramics class is designing mugs with three colored stripes. The colors are red, yellow, and green. How many different ways can students in the class arrange the three colored stripes?

2. Meg and Matt are painting all 4 walls of a room. Each person is painting 2 walls. After one hour, Meg has painted \( \frac{1}{2} \) of one wall, and Matt has painted 1 wall. How much longer will it take Meg to paint her 2 walls than it will take Matt to paint his?

3. Twenty-four students are in study hall. Eight more arrive. At the same time, 12 leave. Then, 16 leave and 8 more arrive. How many students are left in study hall?

4. Ellen is decorating a wall with family pictures. She has 2 pictures that are 10 inches, 2 pictures that are 8 inches, and 2 pictures that are 6 inches. If she keeps the same size pictures in rows, how many ways can she arrange the pictures?

5. Dolores has 6 quarters, 5 dimes, 4 nickels, and 10 pennies. How many different combinations of coins can she make to have $0.50?
5–4

Homework Practice

Problem-Solving Strategy

Solve. Use the act it out strategy.

1. Alberto has 2 quarters, 2 dimes, 2 nickels, and 2 pennies. How many different combinations of coins can he make to have $0.55?

2. Carlos is running drills of $\frac{1}{2}$ mile. If he runs 5 drills, how many miles did he run?

3. Students are hanging their art projects in the school hallway. Each student wants to hang a project that is $\frac{7}{8}$ foot wide. The hallway is 16 feet long. If they don’t leave any space between each project, how many projects will fit in the hallway?

4. Hana is wrapping books to give as gifts. She needs pieces of wrapping paper that are $\frac{5}{6}$ foot long for each book. She has a total of 6 books. How long a roll of wrapping paper will she need?

Spiral Review

Add or subtract. Write in simplest form. (Lesson 5–3)

5. $\frac{3}{5} + \frac{9}{5}$

6. $\frac{3}{9} - \frac{1}{9}$

7. $\frac{7}{8} - \frac{2}{8}$

8. $\frac{3}{4} + \frac{1}{4}$

9. $\frac{9}{9} - \frac{3}{9}$

10. $\frac{5}{8} + \frac{6}{8}$

11. $\frac{1}{2} + \frac{2}{2}$

12. $\frac{6}{5} - \frac{2}{5}$

13. $\frac{12}{15} - \frac{3}{15}$

14. $\frac{6}{8} - \frac{2}{8}$

15. $\frac{5}{8} + \frac{3}{8}$

16. $\frac{5}{8} - \frac{3}{8}$
Fractions are important in measurement. Using fractions allows you to be more exact than when you round to the nearest inch. When you go to the doctor, your height is not measured to the nearest inch. It is measured to fractions of an inch. Scientists use fractions all the time because their measurements need to be very precise.

Solve.

1. Janelle is cutting a piece of wood that is \( \frac{7}{12} \) inch long for a miniature picture frame. If she is cutting it from a piece of wood that is 1 inch long, what is the length of wood that will be left over?

2. The winning high jump in a track meet was \( \frac{3}{8} \) inch away from the world record. The second place jump was \( \frac{7}{8} \) inch away from the world record. What is the difference between the two jumps?

3. A carpenter needs to fill a \( \frac{3}{4} \) inch-wide hole. He has a piece of wood that is \( \frac{9}{12} \) inch wide. How much should he cut off from the piece so that it will fit in the hole?

4. Evie is cutting ribbons 8 \( \frac{1}{3} \) feet long for a sewing project. If the original ribbon is 36 \( \frac{4}{12} \) feet long, how long is it after she cuts her first ribbon?

5. Fabric is sold by the yard. Derek wants \( \frac{6}{8} \) yard of a particular kind of fabric. There is only \( \frac{1}{4} \) yard of the fabric left on the bolt. Derek buys what is left. How much more does he need to buy?
**Reteach**

*Adding and Subtracting Fractions with Unlike Denominators*

When adding or subtracting fractions with unlike denominators, it helps to write the problems in vertical form.

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
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</thead>
<tbody>
<tr>
<td>Find the least common denominator (LCD).</td>
<td>Rename each fraction using the LCD.</td>
<td>Write the problems in vertical form.</td>
</tr>
</tbody>
</table>

Add \( \frac{7}{8} + \frac{2}{3} \).

Multiples of 3: 3, 6, 9, 12, 15, 18, 21, 24, ...

Multiples of 8: 8, 16, 24, ...

The LCD is 24.

\[
\frac{7}{8} = \frac{21}{24} \quad \frac{2}{3} = \frac{16}{24}
\]

Add.

\[
\frac{7}{8} + \frac{2}{3} = \frac{21}{24} + \frac{16}{24} = \frac{37}{24} = 1 \frac{13}{24}
\]

Subtract \( \frac{3}{4} - \frac{1}{3} \).

Find the LCD of \( \frac{3}{4} \) and \( \frac{1}{3} \).

Multiples of 4: 4, 8, 12, ...

Multiples of 3: 3, 6, 9, 12, ...

The LCD of \( \frac{3}{4} \) and \( \frac{1}{3} \) is 12.

\[
\frac{3}{4} = \frac{9}{12} \quad \frac{1}{3} = \frac{4}{12}
\]

Subtract.

\[
\frac{9}{12} - \frac{4}{12} = \frac{5}{12}
\]

**Add or subtract. Write in simplest form.**

1. \( \frac{3}{8} + \frac{5}{6} \)
   - Multiples of 8: ________________
   - Multiples of 6: ________________
   - LCD: ________________
   - So, \( \frac{3}{8} + \frac{5}{6} = \) ________________

2. \( \frac{11}{12} - \frac{3}{4} \)
   - Multiples of 12: ________________
   - Multiples of 4: ________________
   - LCD: ________________
   - So, \( \frac{11}{12} - \frac{3}{4} = \) ________________
Skills Practice
Adding and Subtracting Fractions with Unlike Denominators

Write the addition or subtraction sentence shown by each model. Write the sum or difference in simplest form.

1. \( \frac{1}{4} + \frac{1}{8} = \) ____
2. \( \frac{1}{5} + \frac{1}{10} = \) ____
3. \( \frac{1}{16} + \frac{1}{8} = \) ____

4. \( \frac{1}{2} + \frac{1}{10} = \) ____
5. \( \frac{1}{8} + \frac{1}{12} = \) ____
6. \( \frac{1}{6} + \frac{1}{6} = \) ____

Add or subtract. Write in simplest form.

7. \( \frac{1}{10} + \frac{1}{5} = \) ____
8. \( \frac{1}{12} + \frac{1}{6} = \) ____
9. \( \frac{5}{16} + \frac{3}{8} = \) ____

10. \( \frac{3}{4} + \frac{1}{12} = \) ____
11. \( \frac{1}{2} + \frac{3}{8} = \) ____
12. \( \frac{2}{3} + \frac{5}{6} = \) ____

13. \( \frac{7}{12} - \frac{1}{4} = \) ____
14. \( \frac{1}{2} - \frac{1}{3} = \) ____
15. \( \frac{9}{10} - \frac{2}{5} = \) ____

16. \( \frac{5}{8} - \frac{1}{4} = \) ____
17. \( \frac{11}{20} - \frac{3}{10} = \) ____
18. \( \frac{11}{12} - \frac{1}{3} = \) ____
Add or subtract. Write in simplest form.

1. \( \frac{2}{5} + \frac{2}{8} \)  
2. \( \frac{3}{6} + \frac{7}{8} \)  
3. \( \frac{9}{10} - \frac{2}{8} \)  
4. \( \frac{5}{7} + \frac{1}{2} \)  
5. \( \frac{3}{4} - \frac{5}{8} \)  
6. \( \frac{1}{6} + \frac{1}{4} \)  
7. \( \frac{2}{5} + \frac{3}{6} \)  
8. \( \frac{3}{4} - \frac{1}{2} \)  
9. \( \frac{2}{3} - \frac{1}{10} \)  
10. \( \frac{2}{7} + \frac{1}{3} \)  
11. \( \frac{3}{8} + \frac{7}{9} \)  
12. \( \frac{8}{9} + \frac{1}{10} \)  
13. \( \frac{1}{2} + \frac{2}{3} \)  
14. \( \frac{3}{5} - \frac{1}{8} \)  
15. \( \frac{9}{10} - \frac{1}{6} \)  
16. \( \frac{6}{7} + \frac{1}{2} \)  

Solve using the act it out strategy. (Lesson 5–4)

17. The Boyd family eats \( \frac{3}{4} \) of a package of pasta for dinner. How many packages of pasta will they need for 4 pasta dinners?

18. Kayla has 5 quarters, 3 dimes, 2 nickels, and 5 pennies. How many different combinations of coins can she make to have $0.50?
Problem-Solving Practice
Adding and Subtracting Fractions
with Unlike Denominators

Solve. Write in simplest form.

1. Steve watched television for \(\frac{3}{4}\) hour on Monday and \(\frac{5}{6}\) hour on Tuesday. How many hours did he watch television on both days?

2. Deanna uses \(\frac{2}{3}\) cup of flour and \(\frac{1}{4}\) cup of shortening in a pie crust recipe. How much more flour than shortening does she use?

3. Marsha and her friend, Tina, are making table decorations for a party. Marsha made \(\frac{2}{9}\) of a decoration in half an hour. Tina can make \(\frac{2}{3}\) of a decoration in the same amount of time. How much more of a decoration can Tina make in half an hour?

4. Kyle planted flowers in the front of the school. He planted \(\frac{11}{16}\) of the plants on Friday and \(\frac{1}{4}\) of the plants on Saturday. What fraction of the total plants did he plant on both days?

5. Shawn rides his bicycle \(\frac{9}{10}\) mile to school. On his way to school, he stops at Mike’s house, which is \(\frac{1}{5}\) mile from Shawn’s house. Then they both ride to Jose’s house, which is \(\frac{2}{7}\) mile from Mike’s house. How far is it from Jose’s house to the school?

6. After school, Laura baby-sits a neighbor’s child for 50 minutes. They rest for 10 minutes, read for 15 minutes, and play for the rest of the time. Write the total baby-sitting time, the resting time, and the reading time, as fractions of an hour. Use these fractions to find the fraction of an hour they play.
Unit Fractions

A unit fraction is a fraction with a numerator of 1 and a denominator that is any counting number greater than 1.

unit fractions: \( \frac{1}{2}, \frac{1}{3}, \frac{1}{10} \)

A curious fact about unit fractions is that each one can be expressed as a sum of two distinct unit fractions. (Distinct means that the two new fractions are different from one another.)

\[
\frac{1}{2} = \frac{1}{3} + \frac{1}{6} \\
\frac{1}{3} = \frac{1}{4} + \frac{1}{12} \\
\frac{1}{10} = \frac{1}{11} + \frac{1}{110}
\]

1. The three sums shown above follow a pattern. What is it?

2. Use the pattern you described in Exercise 1. Express each unit fraction as a sum of two distinct unit fractions.
   
   a. \( \frac{1}{4} \)   
   b. \( \frac{1}{5} \)   
   c. \( \frac{1}{12} \)   
   d. \( \frac{1}{100} \)

   Does it surprise you to know that other fractions, such as \( \frac{5}{6} \), can be expressed as sums of unit fractions? One way to do this is by using equivalent fractions. Here’s how.

   \[
   \frac{5}{6} = \frac{10}{12} \quad \rightarrow \quad \frac{10}{12} = \frac{6}{12} + \frac{4}{12} = \frac{1}{2} + \frac{1}{3} \quad \rightarrow \quad \frac{5}{6} = \frac{1}{2} + \frac{1}{3}
   \]

3. Express each fraction as a sum of two distinct unit fractions.

   a. \( \frac{2}{3} \)   
   b. \( \frac{4}{15} \)   
   c. \( \frac{5}{9} \)   
   d. \( \frac{2}{5} \)

4. Express \( \frac{4}{5} \) as the sum of three distinct unit fractions.

5. **CHALLENGE** Show two different ways to express \( \frac{1}{2} \) as the sum of three distinct unit fractions.
Choose the Best Strategy

Fina did a survey of how much time students spend on homework each night. Out of 16 people interviewed, \( \frac{1}{2} \) spend about 1 hour on homework and \( \frac{1}{4} \) spend about 45 minutes on homework. The rest spend about 30 minutes on homework. How many students spend 30 minutes on homework?

<table>
<thead>
<tr>
<th>Understand</th>
<th>( \frac{1}{2} ) of 16 students spend 1 hour on homework.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \frac{1}{4} ) of 16 students spend 45 minutes on homework.</td>
</tr>
<tr>
<td></td>
<td>You need to know how many people spend 30 minutes on homework.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Plan</th>
<th>You can use the act it out strategy.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Draw 16 students.</td>
</tr>
<tr>
<td></td>
<td>Cross out the students who spend 1 hour and who spend 45 minutes on homework.</td>
</tr>
<tr>
<td></td>
<td>You will be left with the students who spend 30 minutes on homework.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Solve</th>
<th>( \frac{1}{2} ) of 16 is 8. Cross out 8 students.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \frac{1}{4} ) of 16 is 4. Cross out 4 more students.</td>
</tr>
<tr>
<td></td>
<td>Count the students that are left. 4 students spend about 30 minutes on homework.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Check</th>
<th>Use math to check your work.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( 16 - 8 - 4 = 4 )</td>
</tr>
<tr>
<td></td>
<td>Your answer is correct.</td>
</tr>
</tbody>
</table>
Use any strategy shown below to solve.

- Act it out
- Make a table
- Use logical reasoning

1. Out of the 200 students at Groves High, 50 spend 2 hours a night on homework, 25 spend 1 hour on homework, and 75 spend 45 minutes on homework. The rest spend 30 minutes on homework. How many students spend 30 minutes on homework?

2. Mrs. Jones told her class of 30 students that 8 people scored 90 on a math test, 7 people scored 80, and 10 people scored 70. How many people scored lower than 70?

3. If square tables are arranged in a restaurant so that only one person can sit on any side of the table, how many tables will it take to seat 40 people?

4. If the 40 people in the restaurant spend a total of $600 and \( \frac{1}{2} \) of the 40 people spend \( \frac{1}{2} \) of what the 20 other people spend, what is the least amount of money a person spends?

5. Alan bought a computer that was on sale for $568. If the computer originally cost $647, how much money did Alan save?
Use any strategy shown below to solve.

- Make a table
- Use logical reasoning
- Act it out

1. In how many ways can 5 people stand in line if one of the people always has to be first in line?

2. The teacher told the class of 30 students that \( \frac{1}{2} \) of them scored above an 80 on their math test. An additional \( \frac{1}{3} \) of them scored at least a 70. How many of them scored below 70?

3. Alicia bought a CD player for $10 less than the regular price. If she paid $58 for the CD player, what was the regular price?

4. Miguel bought boxes of chocolates. The first box weighed \( 4\frac{1}{4} \) pounds, the second, \( 2\frac{3}{4} \), and the third, \( 1\frac{1}{3} \). What is the total amount of chocolate that Miguel bought?

5. After Miguel shared the chocolate with his friends, he had \( 3\frac{5}{8} \) pounds left. Then, he gave \( 2\frac{3}{4} \) pounds to his mother. Now, how much does he have?

6. The first \( \frac{1}{5} \) mile of a \( 3\frac{3}{4} \)-mile path through a rose garden is paved with bricks. How much of the path is not paved with bricks?
Use any strategy shown below to solve.

- Make a table  • Use logical reasoning  • Act it out

1. Olivia bought a ring for \( \frac{1}{2} \) off the regular price. If she paid $50, what was the regular price?

2. Mrs. Jones told the class that \( \frac{1}{3} \) of them scored 90 or above on the math test. Another \( \frac{1}{3} \) of them had a passing score. What fraction of the class failed?

3. At a park, a picnic shelter covers \( \frac{1}{4} \) of an acre and a playground covers \( \frac{5}{8} \) of an acre. How much area is covered by both the picnic shelter and the playground?

4. Of the 300 students at school, 110 are in the chorus and 150 are in the band. Of these students, 50 are in both chorus and the band. How many students are neither in the chorus nor the band?

Add or subtract. Write in simplest form. (Lesson 5–5)

5. \( \frac{3}{5} + \frac{2}{9} \)

6. \( \frac{3}{5} + \frac{6}{8} \)

7. \( \frac{7}{10} + \frac{2}{7} \)

8. \( \frac{6}{7} + \frac{1}{2} \)

9. \( \frac{7}{8} - \frac{3}{5} \)

10. \( \frac{5}{6} + \frac{1}{3} \)
Choose the Operation

Solve.

1. A box is \( \frac{1}{2} \) inch tall. If 5 of the boxes are stacked on top of each other, how tall is the stack of boxes?

2. Darlene needs \( \frac{3}{4} \) yard of fabric to cover a chair. She has \( \frac{3}{8} \) yard of fabric. How much more fabric does she need?

3. Mr. Montgomery is a chef. He has created 250 new recipes. He plans to donate \( \frac{3}{5} \) of them to the school library. How many recipes does he plan to donate? Hint: \( \frac{1}{5} \) of 250 is 50.

4. The art department received a shipment of 6 boxes of clay. Each box weighed \( \frac{3}{4} \) pound. How many pounds of clay were in the shipment?

5. A sculptor has a steel tube that is \( \frac{2}{3} \) foot long. To create a longer tube, he attaches it to another steel tube that is \( \frac{5}{6} \) foot long. How long is the new steel tube?

6. Marcel was in a triathlon, a race with 3 events. He ran 4 miles in \( \frac{2}{3} \) hour. He bicycled 5 miles in \( \frac{3}{4} \) hour, and he swam 880 yards in \( \frac{1}{2} \) hour. What was his total race time?
Reteach

Adding and Subtracting Mixed Numbers

Add $1 \frac{7}{8} + 1 \frac{1}{2}$.

Rename the addends using their LCD.

Multiples of 8: 8, 16, 24, . . .
Multiples of 2: 2, 4, 6, 8, . . .
The LCD of $1 \frac{7}{8}$ and $1 \frac{1}{2}$ is 8.

Show $1 \frac{7}{8}$ and $1 \frac{1}{2}$ using eighths as a denominator.

The LCD of $1 \frac{7}{8}$ and $1 \frac{1}{2}$ is 8.

$1 \frac{7}{8} \rightarrow 1 \frac{7}{8}$

$+ 1 \frac{1}{2} \rightarrow 1 \frac{4}{8}$

$2 \frac{11}{8} = 2 + \frac{3}{8}$ or $3 \frac{3}{8}$

Add the ones.
Then count the eighths.

Subtract $2 \frac{3}{4} - 1 \frac{5}{8}$.

Find the LCD of $\frac{3}{4}$ and $\frac{5}{8}$.

Multiples of 4: 4, 8,
Multiples of 8: 8, . . .
The LCD of $\frac{3}{4}$ and $\frac{5}{8}$ is 8.

Rename $2 \frac{3}{4}$ so the fraction part is in eighths. Subtract the ones. Then subtract the eighths.

$2 \frac{3}{4} \downarrow$

$2 \frac{6}{8} - 1 \frac{5}{8} = 1 \frac{1}{8}$

Add or subtract. Write in simplest form.

1. $2 \frac{5}{8} + 1 \frac{3}{4} = \underline{_____}$

2. $1 \frac{3}{5} + 2 \frac{7}{10} = \underline{_____}$

3. $6 \frac{4}{5} - 1 \frac{7}{10} = \underline{_____}$

4. $3 \frac{3}{8} - 1 \frac{1}{4} = \underline{_____}$
Add or subtract. Write in simplest form.

1. \(7 \frac{15}{16} - 2 \frac{11}{16} = \) 
2. \(11 \frac{4}{5} - 4 \frac{3}{10} = \)
3. \(12 + 9 \frac{1}{3} = \)
4. \(18 \frac{5}{6} - 9 \frac{1}{6} = \)
5. \(9 + 5 \frac{1}{12} = \)
6. \(16 \frac{7}{10} - 7 \frac{1}{3} = \)
7. \(34 \frac{11}{20} + 15 = \)
8. \(64 \frac{11}{12} - 37 \frac{3}{4} = \)
9. \(51 \frac{2}{5} + 25 \frac{3}{4} = \)
10. \(46 \frac{3}{4} - 27 = \)
11. \(82 \frac{4}{5} + 62 = \)
12. \(23 \frac{2}{5} - 15 \frac{1}{8} = \)
13. \(16 \frac{11}{12} - 7 = \)
14. \(35 \frac{7}{8} + 21 \frac{1}{4} = \)
15. \(97 \frac{4}{5} - 87 = \)
16. \(6 \frac{11}{12} + 4 \frac{5}{12} = \)
17. \(11 \frac{2}{3} - 3 \frac{2}{5} = \)
18. \(14 \frac{7}{8} + 5 = \)
19. \(15 \frac{1}{4} - 6 \frac{1}{6} = \)

20. A grocery bag will hold \(8 \frac{5}{8}\) pounds of oranges. Kyle puts 3 pounds of oranges in the bag. How many more pounds of oranges can he put in the bag?

21. Sara needs \(2 \frac{7}{8}\) pounds of grapes for a salad. She buys a bag of grapes that weighs only \(1 \frac{1}{2}\) pounds. How many more pounds of grapes does she need?

22. Keith is making canvas tent. He needs \(12 \frac{3}{4}\) yards of beige canvas for the top and \(8 \frac{2}{5}\) yards of green canvas for the bottom. How many yards of canvas does he need in all?
Add or subtract. Write in simplest form.

1. $3 \frac{3}{4} + 8 \frac{1}{4}$
2. $6 \frac{1}{5} + 6 \frac{3}{5}$
3. $11 \frac{3}{10} + 1 \frac{1}{10}$
4. $6 \frac{5}{8} + 7 \frac{6}{8}$
5. $9 \frac{4}{8} - 6 \frac{1}{8}$
6. $8 \frac{1}{3} + 9 \frac{2}{3}$
7. $5 \frac{1}{5} + 7 \frac{3}{5}$
8. $9 \frac{8}{9} - 1 \frac{1}{9}$
9. $7 \frac{6}{7} - 5 \frac{1}{7}$
10. $12 \frac{4}{8} - 4 \frac{1}{8}$

Spiral Review

Use any strategy shown below to solve. (Lesson 5–6)

- Make a table
- Use logical reasoning
- Act it out

11. Janice bought 2 pairs of sneakers. The first pair was full price and the second was half price. The original price of the first pair was $32. How much did she spend?

12. Jill bought five packages of printer paper that weighed $1 \frac{1}{2}$ pounds, $2 \frac{1}{8}$ pounds, $3 \frac{3}{4}$ pounds, $1 \frac{1}{8}$ pounds, and $2 \frac{1}{2}$ pounds. How many pounds of paper did she buy?

13. Chou’s quiz scores are 78, 99, 101, 88, 93, 89, 92, 94, 84, 95. On how many more quizzes did Chou score above 90 than below 90?
5–7

Problem-Solving Practice

Adding and Subtracting Mixed Numbers

Solve.

1. Blanca’s children are $6\frac{1}{6}$ years old and $5\frac{1}{12}$ years old. In simplest form, what are combined ages of her children?

2. Rick has a choice of buying $4\frac{3}{4}$ packages of pencils or $2\frac{2}{5}$ packages of pens. In simplest form, how many more packages of pencils than pens can he buy?

3. Cumberland Valley Coal Company mined $249\frac{2}{3}$ tons of coal on one day and $387\frac{1}{7}$ tons on another day. What is the total number of tons of coal mined on both days?

4. One year, Cumberland Valley Coal Company planted $14\frac{1}{6}$ dozen trees to help prevent erosion. The following year, they planted $20\frac{2}{3}$ dozen trees. How many more trees did they plant the second year?

5. James recycled $22\frac{1}{2}$ pounds of aluminum in one week. Matt recycled $18\frac{3}{7}$ pounds of aluminum the same week. How many more pounds of aluminum did James recycle?

6. Bethany bought $2\frac{1}{2}$ pounds of bread, $3\frac{1}{4}$ pounds of meat, and $3\frac{1}{3}$ pounds of cheese to make sandwiches for a party. She also bought $2\frac{1}{3}$ pounds of tomatoes, $1\frac{1}{5}$ pounds of onions, and $2\frac{1}{2}$ pounds of lettuce.

What is the total number of pounds of food that she bought?
Enrich

A Maze of Mixed Numbers

Find your way through the maze to reach the dot. When you come to a letter, solve the problem that matches that letter. Draw your path through the sum or difference in simplest form. Follow the path until you reach the next intersection. Continue finding each sum or difference.

A. $3\frac{1}{3} + 2\frac{3}{5}$  
B. $\frac{1}{10} + 3\frac{1}{2}$  
C. $4\frac{1}{5} - 1\frac{1}{6}$  
D. $4\frac{1}{4} + 3\frac{3}{4}$

E. $2\frac{4}{5} + 5\frac{1}{2}$  
F. $11\frac{1}{3} - \frac{1}{6}$  
G. $3\frac{5}{6} + 2\frac{5}{12}$  
H. $6\frac{3}{5} + 2\frac{1}{6}$

I. $7\frac{1}{4} - 3\frac{1}{5}$  
J. $8\frac{3}{4} + 6\frac{1}{3}$  
K. $1\frac{2}{3} - 1\frac{1}{3}$  
L. $8\frac{7}{8} - 2\frac{1}{4}$

M. $1\frac{2}{3} + 9\frac{3}{5}$  
N. $6\frac{5}{8} - 1\frac{1}{3}$

START
Reteach

Subtracting Mixed Numbers with Renaming

To subtract mixed numbers with unlike denominators you need to write equivalent fractions with a common denominator.

Subtract $6\ 1\ _2 - 2\ 3\ _4$.

**Step 1** Write the fractions with a common denominator.

*Think:* The LCD of $\frac{1}{2}$ and $\frac{3}{4}$ is 4.

Rename $\frac{1}{2}$ as $\frac{2}{4}$.

Then subtract.

**Step 2** Subtract the fractions.

Regroup if necessary.

$\begin{align*}
6\ 2\ _4 & \quad 5\ 6\ _4 \\
- 2\ 3\ _4 & \quad - 2\ 3\ _4 \\
\hline
\quad \ 3\ _4 & \quad \ 3\ _4
\end{align*}$

**Step 3** Subtract the whole numbers.

**Step 4** Simplify if possible.

So, $6\ 1\ _2 - 2\ 3\ _4 = 3\ 3\ _4$.

Subtract. Write in simplest form.

1. $7\ 1\ _4 - 3\ 3\ _8$  
2. $2\ 3\ _{16} - 1\ 1\ _4$  
3. $9\ 1\ _5 - 4\ 3\ _5$  
4. $21\ 4\ _5 - 11\ 1\ _6$  
5. $15\ 1\ _2 - 11\ 1\ _2$

6. $12\ 1\ _4 - 4\ 1\ _8$  
7. $3\ 2\ _3 - 1\ 5\ _6$  
8. $6\ 1\ _5 - 2\ 1\ _4$

9. $41\ 1\ _4 - 27\ 5\ _6$  
10. $70\ 7\ _{10} - 45\ 4\ _5$  
11. $10\ 1\ _{10} - 3\ 2\ _5$

12. $3\ 3\ _8 - 1\ 3\ _4$  
13. $4\ 5\ _{12} - 1\ 1\ _2$  
14. $6\ 1\ _5 - 2\ 2\ _3$

15. $3\ 2\ _3 - 1\ 3\ _4$  
16. $18\ 1\ _2 - 1\ 2\ _3$  
17. $4\ 3\ _8 - 1\ 7\ _{16}$

18. $3\ 1\ _{16} - 2\ 1\ _2$  
19. $4\ 1\ _4 - 1\ 2\ _3$  
20. $25\ 5\ _8 - 17\ 15\ _{16}$
Subtract. Write in simplest form.

1. $10\frac{11}{16} - 3\frac{7}{8}$
2. $8\frac{1}{3} - 2\frac{3}{8}$
3. $9 - 3\frac{2}{5}$
4. $5\frac{3}{16} - 2\frac{3}{8}$

5. $8\frac{1}{6} - 3\frac{2}{5}$
6. $7 - 3\frac{1}{2}$
7. $2\frac{1}{8} - 1\frac{3}{4}$
8. $4\frac{1}{16} - 2\frac{1}{8}$

9. $5\frac{1}{5} - 1\frac{1}{4}$
10. $10\frac{2}{3} - 7\frac{3}{4}$
11. $7\frac{1}{4} - 2\frac{5}{6}$

12. $8\frac{1}{2} - 1\frac{2}{3}$
13. $10\frac{1}{2} - 2\frac{4}{5}$
14. $12\frac{2}{3} - 6\frac{3}{4}$

15. $5\frac{1}{2} - 3\frac{3}{4}$
16. $15\frac{1}{8} - 7\frac{3}{4}$
17. $11\frac{1}{4} - 6\frac{5}{8}$

18. $6\frac{3}{10} - 4\frac{4}{5}$
19. $15\frac{1}{3} - 8\frac{7}{12}$
20. $10\frac{2}{3} - 6\frac{7}{8}$

Solve.

21. Anna has $3\frac{1}{4}$ yards of fabric. She plans to use $2\frac{1}{2}$ yards for curtains. Does she have enough left to make 2 pillows that each use $\frac{5}{8}$ yard of fabric? Explain.

22. Paula has 2 yards of elastic. One project needs a $\frac{3}{4}$ yard piece. Does she have enough for another project that needs $1\frac{1}{3}$ yards? Explain.
Homework Practice

Subtracting Mixed Numbers with Renaming

Subtract. Write in simplest form.

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

Spiral Review

Add or subtract. Write in simplest form. (Lesson 5–7)

15. $2\frac{2}{4} + 7\frac{1}{4}$
16. $5\frac{1}{5} + 2\frac{3}{5}$
17. $1\frac{3}{10} + 11\frac{8}{10}$
18. $6\frac{6}{8} - 4\frac{5}{8}$
19. $9\frac{4}{8} + 6\frac{1}{8}$
20. $7\frac{2}{3} - 5\frac{1}{3}$
21. $5\frac{2}{5} + 4\frac{3}{5}$
22. $9\frac{5}{9} - 3\frac{1}{9}$
23. $7\frac{6}{7} + 5\frac{1}{7}$
24. $11\frac{5}{8} - 4\frac{3}{8}$
Problem-Solving Practice

Subtracting Mixed Numbers with Renaming

Solve.

1. When Shane and her family went on vacation, the pilot announced
that it would take $4\frac{1}{4}$ hours to reach their destination. When the
flight snack was served, they had been in flight $2\frac{3}{4}$ hours. How
much longer was the flight after the snack was served?

2. Mark bought $5\frac{1}{4}$ pounds of yellow cheese and $3\frac{3}{5}$ pounds of white
cheese. How much more yellow cheese than white cheese did
he buy?

3. Stella made 4 quarts of lemon tea for the weekend barbecue.
Vincent made $3\frac{1}{6}$ quarts of mint tea for the barbecue. How much
more tea did Stella make than Vincent?

4. Taylor’s puppy weighs 9 pounds. Belinda’s kitten weighs
$3\frac{3}{5}$ pounds. How much more does Taylor’s puppy weigh than
Belinda’s kitten?

5. Jillian has a piece of leather cord that is $12\frac{1}{5}$ inches long. She only
needs $8\frac{9}{10}$ inches of cord to make a bracelet. How much leather
cord will she trim?

6. The Department of Education prohibits a student from doing more
than 50 hours of homework in a 7-day period. Silvio has done
homework for $30\frac{1}{4}$ hours in the last 5 days. How many more hours
is he allowed to do homework in the next 2 days?
Equations with Fractions and Decimals

Sometimes an equation involves both fractions and decimals. To solve an equation like this, you probably want to work with numbers in the same form. One method of doing this is to start by expressing the decimals as fractions. The example at the right shows how you might solve the equation \( m + \frac{2}{5} = 0.6 \).

Name the number that is a solution of the given equation.

1. \( z = \frac{1}{8} + 0.375; \frac{1}{8}, \frac{3}{8}, \frac{1}{2}, \frac{3}{4} \) _______
2. \( 0.75 - \frac{3}{4} = b; 0, \frac{1}{4}, 1, \frac{1}{4} \) _______
3. \( c + 0.6 = \frac{4}{5}, \frac{1}{5}, \frac{3}{5}, \frac{1}{2}, \frac{3}{5}, \frac{3}{10} \) _______
4. \( 0.6 = j - \frac{1}{5}, \frac{1}{5}, \frac{4}{5}, 1, \frac{1}{2} \) _______
5. \( \frac{1}{4} + r = 0.75; \frac{1}{4}, \frac{1}{2}, \frac{3}{4}, 1 \) _______
6. \( d - 0.1 = \frac{7}{10}, \frac{1}{2}, \frac{3}{5}, \frac{4}{5}, \frac{9}{10} \) _______

Solve each equation. If the solution is a fraction or a mixed number, be sure to express it in simplest form.

7. \( \frac{2}{5} + 0.4 = k \) _______
8. \( s = \frac{7}{8} - 0.125 \) _______
9. \( 0.6 - n = \frac{2}{5} \) _______
10. \( t + 0.2 = \frac{4}{5} \) _______
11. \( 0.375 + g = \frac{5}{8} \) _______
12. \( y - 0.25 = \frac{3}{4} \) _______
13. \( 0.8 - \frac{1}{5} = x \) _______
14. \( q + 0.125 = \frac{5}{8} \) _______
15. \( w = \frac{1}{8} + 0.375 + \frac{5}{8} \) _______
16. \( 0.7 + \frac{1}{10} - 0.3 = a \) _______
17. \( p + \frac{1}{5} = 0.8 - \frac{3}{5} \) _______
18. \( k - 0.875 = 0.375 + \frac{1}{8} \) _______
# Individual Progress Checklist

<table>
<thead>
<tr>
<th>B</th>
<th>D</th>
<th>M</th>
<th>Goal</th>
<th>Progress</th>
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<tbody>
<tr>
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<td>round fractions and mixed numbers</td>
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<td>estimate sums and differences of fractions and mixed numbers</td>
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<td>add and subtract mixed numbers</td>
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<td>solve problems by acting them out</td>
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<td>add and subtract fractions with like denominators</td>
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<td>choose the best strategy to solve a problem</td>
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<td>subtract mixed numbers involving renaming</td>
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</table>

**Notes**

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Estimate using rounding.

1. $2.1 + 7.7 =$
2. $6.6 + 4.3 =$
3. $9.8 - 5.3 =$
4. $7.6 - 3.1 =$
5. Andrea spent $14.67 on a CD and $5.32 on lunch. About how much did she spend altogether?

Write each fraction in simplest form.

6. $\frac{4}{6}$
7. $\frac{5}{45}$
8. $\frac{14}{21}$
9. $\frac{18}{24}$
10. Dina read 36 out of 54 pages. Write the fraction, in simplest form, of pages that she read.

Write each improper fraction as a mixed number.

11. $\frac{16}{15}$
12. $\frac{8}{5}$
13. $\frac{16}{5}$
14. $\frac{28}{9}$
Chapter Pretest

Add or subtract. Write in simplest form.

1. \(\frac{10}{12} - \frac{4}{12} = \)
2. \(\frac{6}{7} - \frac{2}{7} = \)
3. \(\frac{3}{8} + \frac{7}{8} = \)
4. \(\frac{5}{11} - \frac{1}{5} = \)
5. \(\frac{4}{5} + \frac{2}{10} = \)
6. \(\frac{2}{9} + \frac{1}{2} = \)
7. \(2\frac{4}{5} + 5\frac{7}{8} = \)
8. \(6\frac{2}{7} - 1\frac{1}{4} = \)

Round each number to the nearest half.

9. \(3\frac{3}{7} = \)
10. \(\frac{9}{11} = \)
11. \(5\frac{4}{9} = \)

Estimate the sum or difference.

12. \(\frac{8}{9} + \frac{1}{2} = \)
13. \(4\frac{1}{7} - 3\frac{3}{5} = \)
14. \(\frac{8}{21} + \frac{20}{21} = \)

Solve. Write the answer in simplest form.

15. Terry ate 4 pieces of an apple cut into 8 pieces. Schuyler ate 3 pieces of the apple. How much of the apple did they eat in all?

16. Lacey wore a skirt that was \(2\frac{1}{6}\) feet long. Her mother hemmed it by \(\frac{1}{4}\) foot. How long was the skirt after her mother hemmed it?
Quiz 1 (Lessons 5–1 through 5–3)

Estimate.

1. \(3 \frac{2}{3} + \frac{5}{8}\)
2. \(2 \frac{1}{6} + \frac{7}{8}\)
3. \(\frac{5}{10} + 3 \frac{1}{3}\)

Round to the nearest half.

4. \(8 \frac{1}{3}\)
5. \(1 \frac{1}{12}\)
6. \(6 \frac{5}{10}\)

Solve.

7. Joe is \(4 \frac{7}{8}\) feet tall and his younger brother is \(3 \frac{5}{6}\) feet tall. About how much taller is Joe than his brother?

Add or subtract.

8. \(\frac{7}{8} + \frac{6}{8}\)
9. \(\frac{5}{10} - \frac{1}{10}\)
10. \(\frac{6}{7} + \frac{1}{7}\)
Quiz 2 (Lessons 5–4 through 5–6)

Solve.

1. Six students are playing basketball. 1 student arrives, and at the same time, 2 students leave. Then, 1 more student leaves and 3 more arrive. Now, how many students are playing basketball?

2. John has 3 quarters, 5 dimes, 2 nickels, and 5 pennies. How many different combinations of coins can he make to have $0.60?

3. Ann is using a roll of shelf paper to line 10 shelves that are all the same size. The roll of paper had $25\frac{1}{2}$ feet on it. She has already used $4\frac{1}{3}$ feet on 1 shelf. Will she have enough to line the other 9 shelves?

4. Sandra and Janice are painting flowers in a border around two walls of a room. They each are doing one wall. Sandra has \(\frac{1}{3}\) of her wall painted in 2 hours. How much longer will it take Sandra to finish her wall?

Add or subtract. Write in simplest form.

5. \(\frac{2}{6} + \frac{2}{8}\)

6. \(\frac{3}{4} + \frac{7}{8}\)

7. \(\frac{9}{10} - \frac{2}{8}\)

8. \(\frac{5}{6} + \frac{1}{3}\)

9. \(\frac{7}{9} - \frac{5}{8}\)

10. \(\frac{5}{6} - \frac{1}{4}\)
Add or subtract. Write in simplest form.

1. \( 5 \frac{2}{3} + 10 \frac{3}{7} \)
2. \( 7 \frac{11}{9} - 2 \frac{7}{9} \)
3. \( 3 \frac{2}{3} - 1 \frac{3}{10} \)
4. \( 21 \frac{3}{4} + 25 \frac{3}{4} \)
5. \( 4 \frac{8}{11} + 4 \frac{3}{6} \)
6. \( 5 \frac{7}{8} - 3 \frac{2}{8} \)
7. \( 1 \frac{1}{2} + 2 \frac{1}{4} \)
8. \( 12 \frac{9}{10} - 2 \frac{1}{5} \)

Solve.

9. Max is painting clouds on his sister’s bedroom ceiling. He needs \( 5 \frac{1}{4} \) quarts of sky-blue paint and \( 3 \frac{3}{5} \) quarts of white paint. How many more quarts of sky-blue paint does he need than white paint?

10. Brooke worked 10 hours last week as a lifeguard at the local swimming pool. By Friday, she had worked \( 8 \frac{1}{4} \) hours. How many more hours did she work during the rest of the week?
Mid-Chapter Review (Lessons 5–1 through 5–4)

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

1. When rounding fractions, what do you do if the numerator is almost as large as the denominator?
   A. round to 1    C. round to \( \frac{3}{4} \)
   B. round to \( \frac{1}{2} \)    D. round to 0

2. When rounding fractions, what do you do if the numerator is much smaller than the denominator?
   F. round to 1    H. round to \( \frac{3}{4} \)
   G. round to \( \frac{1}{2} \)    J. round to 0

3. When rounding fractions, what do you do if the numerator is about half of the denominator?
   A. round to 1    C. round to \( \frac{3}{4} \)
   B. round to \( \frac{1}{2} \)    D. round to 0

4. What is \( 3 \frac{1}{10} \) rounded to the nearest half?
   F. 3    H. 5
   G. 4    J. 6

5. What is the estimated sum of \( 3 \frac{1}{9} + 2 \frac{6}{7} \)?
   A. 3    C. 6
   B. 5    D. 8

6. How do you estimate sums and differences of fractions?

7. What are like fractions?

8. How do you add fractions with the same denominator?

9. How do you subtract fractions with the same denominator?

10. What is the advantage of using the act it out strategy?
Vocabulary Test

Using the word bank below, complete each sentence by writing the correct word or words on the line provided.

<table>
<thead>
<tr>
<th>like fractions</th>
<th>unlike fractions</th>
<th>simplest form</th>
</tr>
</thead>
<tbody>
<tr>
<td>fraction</td>
<td>numerator</td>
<td>denominator</td>
</tr>
<tr>
<td>mixed number</td>
<td>renaming</td>
<td></td>
</tr>
</tbody>
</table>

1. The ______ is the number above the bar in a fraction; the part of the fraction that tells how many of the equal parts are being used.

2. A ______ has a whole number part and a fraction part.

3. A fraction in which the numerator and the denominator have no common factor great than 1 is in ______.

4. The bottom number in a fraction is the ______.

5. When subtracting mixed numbers, sometimes the fraction part of the larger number is less than the fraction part of the smaller number. When this happens, you must use ______.

6. ______ are fractions with different denominators.

7. A number that represents part of a whole or part of a set is a ______.

8. Fractions that have the same denominator are ______.

1. ________________
2. ________________
3. ________________
4. ________________
5. ________________
6. ________________
7. ________________
8. ________________
Draw pictures of a square and a circle on the board. Divide each shape into 4 equal parts. For the square, shade in 1 section. For the circle, shade in 3 sections.

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 on the first square?

2. What is the fraction that represents the amount of parts shaded on the first square?

3. How many parts are shaded on the first circle?

4. What is the fraction that represents the amount of parts shaded on the first circle?

5. Tell how you got your answer.

6. If you add the two fractions for the first square and the first circle, what is the sum?
7. Tell how you got your answer.

Using a piece of paper or the chalkboard, draw 2 circles. The first circle should be shaded to represent $\frac{2}{4}$ and the second circle should be shaded to represent $\frac{1}{4}$.

8. What is the sum of the shaded area of both circles?

9. Tell how you got your answer.

Using a piece of paper or the chalkboard, draw 2 squares. The first square should be shaded to represent $\frac{4}{6}$ and the second circle should represent $\frac{2}{6}$.

10. What is the sum of the shaded areas of both squares?

11. 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. |
## Chapter Foldables Rubric

### Adding and Subtracting Fractions

**Pocket 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.

1. Round \( \frac{5 \frac{5}{8}}{} \) to the nearest half.
   \[ \text{A. } 5 \quad \text{B. } 5 \frac{1}{2} \quad \text{C. } 6 \quad \text{D. } 6 \frac{1}{2} \]
   \[ 1. \] 

2. Use rounding to order \( \frac{5}{9} \), \( \frac{7}{8} \), and \( \frac{2}{19} \) from least to greatest.
   \[ \text{F. } \frac{5}{9}, \frac{7}{8}, \frac{2}{19} \quad \text{G. } \frac{5}{9}, \frac{2}{19}, \frac{7}{8} \quad \text{H. } \frac{2}{19}, \frac{5}{9}, \frac{7}{8} \quad \text{J. } \frac{7}{8}, \frac{5}{9}, \frac{2}{19} \]
   \[ 2. \] 

Estimate.

3. \( 3 \frac{4}{5} + 1 \frac{1}{10} \)
   \[ \text{A. } 6 \quad \text{B. } 5 \quad \text{C. } 4 \quad \text{D. } 3 \]
   \[ 3. \] 

4. \( 4 \frac{1}{5} - 1 \frac{9}{10} \)
   \[ \text{F. } 1 \quad \text{G. } 2 \quad \text{H. } 3 \quad \text{J. } 5 \]
   \[ 4. \] 

Add or subtract. Write in simplest form.

5. \( \frac{9}{10} - \frac{2}{10} \)
   \[ \text{A. } \frac{2}{5} \quad \text{B. } \frac{1}{2} \quad \text{C. } \frac{7}{10} \quad \text{D. } 1 \frac{1}{10} \]
   \[ 5. \] 

6. \( \frac{7}{10} + \frac{3}{5} \)
   \[ \text{F. } \frac{4}{10} \quad \text{G. } \frac{10}{15} \quad \text{H. } 1 \frac{1}{10} \quad \text{J. } 1 \frac{3}{10} \]
   \[ 6. \] 

7. \( 3 \frac{5}{8} + 9 \frac{2}{3} \)
   \[ \text{A. } 12 \frac{7}{24} \quad \text{B. } 12 \frac{7}{8} \quad \text{C. } 13 \frac{1}{4} \quad \text{D. } 13 \frac{7}{24} \]
   \[ 7. \] 

8. \( \frac{13}{20} - \frac{3}{10} \)
   \[ \text{F. } \frac{9}{10} \quad \text{G. } \frac{7}{10} \quad \text{H. } \frac{1}{2} \quad \text{J. } \frac{7}{20} \]
   \[ 8. \]
Chapter Test, Form 1 (continued)

9. \(19 \frac{1}{6} - 6 \frac{1}{2}\)
   - (A) \(12 \frac{1}{2}\)
   - (B) \(12 \frac{2}{3}\)
   - (C) \(13 \frac{1}{2}\)
   - (D) \(13 \frac{2}{3}\)

10. \(\frac{2}{3} + \frac{4}{5}\)
    - (F) \(1 \frac{7}{15}\)
    - (G) \(1 \frac{1}{3}\)
    - (H) \(1 \frac{1}{5}\)
    - (J) \(\frac{3}{4}\)

11. \(42 \frac{1}{10} + 16 \frac{2}{5}\)
    - (A) \(58 \frac{3}{5}\)
    - (B) \(58 \frac{1}{2}\)
    - (C) \(57 \frac{1}{2}\)
    - (D) \(57 \frac{3}{10}\)

12. \(19 \frac{9}{10} - 10 \frac{1}{4}\)
   - (F) \(10 \frac{3}{20}\)
   - (G) \(9 \frac{7}{10}\)
   - (H) \(9 \frac{13}{20}\)
   - (J) \(9 \frac{1}{4}\)

13. \(31 \frac{1}{2} + 9 \frac{1}{6}\)
   - (A) \(41 \frac{1}{3}\)
   - (B) \(40 \frac{2}{3}\)
   - (C) \(40 \frac{1}{3}\)
   - (D) \(39 \frac{2}{3}\)

14. \(4 - 2 \frac{3}{8}\)
   - (F) \(2 \frac{5}{8}\)
   - (G) \(2 \frac{3}{8}\)
   - (H) \(1 \frac{5}{8}\)
   - (J) \(1 \frac{3}{8}\)

Solve.

15. Janice spent \(\frac{1}{3}\) of her savings on an outfit. The next week Janice spent another \(\frac{1}{4}\) of her savings on a CD. How much of her total savings did she spend?
   - (A) \(\frac{1}{7}\)
   - (B) \(\frac{5}{12}\)
   - (C) \(\frac{1}{2}\)
   - (D) \(\frac{7}{12}\)

16. A 20-pound bag of nails has \(7 \frac{1}{4}\) pounds left. How many pounds of nails have been removed?
   - (F) \(13 \frac{1}{4}\) lb
   - (G) \(13 \frac{1}{8}\) lb
   - (H) \(12 \frac{3}{4}\) lb
   - (J) \(12 \frac{1}{4}\) lb
Chapter Test, Form 2A

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

1. Round \(4\frac{7}{13}\) to the nearest half.
   
   A. 4   B. \(4\frac{1}{2}\)   C. 5   D. \(5\frac{1}{5}\)  
   
   1. ____

2. Use rounding to order \(\frac{4}{7}, \frac{7}{9}\) and \(\frac{4}{21}\) from least to greatest.
   
   F. \(\frac{4}{7}, \frac{7}{9}, \frac{4}{21}\)   G. \(\frac{4}{7}, \frac{4}{9}, \frac{7}{21}\)   H. \(\frac{4}{21}, \frac{4}{7}, \frac{7}{9}\)   J. \(\frac{7}{9}, \frac{4}{7}, \frac{4}{21}\)  
   
   2. ____

Estimate.

3. \(2\frac{5}{8} + 1\frac{1}{3}\)
   
   A. 6   B. 5   C. 4   D. 3  
   
   3. ____

4. \(6\frac{1}{6} - 1\frac{11}{12}\)
   
   F. 5   G. 4   H. 3   J. 2  
   
   4. ____

Add or subtract. Write in simplest form.

5. \(\frac{8}{9} - \frac{5}{9}\)
   
   A. \(\frac{2}{9}\)   B. \(\frac{1}{3}\)   C. \(\frac{4}{9}\)   D. \(1\frac{2}{3}\)  
   
   5. ____

6. \(\frac{7}{8} + \frac{3}{4}\)
   
   F. \(\frac{5}{8}\)   G. \(1\frac{1}{2}\)   H. \(1\frac{5}{8}\)   J. \(1\frac{7}{8}\)  
   
   6. ____

7. \(2\frac{1}{4} + 7\frac{5}{6}\)
   
   A. \(10\frac{1}{12}\)   B. \(10\frac{1}{4}\)   C. \(10\frac{1}{6}\)   D. \(9\frac{11}{12}\)  
   
   7. ____

8. \(\frac{5}{8} - \frac{1}{8}\)
   
   F. \(\frac{3}{4}\)   G. \(\frac{3}{8}\)   H. \(\frac{1}{2}\)   J. \(\frac{1}{4}\)  
   
   8. ____
Chapter Test, Form 2A (continued)

9. \(25\frac{3}{8} - 23\frac{1}{4}\)
   - A. \(2\frac{1}{2}\)
   - B. \(2\frac{1}{8}\)
   - C. \(1\frac{7}{8}\)
   - D. \(1\frac{1}{2}\)

10. \(\frac{1}{10} + \frac{3}{8}\)
    - F. \(\frac{9}{10}\)
    - G. \(\frac{19}{30}\)
    - H. \(\frac{19}{40}\)
    - J. \(\frac{19}{80}\)

11. \(8\frac{2}{3} + 6\frac{7}{15}\)
    - A. \(15\frac{1}{15}\)
    - B. \(15\frac{2}{15}\)
    - C. \(15\frac{1}{5}\)
    - D. \(15\frac{1}{3}\)

12. \(15\frac{13}{16} - 3\)
    - F. \(18\frac{13}{16}\)
    - G. \(18\frac{5}{8}\)
    - H. \(12\frac{13}{16}\)
    - J. \(12\frac{3}{16}\)

13. \(21\frac{2}{3} + 5\frac{5}{6}\)
    - A. \(27\frac{2}{3}\)
    - B. \(27\frac{1}{2}\)
    - C. \(26\frac{2}{3}\)
    - D. \(26\frac{1}{2}\)

14. \(3 - 2\frac{5}{7}\)
    - F. \(\frac{2}{7}\)
    - G. \(\frac{5}{7}\)
    - H. \(1\frac{2}{7}\)
    - J. \(1\frac{5}{7}\)

Solve.

15. A 30-pound bag of dog food has \(12\frac{1}{2}\) pounds left. How many pounds of dog food have been removed?
   - A. 17 lb
   - B. 17\frac{1}{2} lb
   - C. 18 lb
   - D. 18\frac{1}{2} lb

16. Paulo cooked \(2\frac{3}{4}\) pounds of chicken for a hiking trip. He also made \(3\frac{3}{8}\) pounds of meatballs. How many pounds of food did Paulo cook in all?
   - F. 6\frac{7}{8} lb
   - G. 6\frac{5}{8} lb
   - H. 5\frac{7}{8} lb
   - J. 5\frac{5}{8} lb
Read each question carefully. Write your answer on the line provided.

1. Round $4\frac{7}{13}$ to the nearest half.
   
   A. 4  
   B. $4\frac{1}{2}$  
   C. 5  

2. Order $\frac{4}{7}$, $\frac{7}{9}$, and $\frac{4}{21}$ from least to greatest. Use rounding.
   
   F. $\frac{4}{7}$, $\frac{7}{9}$, $\frac{4}{21}$  
   G. $\frac{4}{7}$, $\frac{4}{7}$, $\frac{7}{9}$  
   H. $\frac{4}{21}$, $\frac{4}{7}$, $\frac{7}{9}$

Estimate.

3. $2\frac{5}{8} + 1\frac{1}{3}$
   
   A. 3  
   B. 4  
   C. 5

4. $6\frac{1}{6} - 1\frac{11}{12}$
   
   F. 5  
   G. 4  
   H. 3

Add or subtract. Write in simplest form.

5. $\frac{8}{9} - \frac{5}{9}$
   
   A. $\frac{4}{9}$  
   B. $\frac{1}{9}$  
   C. $\frac{2}{9}$

6. $\frac{7}{8} + \frac{3}{4}$
   
   F. $\frac{5}{8}$  
   G. $1\frac{5}{8}$  
   H. $1\frac{7}{8}$

7. $2\frac{1}{4} + 7\frac{5}{6}$
   
   A. $10\frac{1}{12}$  
   B. $10\frac{1}{4}$  
   C. $10\frac{1}{6}$

8. $\frac{5}{8} - \frac{1}{8}$
   
   F. $\frac{3}{4}$  
   G. $\frac{1}{2}$  
   H. $\frac{3}{8}$
9. $25\frac{3}{8} - 23\frac{1}{4}$
   A. $2\frac{1}{8}$  B. $2\frac{1}{2}$  C. $1\frac{7}{8}$

10. $\frac{1}{10} + \frac{3}{8}$
    F. $\frac{9}{10}$  G. $\frac{19}{40}$  H. $\frac{19}{80}$

11. $8\frac{2}{3} + 6\frac{7}{15}$
    A. $15\frac{1}{15}$  B. $15\frac{2}{15}$  C. $15\frac{1}{5}$

12. $15\frac{13}{16} - 3$
    F. $18\frac{13}{16}$  G. $18\frac{5}{8}$  H. $12\frac{13}{16}$

13. $21\frac{2}{3} + 5\frac{5}{6}$
    A. $27\frac{2}{3}$  B. $27\frac{1}{2}$  C. $26\frac{1}{2}$

14. $3 - 2\frac{5}{7}$
    F. $2\frac{2}{7}$  G. $\frac{5}{7}$  H. $1\frac{2}{7}$

Solve.

15. Find $a + b$.
   $a = 6\frac{1}{4}$ and $b = \frac{3}{5}$
   A. $7\frac{19}{20}$  B. $6\frac{9}{10}$  C. $6\frac{17}{20}$

16. Find $x - y$.
   $x = 3\frac{4}{9}$ and $y = 1\frac{1}{3}$
   F. $2\frac{2}{9}$  G. $2\frac{1}{9}$  H. $1\frac{1}{9}$
Chapter Test, Form 2C

Read each question carefully. Fill in the correct answer on the line provided.

1. Round $\frac{47}{13}$ to the nearest half.

2. Use rounding to order $\frac{4}{7}, \frac{7}{9}$, and $\frac{4}{21}$ from least to greatest.

Estimate.

3. $2\frac{5}{8} + 1\frac{1}{3}$

4. $6\frac{1}{6} - 1\frac{11}{12}$

Add or subtract. Write in simplest form.

5. $\frac{8}{9} - \frac{5}{9}$

6. $\frac{7}{8} + \frac{3}{4}$

7. $2\frac{1}{4} + 7\frac{5}{6}$

8. $\frac{5}{8} - \frac{1}{8}$

9. $25\frac{3}{8} - 23\frac{1}{4}$

10. $\frac{1}{10} + \frac{3}{8}$

11. $8\frac{2}{3} + 6\frac{7}{15}$

12. $15\frac{13}{16} - 3$

13. $21\frac{2}{3} + 5\frac{5}{6}$

14. $3 - 2\frac{5}{7}$
Evaluate each expression.

15. \(a + b\) if \(a = 6 \frac{1}{4}\) and \(b = \frac{3}{5}\)  
16. \(x - y\) if \(x = 3 \frac{4}{9}\) and \(y = 1 \frac{1}{3}\)

Solve.

17. A 30-pound bag of dog food has 12 \(\frac{1}{2}\) pounds left. How many pounds of dog food have been removed?

18. Paulo cooked 2 \(\frac{3}{4}\) pounds of chicken for a hiking trip. He also made 3 \(\frac{1}{8}\) pounds of meatballs. How many pounds of food does Paulo cook in all?

19. Luisa had 1 \(\frac{3}{4}\) cups of spaghetti sauce in a jar. She used \(\frac{1}{2}\) cup for her dinner. How many cups of sauce are left in the jar?

20. In her meatloaf recipe, Ana uses \(\frac{1}{2}\) cup breadcrumbs, 1 \(\frac{3}{4}\) cups tomato sauce, and \(\frac{1}{4}\) cup onions. How many cups of the ingredients does she use all together?
Read each question carefully. Fill in the correct answer on the line provided.

1. Round $4 \frac{7}{13}$ to the nearest half.

2. Use rounding to order $\frac{4}{7}$, $\frac{7}{9}$, and $\frac{4}{21}$ from least to greatest.

Estimate.

3. $2 \frac{5}{8} + 1 \frac{1}{3}$

4. $6 \frac{1}{6} - 1 \frac{11}{12}$

Add or subtract. Write in simplest form.

5. $\frac{8}{9} - \frac{5}{9}$

6. $\frac{7}{8} + \frac{3}{4}$

7. $2 \frac{1}{4} + 7 \frac{5}{6}$

8. $\frac{5}{8} - \frac{1}{8}$

9. $25 \frac{3}{8} - 23 \frac{1}{4}$

10. $\frac{1}{10} + \frac{3}{8}$

11. $8 \frac{2}{3} + 6 \frac{7}{15}$

12. $15 \frac{13}{16} - 3$

13. $21 \frac{2}{3} + 5 \frac{5}{6}$

14. $3 - 2 \frac{5}{7}$
Solve.

15. Find $a + b$
   
   $a = 6\frac{1}{4}$ and $b = \frac{3}{5}$

16. Find $x - y$
   
   $x = 3\frac{4}{9}$ and $y = 1\frac{1}{3}$

17. A 30-pound bag of dog food has $12\frac{1}{2}$ pounds left. How many pounds are gone?

18. Paulo makes $2\frac{3}{4}$ pounds of chicken. Then he makes $3\frac{1}{8}$ pounds of meatballs. How many pounds of food does Paulo make in all?

19. Luisa had $1\frac{3}{4}$ cups of rice in a jar. She uses $\frac{1}{2}$ cup. How many cups of rice are left in the jar?

20. Ana has $\frac{1}{2}$ cup sugar, $1\frac{3}{4}$ cups tomato sauce, and $\frac{1}{4}$ cup onions. How many cups of food does she have in all?
Chapter Test, Form 3

Read each question carefully. Fill in the correct answer on the line provided.

Estimate as directed.

1. Round \( \frac{3}{25} \) to the nearest half.

2. Round \( 1 \frac{49}{63} \) to the nearest half.

Estimate each sum or difference.

3. \( 9 \frac{7}{8} + 1 \frac{1}{9} \)

4. \( 6 \frac{1}{5} - \frac{2}{13} \)

Find the sum or difference. Write your response in simplest form.

5. \( 3 \frac{7}{8} + 1 \frac{1}{12} + \frac{3}{4} \)

6. \( \frac{3}{4} - \frac{3}{19} \)

7. \( 3 \frac{1}{4} + 7 \frac{6}{7} \)

8. \( \frac{17}{132} - \frac{7}{132} \)

9. \( 19 \frac{3}{10} - 5 \frac{3}{4} \)

10. \( \frac{7}{10} + 3 \frac{1}{2} + 1 \frac{3}{4} \)

11. \( \frac{7}{8} + \frac{3}{16} \)

12. \( 14 - 9 \frac{5}{7} \)

13. \( 22 \frac{2}{13} - 1 \frac{8}{39} \)
Evaluate each expression.

14. \( a + b + c \) if \( a = 4 \frac{3}{4}, b = 1 \frac{3}{5}, \) and \( c = \frac{1}{6} \)

15. \( x - y \) if \( x = 61 \) and \( y = 3 \frac{4}{11} \)

Order from least to greatest.

16. \( \frac{4}{15}, \frac{9}{30}, \frac{4}{10}, \frac{1}{5} \)

Solve.

17. Steve spent \( \frac{1}{3} \) of his monthly allowance of $24 in May. In June, he spent \( \frac{1}{2} \) of his allowance on repairing his bike. How much more of his allowance did Steve spend in June than in May?

18. Marco buys 4 gallons of cherry stain and 3 gallons of clear stain. He uses \( 1 \frac{1}{3} \) gallons of cherry stain on woodwork. How many gallons of cherry and clear stain does he have left?

19. Erica kicks a soccer ball \( 20 \frac{5}{6} \) feet, Maggie kicks a soccer ball \( 11 \frac{7}{12} \) feet, and Marie kicks a soccer ball \( 11 \frac{11}{20} \) feet. Find the difference between the farthest and shortest difference.

20. A triangular fence has sides that measure \( 5 \frac{2}{3} \) feet, \( 6 \frac{1}{4} \) feet, and \( 7 \frac{2}{7} \) feet. A rectangular fence has two sides that measure \( 2 \frac{2}{3} \) feet and two sides that measure \( 6 \frac{1}{8} \) feet. Which fence has the greater perimeter (sum of the measures of the sides)?
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 proper method for rounding fractions and mixed numbers to the nearest half?

b. Describe a situation where it would make sense to round a fraction up to the nearest inch.

2. Would you round \(3 \frac{1}{4}\) to 3 or 4? Explain your reasoning.

3. a. Explain in your own words how to subtract fractions with the same denominators. Provide an example.

b. Explain in your own words how to add fractions with different denominators. Provide an example.

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

10. F G H J
Test Example

Toni is going to knit three scarves. She will need the following amount of yarn for each scarf. How much yarn does Toni need for all three scarves?

<table>
<thead>
<tr>
<th>Scarf 1</th>
<th>Scarf 2</th>
<th>Scarf 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>150 ( \frac{1}{2} ) yards</td>
<td>111 ( \frac{1}{4} ) yards</td>
<td>120 ( \frac{2}{3} ) yards</td>
</tr>
</tbody>
</table>

A. 381 \( \frac{5}{12} \) yards  B. 381 \( \frac{7}{12} \) yards  C. 382 \( \frac{5}{12} \) yards  D. 382 \( \frac{7}{12} \) yards

Read the Question

You need to find how much yarn Toni needs.

Solve the Question

First use the LCD to rename the fractions.

\[
150 \frac{1}{2} \rightarrow 150 \frac{6}{12} \\
111 \frac{1}{4} \rightarrow 111 \frac{3}{12} \\
+120 \frac{2}{3} \rightarrow +120 \frac{8}{12}
\]

\[
381 \frac{17}{12} = 382 \frac{5}{12}
\]

So, the answer is C.
Choose the best answer.

1. Tina needs to buy wood to create a birdhouse. She needs $\frac{2}{5}$ foot of oak wood and $\frac{7}{10}$ foot of cherry wood. Find the total amount of wood that Tina needs to buy.

   A. $1 \frac{1}{5}$ feet    
   B. $1 \frac{1}{10}$ feet    
   C. $1 \frac{1}{15}$ feet    
   D. $\frac{1}{10}$ foot

2. Jillian rode her bicycle $\frac{1}{10}$ mile to get from her house to the pool. Then Jillian rode $\frac{1}{2}$ mile from the pool to the post office. What is the total distance that Jillian rode?

   F. $\frac{1}{21}$ mile    
   G. $\frac{2}{21}$ mile    
   H. $\frac{9}{21}$ mile    
   J. $\frac{10}{21}$ mile

3. Ivette has math and reading homework. It takes Ivette $\frac{3}{10}$ hour to complete her math homework and $\frac{1}{2}$ hour to complete her reading homework. How much time does it take Ivette to complete both her math and reading homework?

   A. $\frac{1}{5}$ hour    
   B. $\frac{3}{5}$ hour    
   C. $\frac{4}{5}$ hour    
   D. 1 hour

4. $2 \frac{1}{2} - 1 \frac{1}{4} =$

   F. $1 \frac{1}{2}$    
   G. $1 \frac{1}{4}$    
   H. $\frac{1}{2}$    
   J. $\frac{1}{4}$

5. Joey cooks two vegetarian pizzas for a class party. The shaded portions of the pizzas below show the pieces that are left. What portion is left altogether?

   A. $\frac{39}{40}$ of a pizza    
   B. $\frac{27}{40}$ of a pizza    
   C. $\frac{6}{13}$ of a pizza    
   D. $\frac{6}{40}$ of a pizza
6. Which letter on the number line identifies the location of $-3$?

\[ \text{A. A} \quad \text{B. B} \quad \text{C. C} \quad \text{D. D} \]

6. ________

7. Kira read 97 pages of a book last night, which was \( \frac{2}{5} \) of the book. What decimal represents the fraction of the book that she read?

A. 0.2  
B. 0.3  
C. 0.4  
D. 0.5  

7. ________

8. If \( v = 7 \), what is the value of \( 4 \times v - 11 \)?

F. 17  
G. 15  
H. 11  
J. 7  

8. ________

9. Paul gives away \( \frac{4}{9} \) of his shirts because they no longer fit. What fraction of his shirts did Paul keep?

9. ________

10. Find the least common multiple of 10, 30, and 40.

10. ________

11. Lexi reads \( \frac{1}{8} \) of a book in the morning and \( \frac{5}{12} \) of the book in the evening. Find the total fraction of the book that Lexi read.

11. ________

12. Write the prime factorization of 56.

12. ________

13. \( 20 - 18 \frac{7}{9} = \)

13. ________

14. Randy and Phil run a 100-meter race. Randy's time is 16.041 seconds and Phil's time is 16.149 seconds. Who won the race?

14. ________

15. A test has 40 questions. Rafael answers \( \frac{7}{8} \) of the questions correctly. How many questions did Rafael answer correctly?

15. ________

16. Find the value of \( x \) to make the fractions equivalent. \( \frac{3}{x} = \frac{12}{20} \)

16. ________
Answers

Grade 5

Chapter 5

Anticipation Guide

Adding and Subtracting Fractions

**Before you begin Chapter 5**

- 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. Like fractions have the same numerator.</td>
<td>D</td>
</tr>
<tr>
<td>2. Unlike fractions have different denominators.</td>
<td>A</td>
</tr>
<tr>
<td>3. ( \frac{1}{2} ) and ( \frac{1}{2} ) are like fractions.</td>
<td>A</td>
</tr>
<tr>
<td>4. ( \frac{7}{12} ) is in simplest form.</td>
<td>A</td>
</tr>
<tr>
<td>5. A fraction is a number that represents part of a whole or part of a set.</td>
<td>A</td>
</tr>
<tr>
<td>6. ( \frac{5}{6} ) and ( \frac{5}{6} ) are unlike fractions.</td>
<td>A</td>
</tr>
<tr>
<td>7. ( \frac{3}{10} ) and ( \frac{7}{10} ) are like fractions.</td>
<td>A</td>
</tr>
<tr>
<td>8. In the fraction ( \frac{13}{12} ), 10 is the denominator.</td>
<td>A</td>
</tr>
<tr>
<td>9. In the fraction ( \frac{13}{12} ), 3 is the denominator.</td>
<td>D</td>
</tr>
<tr>
<td>10. In the fraction ( \frac{13}{12} ), 3 is the numerator.</td>
<td>A</td>
</tr>
</tbody>
</table>

**After you complete Chapter 5**

- 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.
Answers (Lesson 5-1)

Rounding Fractions and Mixed Numbers

Round Up
If the numerator is almost as large as the denominator, round the number up to the next whole number.

Example: \( \frac{9}{10} \) rounds to 1.
9 is almost as large as 10.

Round to \( \frac{1}{2} \)
If the numerator is about half of the denominator, round the fraction to \( \frac{1}{2} \).

Example: \( \frac{3}{5} \) rounds to \( \frac{1}{2} \).
3 is about half of 5.

Round Down
If the numerator is much smaller than the denominator, round the number down to the previous whole number.

Example: \( \frac{1}{5} \) rounds to 0.
1 is much smaller than 5.

Round each number to the nearest half.

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

Solve.

22. Mrs. Jones is putting up blinds to fit in a window opening that is \( \frac{36}{2} \) inches wide. Should she round \( \frac{36}{2} \) up or down when deciding on the size of blinds to purchase?

\[ \text{down to } \frac{36}{2} \]

23. Marvin is mailing a copy of a document that is \( \frac{12}{2} \) inches long and \( \frac{10}{2} \) inches wide. Will the document fit in an envelope that is 12 inches long and \( \frac{10}{2} \) inches wide or in an envelope that is \( \frac{12}{2} \) inches long and 11 inches wide?

12 \( \frac{1}{2} \) inches long and 11 inches wide
Problem-Solving Practice

Rounding Fractions and Mixed Numbers

Solve.

1. A recipe for cookies calls for \( \frac{3}{4} \) of a cup of chocolate chips. Should you buy a package with \( \frac{1}{2} \) cup or a package with 1 cup?

2. The cookie recipe also calls for \( \frac{3}{8} \) of a cup of walnuts. Should you buy a package with 1 cup or a package with \( \frac{1}{2} \) cup of walnuts?

3. To the nearest half foot, what is the tallest refrigerator that can fit in a kitchen with a space that is \( 6 \frac{3}{4} \) feet tall?

4. Russ is putting his photographs in an album that is \( 12 \frac{1}{8} \) inches long and \( 10 \frac{1}{2} \) inches wide. Should he trim the edges of the photographs to 12 inches long and 10 inches wide or to \( 12 \frac{1}{4} \) inches long and \( 10 \frac{1}{8} \) inches wide?

5. A farmer is planting squash plants that need \( 2 \frac{3}{8} \) feet to spread out. Round the amount of space the squash plants need to the nearest \( \frac{1}{2} \) foot.

6. Based on the area of his flowerbed, a gardener calculates that he needs \( 6 \frac{9}{14} \) gallons of fertilizer. Should he round \( 6 \frac{9}{14} \) up or down when deciding on the amount of fertilizer he should purchase?

Graph each ordered pair on the coordinate plane at the right.

12. \( M \left( 4, 3 \right) \)

13. \( N \left( 1 \frac{1}{2}, 2 \right) \)

14. \( P \left( 3, 2.5 \right) \)

15. \( Q \left( 4 \frac{3}{4}, 5 \right) \)

16. \( T \left( 2, 2 \frac{1}{4} \right) \)

17. \( V \left( 1, 3 \frac{1}{2} \right) \)
Estimating Sums and Differences

You can round mixed numbers to the nearest half to estimate sums and differences of mixed numbers. Use the number lines to help you.

1. $5 \frac{1}{2}$ is closer to 5 than to $5 \frac{1}{2}$. Between 5 and 6, $5 \frac{1}{2}$ is closer to 5 than to 6. So, $5 \frac{1}{2} \approx 5$.

2. $\frac{3}{4}$ is closer to $\frac{3}{2}$ than to $\frac{1}{2}$. Between $\frac{1}{2}$ and 1, $\frac{3}{4}$ is closer to $\frac{3}{2}$ than to $\frac{1}{2}$. So, $\frac{3}{4} \approx \frac{3}{2}$.

3. $\frac{5}{8} \frac{1}{2} = \frac{5}{8} + \frac{1}{2} = \frac{5}{8} + \frac{4}{8} = \frac{9}{8}$. Between $\frac{5}{8}$ and 1, $\frac{9}{8}$ is closer to 1 than to $\frac{5}{8}$. So, $\frac{9}{8} \approx 1$.

Show each mixed number on a number line and round it to the nearest half. Then estimate the sum or difference.

1. $3 \frac{1}{2} + 4 \frac{9}{10}$

2. $5 \frac{1}{2} - \frac{1}{3}$

Estimate the sum or difference. You may draw number lines.

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5–2

Name ____________________________  Date  ________________

Skills Practice

Estimating Sums and Differences

Round to the nearest half.

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

Estimate the sum or difference.

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

Solve.

27. Beth walks 10 \( \frac{7}{8} \) miles in one week. She walks \( 2 \frac{1}{2} \) fewer miles the following week. About how many miles does she walk the second week?

28. Jon wants to walk at least 8 miles by the end of the week. He walks 5 \( \frac{3}{4} \) miles by Thursday. If he walks another \( 2 \frac{1}{2} \) miles on Friday, will he meet his goal? Explain.

Homework Practice

Estimating Sums and Differences

Spiral Review

Round to the nearest half. (Lesson 5–1)

11. \( \frac{\frac{2}{3} + \frac{1}{2}}{5 + \frac{1}{2}} = \frac{5}{2} \)
12. \( \frac{\frac{2}{3} - \frac{1}{2}}{8 - \frac{1}{2}} = \frac{2}{3} \)
13. \( \frac{\frac{1}{3} + \frac{1}{2}}{10 + \frac{1}{10}} = \frac{10}{2} \)
14. \( \frac{\frac{1}{3} - \frac{1}{2}}{14 - \frac{1}{2}} = \frac{1}{2} \)
15. \( \frac{\frac{1}{3} + \frac{1}{2}}{4 + \frac{1}{2}} = \frac{4}{2} \)
16. \( \frac{\frac{1}{2} + \frac{1}{2}}{7 - \frac{1}{2}} = \frac{7}{2} \)
17. \( \frac{\frac{1}{2} + \frac{1}{2}}{11 + \frac{1}{2}} = \frac{11}{2} \)
18. \( \frac{\frac{1}{2} + \frac{1}{2}}{14 - \frac{1}{2}} = \frac{14}{2} \)
19. \( \frac{\frac{1}{2} + \frac{1}{2}}{5 + \frac{1}{2}} = \frac{5}{2} \)
20. \( \frac{\frac{1}{2} + \frac{1}{2}}{18 + \frac{1}{2}} = \frac{18}{2} \)

Answers
**Problem-Solving Practice**

*Estimating Sums and Differences*

1. Abdul works $\frac{3}{4}$ hour one day and $\frac{1}{2}$ hour the next day. Estimate the total number of hours he works on both days combined.

   about $1\frac{1}{2}$ hours

2. Anna is making cookies for the school bake sale. If she uses $1\frac{1}{8}$ pounds of flour per batch, what is the amount of flour she needs for four batches?

   $4\frac{1}{2}$ pounds

3. Rachel sings in a chorus at a concert. The songs are $4\frac{4}{10}$ minutes, $7\frac{11}{12}$ minutes, and $10\frac{3}{4}$ minutes long. Estimate the amount of time the chorus spends singing.

   about $22\frac{1}{2}$ minutes

4. Kathy rides her bicycle to her aunt’s house. It takes her $20\frac{2}{3}$ minutes to get there. She is tired when she leaves, and it takes her $24\frac{1}{6}$ minutes to ride home. What is the approximate difference in the two times?

   $3\frac{1}{2}$ minutes

5. Carol wants to make a picture frame for an $8 \times 10$ inch photo. The long pieces of the frame need to be $12\frac{3}{8}$ inches long. The short pieces should be $10\frac{1}{2}$ inches long. Estimate the length of wood Carol must buy to make the frame.

   about $44$ inches

   Would this length be the actual amount she should buy? Explain.

**The estimate is an approximate length. Since all numbers were rounded down, she will need extra wood.**

6. Justin plays football. On one play, he ran the ball $24\frac{1}{3}$ yards. The following play, he was tackled and lost $3\frac{2}{5}$ yards. The next play, he ran for $5\frac{1}{2}$ yards. Estimate how much farther the ball is down the field after the three plays.

   about $25\frac{1}{2}$ yards

---

**Enrich**

*Using 1 as a Benchmark*

When you estimate sums of proper fractions, it often helps to use the number 1 as a benchmark, like this:

Two halves make a whole, so $\frac{1}{2} + \frac{1}{2} = 1$.

If two fractions are each less than $\frac{1}{2}$, their sum is less than 1.

If two fractions are each greater than $\frac{1}{2}$, their sum is greater than 1.

$\frac{5}{8} + \frac{7}{8} > 1$

---

Fill in each $\square$ with $<$ or $>$ to make a true statement.

1. $\frac{2}{3} + \frac{5}{8}$

   $\square$

2. $\frac{2}{5} + \frac{3}{7}$

   $\square$

3. $\frac{3}{10} + \frac{5}{11}$

   $\square$

4. $\frac{27}{50} + \frac{7}{10}$

   $\square$

5. $\frac{50}{99} + \frac{5}{7} + \frac{5}{5}$

   $\square$

6. $\frac{24}{49} + \frac{4}{7}$

   $\square$

---

Fill in each $\square$ with one of the given fractions to make a true statement.

7. $\frac{2}{3} + \frac{4}{5}$

   $\square$

8. $\frac{8}{7} + \frac{6}{11}$

   $\square$

9. $\frac{1}{2} + \frac{4}{5}$

   $\square$

10. $\frac{1}{12} + \frac{13}{24}$

    $\square$

---

Fill in each with $<$ or $>$ to make a true statement.

11. $\frac{5}{9} + \frac{1}{7}$

    $\square$

12. $1 - \frac{5}{11}$

    $\square$

13. $1 - \frac{10}{19}$

    $\square$

14. $\frac{49}{99}$

    $\square$

15. $\frac{4}{7} + \frac{1}{3}$

    $\square$

16. $\frac{3}{4} + \frac{2}{7}$

    $\square$
### Reteach

**Adding and Subtracting Fractions with Like Denominators**

Follow these steps to add or subtract fractions with like denominators.

**Add** \(\frac{3}{8} + \frac{1}{8}\)

**Step 1**

Add the numerators. Use the like denominator.

\[
\frac{3}{8} + \frac{1}{8} = \frac{4}{8}
\]

So, \(\frac{3}{8} + \frac{1}{8} = \frac{4}{8}\) or \(\frac{1}{2}\).

**Step 2**

Divide the numerator and denominator by their greatest common factor.

\[
\frac{4}{8} ÷ \frac{4}{4} = \frac{1}{2}
\]

**Add or subtract. Write in simplest form.**

1. \(\frac{7}{10} + \frac{1}{10} = \frac{8}{10} = \frac{4}{5}\)
2. \(\frac{13}{16} + \frac{7}{16} = \frac{20}{16} = \frac{5}{4}\) or \(1\frac{1}{4}\)
3. \(\frac{4}{5} + \frac{1}{5} = \frac{5}{5} = 1\)

4. \(\frac{7}{12} + \frac{5}{12} = \frac{12}{12} = 1\)
5. \(\frac{4}{5} + \frac{3}{5} = \frac{7}{5} = \frac{1}{5}\)
6. \(\frac{5}{6} + \frac{5}{6} = \frac{10}{6} = \frac{5}{3}\)

7. \(\frac{7}{15} + \frac{2}{15} = \frac{9}{15} = \frac{1}{3}\)
8. \(\frac{9}{20} - \frac{3}{20} = \frac{6}{20} = \frac{3}{10}\)
9. \(\frac{3}{8} - \frac{1}{8} = \frac{2}{8} = \frac{1}{4}\)

10. \(\frac{3}{8} + \frac{1}{8} = \frac{4}{8} = \frac{1}{2}\)
11. \(\frac{2}{3} + \frac{1}{3} = \frac{3}{3} = 1\)
12. \(\frac{5}{6} - \frac{1}{6} = \frac{4}{6} = \frac{2}{3}\)

13. \(\frac{7}{16} + \frac{3}{16} = \frac{10}{16} = \frac{5}{8}\)
14. \(\frac{3}{10} + \frac{9}{10} = \frac{12}{10} = \frac{6}{5}\) or \(1\frac{1}{5}\)
15. \(\frac{7}{8} + \frac{7}{8} = \frac{14}{8} = \frac{7}{4}\)

16. \(\frac{7}{12} + \frac{11}{12} = \frac{18}{12} = \frac{3}{2}\)
17. \(\frac{19}{20} + \frac{5}{20} = \frac{24}{20} = \frac{6}{5}\)
18. \(\frac{11}{20} - \frac{7}{20} = \frac{4}{20} = \frac{1}{5}\)

19. \(\frac{9}{16} - \frac{7}{16} = \frac{2}{16} = \frac{1}{8}\)
20. \(\frac{4}{5} - \frac{3}{5} = \frac{1}{5}\)
21. \(\frac{7}{9} - \frac{4}{9} = \frac{3}{9} = \frac{1}{3}\)

22. In Mr. Jane’s homeroom, \(\frac{8}{25}\) of the students brought a lunch from home. \(\frac{15}{25}\) of the students will buy a lunch, and \(\frac{2}{25}\) of the students will go home for lunch. What fraction of the class will eat lunch at school? \(\frac{23}{25}\)
5–3
Homework Practice
Adding and Subtracting Fractions with Like Denominators

Add or subtract. Write in simplest form.
1. \( \frac{2}{5} + \frac{3}{5} = \frac{2}{1} \)
2. \( \frac{5}{9} - \frac{1}{9} = \frac{4}{9} \)
3. \( \frac{6}{8} + \frac{5}{8} = \frac{8}{1} \)
4. \( \frac{3}{4} + \frac{2}{4} = \frac{1}{4} \)
5. \( \frac{9}{9} + \frac{3}{9} = \frac{1}{3} \)
6. \( \frac{7}{8} + \frac{2}{8} = \frac{1}{8} \)
7. \( \frac{1}{2} + \frac{2}{2} = \frac{1}{2} \)
8. \( \frac{4}{5} - \frac{3}{5} = \frac{5}{5} \)
9. \( \frac{12}{15} + \frac{3}{15} = \frac{1}{1} \)
10. \( \frac{6}{7} - \frac{1}{7} = \frac{7}{7} \)

Spiral Review
Estimate. (Lesson 5–2)
11. \( \frac{2}{2} + \frac{5}{9} = \frac{3}{1} \)
12. \( \frac{5}{4} + \frac{1}{2} = \frac{6}{3} \)
13. \( \frac{2}{5} + \frac{6}{5} = \frac{6}{2} \)
14. \( \frac{3}{7} - \frac{1}{2} = \frac{3}{9} \)
15. \( \frac{8}{10} + \frac{3}{9} = \frac{11}{1} \)
16. \( \frac{1}{3} + \frac{7}{6} = \frac{9}{7} \)
17. \( \frac{6}{5} + \frac{3}{5} = \frac{15}{5} \)
18. \( \frac{5}{15} + \frac{7}{9} = \frac{8}{1} \)
19. \( \frac{7}{8} + \frac{1}{7} = \frac{1}{1} \)
20. \( \frac{1}{8} + \frac{5}{9} = \frac{2}{2} \)
21. \( \frac{5}{8} + \frac{11}{2} = \frac{6}{6} \)
22. \( \frac{3}{7} - \frac{2}{3} = \frac{2}{2} \)

5–3
Problem-Solving Practice
Adding and Subtracting Fractions with Like Denominators

Solve. Write your answer in simplest form.
1. Debbie helped her mother with the laundry. She did \( \frac{1}{2} \) of it on Monday and another \( \frac{3}{8} \) of it on Tuesday. What fraction of the laundry has she done?

\( \frac{1}{2} \) of the laundry

2. Laureano worked \( \frac{1}{4} \) hour one day and \( \frac{3}{4} \) hour the next day. How many hours did he work on the two days?

1 hour

3. Mindy likes to order fresh meat and vegetable wraps from a local restaurant. One cook can roll \( \frac{1}{3} \) wraps in 5 minutes. Another cook can roll \( \frac{2}{3} \) wraps in the same amount of time. What is the difference in the number of wraps the two cooks can prepare in 5 minutes?

\( \frac{1}{3} \) wrap

4. John went to a museum to see model trains. He saw \( \frac{2}{5} \) mile of track on the first floor of the museum. He saw \( \frac{4}{5} \) mile of track on the second floor. How much more track did John see on the second floor than the first?

\( \frac{2}{5} \) mile

5. Sherry was in charge of distributing 250 food items that were donated to the local food pantry. On Monday she distributed 87 items. On Tuesday, she distributed 63 more items. Fifty more items were distributed on Wednesday.

What fraction of the food items was distributed by the end of the day on Wednesday?

\( \frac{4}{5} \) of the items

6. Laura and her sister Katie swim every day. Laura can swim \( \frac{3}{4} \) mile in 10 minutes. Katie can swim \( \frac{5}{6} \) mile in the same amount of time. If they swim for 20 minutes and their speeds stay the same, how much farther does Laura swim than her sister?

\( \frac{2}{7} \) mile farther

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**Name ____________________________  Date  ________________**

## Chapter Resources

**5–3**

**Enrich**

**Fraction Puzzles**

In the puzzles below, the sum of the fractions in each row is the same as the sum of the fractions in each column. Use your knowledge of adding and subtracting fractions to find the missing fractions. Hint: Remember to check the fractions for like denominators before adding.

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**CHALLENGE** Create your own fraction puzzle using a box of 5 rows and 5 columns.

---

**5–4**

**Reteach**

**Problem-Solving Strategy**

Use the **Act It Out Strategy**

Akio and Mei began the project of repainting and covering the seats of old dining room chairs. To recover one seat, they need 2/3 of a yard of fabric. How much fabric do they need to buy to recover the seats of 4 chairs?

- **Understand**
  - What facts do you know?
    - There are 4 chairs to recover. 2/3 of a yard of fabric is needed to cover the seat of each chair.
  - What do you need to find?
    - How much fabric is needed to recover the seats of 4 chairs?

- **Plan**
  - Act out the problem by marking the floor to show a length of 2/3 of a yard.
  - Then, continue to mark 2/3 of a yard of fabric until you have done this 4 times.

- **Solve**
  - 2/3 + 2/3 + 2/3 + 2/3 = 8/3 = 2 2/3 yards of fabric

- **Check**
  - You can estimate by rounding 2 2/3 to 1.
  - Then, you have each chair needs about 1 yard of fabric.
  - 1 + 1 + 1 + 1 = 4, which is close to your answer of 2 2/3.
**Reteach**

**Problem-Solving Strategy** (continued)

**Solve. Use the act it out strategy.**

1. The girls need $\frac{1}{4}$ can of paint to paint each chair. How many cans of paint will they need to paint all 4 chairs?

   **1 can**

2. The girls found 6 more chairs that each need $\frac{2}{3}$ yard of fabric to cover the seats. How much more fabric do they need to buy?

   **4 yards**

3. Since each of the 6 chairs needs $\frac{1}{4}$ can of paint, how much more paint will they need?

   **1 $\frac{1}{2}$ cans**

4. Jean reads $\frac{1}{7}$ of her book each day. If she starts reading on Monday, on what day will she complete her book?

   **Sunday**

5. Robert lives $\frac{3}{10}$ mile from school. Al lives $\frac{7}{10}$ mile from school. Who lives farther from school? How much farther?

   Al; $\frac{2}{5}$ mile

6. A puppy eats $\frac{1}{2}$ of a can of food at each meal. If he eats two times a day, how long will it take him to eat 4 cans of food?

   **6 days**

**Skills Practice**

**Problem-Solving Strategy**

**Solve. Use the act it out strategy.**

1. The ceramics class is designing mugs with three colored stripes. The colors are red, yellow, and green. How many different ways can students in the class arrange the three colored stripes?

   **6**

2. Meg and Matt are painting all 4 walls of a room. Each person is painting 2 walls. After one hour, Meg has painted $\frac{1}{2}$ of one wall, and Matt has painted 1 wall. How much longer will it take Meg to paint her 2 walls than it will take Matt to paint his?

   **2 hours**

3. Twenty-four students are in study hall. Eight more arrive. At the same time, 12 leave. Then, 16 leave and 8 more arrive. How many students are left in study hall?

   **12**

4. Ellen is decorating a wall with family pictures. She has 2 pictures that are 10 inches, 2 pictures that are 8 inches, and 2 pictures that are 6 inches. If she keeps the same size pictures in rows, how many ways can she arrange the pictures?

   **4**

5. Dolores has 6 quarters, 5 dimes, 4 nickels, and 10 pennies. How many different combinations of coins can she make to have $0.50?

   **18**
**Answers**

**Grade 5**

**Chapter 5**

---

**Homework Practice**

**Problem-Solving Strategy**

**5–4**

**SMR2.3, 5NS2.3**

**Solve. Use the act it out strategy.**

1. Alberto has 2 quarters, 2 dimes, 2 nickels, and 2 pennies. How many different combinations of coins can he make to have $0.55?

   **2 combinations**

2. Carlos is running drills at \(\frac{1}{2}\) mile. If he runs 5 drills, how many miles did he run?

   **2 \(\frac{1}{2}\) miles**

3. Students are hanging their art projects in the school hallway. Each student wants to hang a project that is \(\frac{1}{2}\) foot wide. The hallway is 16 feet long. If they don’t leave any space between each project, how many projects will fit in the hallway?

   **18 projects**

4. Hana is wrapping books to give as gifts. She needs pieces of wrapping paper that are \(\frac{3}{6}\) foot long for each book. She has a total of 6 books. How long a roll of wrapping paper will she need?

   **5 feet**

---

**Spiral Review**

Add or subtract. Write in simplest form. (Lesson 5–5)

5. \(\frac{3}{5} + \frac{9}{5}\)  
6. \(\frac{5}{9} - \frac{1}{9}\)  
7. \(\frac{9}{2} - \frac{7}{2}\)  
8. \(\frac{3}{8} + \frac{1}{4}\)

9. \(\frac{1}{3} - \frac{3}{6}\)  
10. \(\frac{3}{5} + \frac{6}{8}\)  
11. \(\frac{1}{2} + \frac{1}{2}\)  
12. \(\frac{6}{5} - \frac{2}{5}\)

13. \(\frac{12}{15} - \frac{3}{15}\)  
14. \(\frac{6}{8} - \frac{2}{8}\)  
15. \(\frac{5}{8} + \frac{3}{8}\)  
16. \(\frac{5}{8} - \frac{3}{8}\)

17. \(\frac{3}{4} + \frac{4}{5}\)

---

**Enrich**

**A Fraction of an Inch**

Fractions are important in measurement. Using fractions allows you to be more exact than when you round to the nearest inch. When you go to the doctor, your height is not measured to the nearest inch. It is measured to fractions of an inch. Scientists use fractions all the time because their measurements need to be very precise.

**Solve.**

1. Jameela is cutting a piece of wood that is \(\frac{7}{12}\) inch long for a miniature picture frame. If she is cutting it from a piece of wood that is 1 inch long, what is the length of wood that will be left over?

   **\(\frac{5}{12}\) inch**

2. The winning high jump in a track meet was \(\frac{3}{4}\) inch away from the world record. The second place jump was \(\frac{7}{8}\) inch away from the world record. What is the difference between the two jumps?

   **\(\frac{1}{8}\) inch**

3. A carpenter needs to fill a \(\frac{1}{3}\)-inch-wide hole. He has a piece of wood that is \(\frac{9}{12}\) inch wide. How much should he cut off from the piece so that it will fit in the hole?

   **none, it is already the right size**

4. Evie is cutting ribbons \(8\frac{1}{2}\) feet long for a sewing project. If the original ribbon is \(36\frac{4}{12}\) feet long, how long is it after she cuts her first ribbon?

   **28 feet**

5. Fabric is sold by the yard. Derek wants \(\frac{6}{8}\) yard of a particular kind of fabric. There is only \(\frac{1}{4}\) yard of the fabric left on the bolt. Derek buys what is left. How much more does he need to buy?

   **\(\frac{1}{4}\) yard**
Skills Practice
Adding and Subtracting Fractions
with Unlike Denominators

Write the addition or subtraction sentence shown by each model.
Write the sum or difference in simplest form.

1. \[
\frac{1}{4} + \frac{3}{8} = \frac{5}{8}
\]
2. \[
\frac{3}{5} + \frac{3}{10} = \frac{9}{10}
\]
3. \[
\frac{3}{16} + \frac{5}{8} = \frac{13}{16}
\]

4. \[
\frac{1}{2} - \frac{2}{10} = \frac{3}{10}
\]
5. \[
\frac{4}{8} - \frac{2}{12} = \frac{4}{24} \text{ or } \frac{1}{3}
\]
6. \[
\frac{5}{6} - \frac{9}{24} = \frac{11}{24}
\]

Add or subtract. Write in simplest form.

7. \[
\frac{1}{10} + \frac{1}{5} = \frac{3}{10}
\]
8. \[
\frac{1}{12} + \frac{1}{6} = \frac{1}{4}
\]
9. \[
\frac{5}{16} + \frac{3}{8} = \frac{11}{16}
\]
10. \[
\frac{3}{4} + \frac{1}{12} = \frac{5}{6}
\]
11. \[
\frac{1}{2} + \frac{3}{8} = \frac{7}{8}
\]
12. \[
\frac{2}{3} + \frac{5}{6} = \frac{11}{6}
\]
13. \[
\frac{7}{12} - \frac{1}{4} = \frac{3}{4}
\]
14. \[
\frac{1}{2} - \frac{3}{8} = \frac{1}{6}
\]
15. \[
\frac{9}{10} - \frac{2}{5} = \frac{2}{5}
\]
16. \[
\frac{5}{8} - \frac{1}{4} = \frac{3}{8}
\]
17. \[
\frac{11}{20} - \frac{3}{10} = \frac{1}{4}
\]
18. \[
\frac{11}{12} - \frac{1}{3} = \frac{7}{12}
\]
Name ______________________ Date ____________ 5NS2.3

5-5

Homework Practice
Adding and Subtracting Fractions with Unlike Denominators

Add or subtract. Write in simplest form.

1. \(\frac{2}{5} + \frac{2}{8} = \frac{13}{20}\)
2. \(\frac{3}{6} + \frac{7}{8} = \frac{13}{8}\)
3. \(\frac{9}{10} - \frac{2}{5} = \frac{2}{5}\)
4. \(\frac{5}{7} + \frac{1}{2} = \frac{13}{14}\)
5. \(\frac{3}{4} + \frac{5}{8} = \frac{1}{8}\)
6. \(\frac{1}{6} + \frac{1}{4} = \frac{5}{12}\)
7. \(\frac{2}{5} + \frac{3}{6} = \frac{17}{15}\)
8. \(\frac{3}{4} - \frac{1}{2} = \frac{1}{4}\)
9. \(\frac{2}{3} + \frac{1}{6} = \frac{11}{12}\)
10. \(\frac{2}{7} + \frac{1}{3} = \frac{19}{21}\)
11. \(\frac{3}{8} + \frac{7}{9} = \frac{72}{72}\)
12. \(\frac{8}{9} + \frac{1}{10} = \frac{90}{90}\)
13. \(\frac{1}{2} + \frac{2}{3} = \frac{11}{6}\)
14. \(\frac{3}{5} - \frac{1}{8} = \frac{5}{14}\)
15. \(\frac{9}{10} - \frac{1}{6} = \frac{15}{15}\)

Spiral Review

Solve using the act it out strategy. (Lesson 5-4)

17. The Boyd family eats \(\frac{3}{4}\) of a package of pasta for dinner. How many packages of pasta will they need for 4 pasta dinners?

3 packages

18. Kayla has 5 quarters, 3 dimes, 2 nickels, and 5 pennies. How many different combinations of coins can she make to have $0.50?

4

5-5

Problem-Solving Practice
Adding and Subtracting Fractions with Unlike Denominators

Solve. Write in simplest form.

1. Steve watched television for \(\frac{2}{3}\) hour on Monday and \(\frac{2}{5}\) hour on Tuesday. How many hours did he watch television on both days? \(1\frac{7}{12}\) hour

2. Deanna uses \(\frac{3}{5}\) cup of flour and \(\frac{1}{4}\) cup of shortening in a pie crust recipe. How much more flour than shortening does she use? \(\frac{5}{12}\) cup

3. Marsha and her friend, Tina, are making table decorations for a party. Marsha made \(\frac{2}{3}\) of a decoration in half an hour. Tina can make \(\frac{3}{4}\) of a decoration in the same amount of time. How much more of a decoration can Tina make in half an hour? \(\frac{9}{4}\) decoration

4. Kyle planted flowers in the front of the school. He planted \(\frac{3}{10}\) of the plants on Friday and \(\frac{3}{5}\) of the plants on Saturday. What fraction of the total plants did he plant on both days? \(\frac{15}{16}\)

5. Shawn rides his bicycle \(\frac{3}{5}\) mile to school. On his way to school, he stops at Mike’s house, which is \(\frac{1}{2}\) mile from Shawn’s house. Then they both ride to Joe’s house, which is \(\frac{2}{3}\) mile from Mike’s house. How far is it from Joe’s house to the school? \(\frac{29}{70}\) mile

6. After school, Laura baby-sits a neighbor’s child for 50 minutes. They rest for 10 minutes, read for 15 minutes, and play for the rest of the time. Write the total baby-sitting time, the resting time, and the reading time, as fractions of an hour.

\(\frac{5}{6}\) hour; \(\frac{1}{2}\) hour; \(\frac{1}{2}\) hour

Use these fractions to find the fraction of an hour they play.

\(\frac{5}{12}\) hour
Choose the Best Strategy

Fina did a survey of how much time students spend on homework each night. Out of 16 people interviewed, \( \frac{1}{2} \) spend about 1 hour on homework and \( \frac{1}{4} \) spend about 45 minutes on homework. The rest spend about 30 minutes on homework. How many students spend 30 minutes on homework?

**Understand**
\[ \frac{1}{2} \text{ of 16 students spend 1 hour on homework.} \]
\[ \frac{1}{4} \text{ of 16 students spend 45 minutes on homework.} \]

You need to know how many people spend 30 minutes on homework.

**Plan**

You can use the **act it out** strategy.

Draw 16 students.

Cross out the students who spend 1 hour and who spend 45 minutes on homework.

You will be left with the students who spend 30 minutes on homework.

**Solve**

\[ \frac{1}{2} \text{ of 16 is } 8. \text{ Cross out 8 students.} \]

\[ \frac{1}{4} \text{ of 16 is } 4. \text{ Cross out 4 more students.} \]

Count the students that are left. 4 students spend about 30 minutes on homework.

**Check**

Use math to check your work.

\[ 16 - 8 - 4 = 4 \]

Your answer is correct.
Reteach

Problem-Solving Investigation (continued)

Use any strategy shown below to solve.

- Act it out
- Make a table
- Use logical reasoning

1. Out of the 200 students at Groves High, 50 spend 2 hours a night on homework, 25 spend 1 hour on homework, and 75 spend 45 minutes on homework. The rest spend 30 minutes on homework. How many students spend 30 minutes on homework?

50 students

2. Mrs. Jones told her class of 30 students that 8 people scored 90 on a math test, 7 people scored 80, and 10 people scored 70. How many people scored lower than 70?

5 people

3. If square tables are arranged in a restaurant so that only one person can sit on any side of the table, how many tables will it take to seat 40 people?

10 tables

4. If the 40 people in the restaurant spend a total of $600 and 3 of the 40 people spend, what is the least amount of money a person spends?

$10

5. Alan bought a computer that was on sale for $568. If the computer originally cost $647, how much money did Alan save?

$79

Skills Practice

Problem-Solving Investigation

Use any strategy shown below to solve.

- Make a table
- Use logical reasoning
- Act it out

1. In how many ways can 5 people stand in line if one of the people always has to be first in line?

24 ways

2. The teacher told the class of 30 students that \( \frac{1}{2} \) of them scored above an 80 on their math test. An additional \( \frac{1}{3} \) of them scored at least a 70. How many of them scored below 70?

5 students

3. Alicia bought a CD player for $10 less than the regular price. If she paid $58 for the CD player, what was the regular price?

$68

4. Miguel bought boxes of chocolates. The first box weighed \( 4 \frac{1}{2} \) pounds, the second, \( 2 \frac{2}{3} \) pounds, and the third, \( 1 \frac{1}{2} \). What is the total amount of chocolate that Miguel bought?

8 \( \frac{1}{3} \) pounds

5. After Miguel shared the chocolate with his friends, he had \( 3 \frac{1}{2} \) pounds left. Then, he gave 2 \( \frac{1}{2} \) pounds to his mother. Now, how much does he have?

7 \( \frac{1}{8} \) pound

6. The first \( \frac{1}{2} \) mile of a 5-mile path through a rose garden is paved with bricks. How much of the path is not paved with bricks?

\( \frac{11}{20} \) mile
Grade 5

5–6

Homework Practice

Problem-Solving Investigation

Use any strategy shown below to solve.

• Make a table  • Use logical reasoning  • Act it out

1. Olivia bought a ring for \( \frac{1}{2} \) off the regular price. If she paid $50, what was the regular price?

\[ \text{Regular price} = 2 \times 50 = 100 \]

2. Mrs. Jones told the class that \( \frac{1}{3} \) of them scored 90 or above on the math test. Another \( \frac{1}{3} \) of them had a passing score. What fraction of the class failed?

\[ \frac{1}{3} \]

3. At a park, a picnic shelter covers \( \frac{1}{4} \) of an acre and a playground covers \( \frac{5}{8} \) of an acre. How much area is covered by both the picnic shelter and the playground?

\[ \frac{7}{8} \text{ acre} \]

4. Of the 300 students at school, 110 are in the chorus and 150 are in the band. Of these students, 50 are in both chorus and the band. How many students are neither in the chorus nor the band?

\[ 90 \text{ students} \]

Spiral Review

Add or subtract. Write in simplest form. (Lesson 5–5)

5. \( \frac{3}{5} + \frac{2}{9} = \frac{37}{45} \)

6. \( \frac{3}{5} - \frac{6}{8} = \frac{17}{20} \)

7. \( \frac{7}{10} + \frac{2}{7} = \frac{69}{70} \)

8. \( \frac{6}{7} - \frac{1}{2} = \frac{15}{14} \)

9. \( \frac{7}{8} - \frac{3}{5} = \frac{11}{40} \)

10. \( \frac{5}{6} - \frac{1}{3} = \frac{1}{6} \)

5–6

Enrich

Choose the Operation

Solve.

1. A box is \( \frac{1}{2} \) inch tall. If 5 of the boxes are stacked on top of each other, how tall is the stack of boxes?

\[ 2\frac{1}{2} \text{ inches tall} \]

2. Darlene needs \( \frac{3}{4} \) yard of fabric to cover a chair. She has \( \frac{3}{8} \) yard of fabric. How much more fabric does she need?

\[ \frac{3}{8} \text{ yard} \]

3. Mr. Montgomery is a chef. He has created 250 new recipes. He plans to donate \( \frac{3}{5} \) of them to the school library. How many recipes does he plan to donate? Hint: \( \frac{1}{5} \) of 250 is 50.

\[ 150; 50 \times 3 = 150 \]

4. The art department received a shipment of 6 boxes of clay. Each box weighed \( \frac{3}{4} \) pound. How many pounds of clay were in the shipment?

\[ 4\frac{1}{2} \text{ pounds} \]

5. A sculptor has a steel tube that is \( \frac{2}{3} \) foot long. To create a longer tube, he attaches it to another steel tube that is \( \frac{5}{6} \) foot long. How long is the new steel tube?

\[ 1\frac{1}{2} \text{ feet long} \]

6. Marcel was in a triathlon, a race with 3 events. He ran 4 miles in \( \frac{3}{4} \) hour. He bicycled 5 miles in \( \frac{2}{3} \) hour, and he swam 880 yards in \( \frac{1}{4} \) hour. What was his total race time?

\[ 1\frac{11}{12} \text{ hour or 1 hour 55 minutes} \]
Reteach

Adding and Subtracting Mixed Numbers

Add \( \frac{7}{8} + 1 \frac{1}{2} \).

Rename the addends using their LCD.

Multiples of 8: 8, 16, 24, . . .
Multiples of 2: 2, 4, 6, 8, . . .
The LCD of \( \frac{7}{8} \) and \( 1 \frac{1}{2} \) is 8.
Show \( 1 \frac{7}{8} \) and \( 1 \frac{1}{2} \) using eighths as a denominator.

\[
1 \frac{7}{8} \rightarrow 1 \frac{7}{8} + 1 \frac{1}{2} \rightarrow 1 \frac{4}{8} \quad \text{or} \quad \frac{11}{8}
\]

Add the ones.
Then count the eighths.

Subtract \( 2 \frac{3}{4} - 1 \frac{5}{8} \).

Find the LCD of \( \frac{3}{4} \) and \( \frac{5}{8} \).
Multiples of 4: 4, 8,
Multiples of 8: 8, . . .
The LCD of \( \frac{3}{4} \) and \( \frac{5}{8} \) is 8.

Rename \( 2 \frac{3}{4} \) so the fraction part is in eighths. Subtract the ones. Then subtract the eighths.

Add or subtract. Write in simplest form.

1. \( 2 \frac{5}{4} + 1 \frac{3}{4} = \frac{11}{4} \)
2. \( 1 \frac{3}{5} + 2 \frac{7}{10} = \frac{13}{10} \)
3. \( 6 \frac{4}{5} - 1 \frac{7}{10} = \frac{51}{10} \)
4. \( 3 \frac{3}{8} - 1 \frac{1}{4} = \frac{21}{8} \)

Add or subtract. Write in simplest form.

1. \( 7 \frac{15}{16} - 2 \frac{11}{16} = \frac{54}{16} \)
2. \( 11 \frac{4}{5} - 4 \frac{3}{10} = \frac{71}{10} \)
3. \( 12 + 9 \frac{1}{3} = \frac{211}{3} \)
4. \( 18 \frac{5}{6} - 9 \frac{1}{6} = \frac{92}{3} \)
5. \( 9 + 5 \frac{1}{12} = \frac{141}{12} \)
6. \( 16 \frac{7}{10} - 7 \frac{1}{3} = \frac{91}{30} \)
7. \( 34 \frac{11}{20} + 15 = \frac{491}{20} \)
8. \( 64 \frac{11}{12} - 37 \frac{3}{4} = \frac{271}{6} \)
9. \( 51 \frac{2}{3} + 25 \frac{3}{4} = \frac{773}{20} \)

10. \( 46 \frac{3}{4} - 27 = \frac{193}{4} \)
11. \( 82 \frac{4}{5} + 62 = \frac{1444}{5} \)
12. \( 23 \frac{2}{9} - 15 \frac{1}{8} = \frac{811}{40} \)
13. \( 16 \frac{11}{12} - 7 = \frac{91}{12} \)
14. \( 35 \frac{7}{8} + 21 \frac{1}{4} = \frac{571}{8} \)
15. \( 97 \frac{4}{5} - 87 = \frac{16}{5} \)

16. \( 6 \frac{11}{12} + 4 \frac{5}{12} = \frac{159}{12} \)
17. \( 11 \frac{2}{3} - 3 \frac{2}{3} = \frac{16}{9} \)
18. \( 14 \frac{7}{8} + 5 = \frac{123}{8} \)
19. \( 15 \frac{1}{4} - 6 \frac{1}{4} = \frac{3}{4} \)

20. A grocery bag will hold \( \frac{5}{8} \) pounds of oranges. Kyle puts 3 pounds of oranges in the bag. How many more pounds of oranges can he put in the bag?

\[ \frac{5}{8} \]

21. Sara needs \( 2 \frac{7}{4} \) pounds of grapes for a salad. She buys a bag of grapes that weighs only \( 1 \frac{1}{2} \) pounds. How many more pounds of grapes does she need?

\[ \frac{13}{8} \]

22. Keith is making a canvas tent. He needs \( 12 \frac{3}{5} \) yards of beige canvas for the top and \( 8 \frac{5}{5} \) yards of green canvas for the bottom. How many yards of canvas does he need in all?

\[ 21 \frac{3}{20} \]
Homework Practice
Adding and Subtracting Mixed Numbers

Add or subtract. Write in simplest form.

1. $3 \frac{3}{4} + 8 \frac{1}{4} = 12$
2. $6 \frac{1}{5} + 6 \frac{3}{5} = 12 \frac{4}{5}$
3. $11 \frac{3}{10} + 1 \frac{1}{10} = 12 \frac{2}{5}$
4. $6 \frac{5}{8} + 7 \frac{6}{8} = 14 \frac{3}{8}$
5. $9 \frac{4}{8} - 6 \frac{1}{8} = 3 \frac{3}{8}$
6. $8 \frac{1}{3} + 9 \frac{2}{3} = 18$
7. $5 \frac{1}{5} + 7 \frac{3}{5} = 12 \frac{4}{5}$
8. $8 \frac{8}{9} - 1 \frac{1}{9} = 7 \frac{7}{9}$
9. $7 \frac{6}{7} - 5 \frac{1}{7} = 2 \frac{5}{7}$
10. $12 \frac{4}{8} - 4 \frac{1}{8} = 8 \frac{3}{8}$

Spiral Review

Use any strategy shown below to solve. (Lesson 5–6)

• Make a table 
  • Use logical reasoning 
  • Act it out

11. Janice bought 2 pairs of sneakers. The first pair was full price and the second was half price. The original price of the first pair was $32. How much did she spend?

$48

12. Jill bought five packages of printer paper that weighed 1 $\frac{1}{2}$ pounds, 2 $\frac{1}{2}$ pounds, 3 $\frac{3}{4}$ pounds, 1 $\frac{1}{8}$ pounds, and 2 $\frac{1}{2}$ pounds. How many pounds of paper did she buy?

11 pounds

13. Chou’s quiz scores are 78, 99, 101, 88, 93, 89, 92, 94, 84, 95. On how many more quizzes did Chou score above 90 than below 90?

2 quizzes

Problem-Solving Practice
Adding and Subtracting Mixed Numbers

Solve.

1. Blanca’s children are 6 $\frac{1}{6}$ years old and 5 $\frac{1}{5}$ years old. In simplest form, what are combined ages of her children?

$11 \frac{1}{4}$ years old

2. Rick has a choice of buying 4 $\frac{3}{4}$ packages of pencils or 2 $\frac{2}{3}$ packages of pens. In simplest form, how many more packages of pencils than pens can he buy?

$2 \frac{7}{20}$ packages

3. Cumberland Valley Coal Company mined 249 $\frac{2}{3}$ tons of coal on one day and 387 $\frac{1}{7}$ tons on another day. What is the total number of tons of coal mined on both days?

$636 \frac{17}{21}$ tons

4. One year, Cumberland Valley Coal Company planted 14 $\frac{1}{6}$ dozen trees to help prevent erosion. The following year, they planted 20 $\frac{2}{3}$ dozen trees. How many more trees did they plant the second year?

$6 \frac{1}{2}$ dozen trees

5. James recycled 22 $\frac{1}{2}$ pounds of aluminum in one week. Matt recycled 18 $\frac{3}{4}$ pounds of aluminum the same week. How many more pounds of aluminum did James recycle?

$4 \frac{1}{4}$ pounds

6. Bethany bought 2 $\frac{1}{2}$ pounds of bread, 3 $\frac{3}{4}$ pounds of meat, and 3 $\frac{3}{8}$ pounds of cheese to make sandwiches for a party. She also bought 2 $\frac{1}{2}$ pounds of tomatoes, 1 $\frac{1}{8}$ pounds of onions, and 2 $\frac{1}{2}$ pounds of lettuce.

What is the total number of pounds of food that she bought?

$15 \frac{1}{12}$ pounds
Subtracting Mixed Numbers with Renaming

To subtract mixed numbers with unlike denominators, you need to write equivalent fractions with a common denominator.

Subtract \(6\frac{1}{2} - 2\frac{3}{4}\).

**Step 1** Write the fractions with a common denominator.

Think: The LCD of \(\frac{1}{2}\) and \(\frac{3}{4}\) is 4.

Rename \(\frac{1}{2}\) as \(\frac{2}{4}\).

Then subtract.

**Step 2** Subtract the fractions. Regroup if necessary.

**Step 3** Subtract the whole numbers.

**Step 4** Simplify if possible.

So, \(6\frac{1}{2} - 2\frac{3}{4} = 3\frac{3}{4}\).

Subtract. Write in simplest form.

1. \(7\frac{1}{4} - 3\frac{1}{8}\)
2. \(2\frac{3}{16} - 1\frac{1}{4}\)
3. \(9\frac{1}{5} - 4\frac{2}{5}\)
4. \(21\frac{4}{5} - 11\frac{1}{5}\)
5. \(15\frac{1}{2} - 11\frac{1}{2}\)

6. \(12\frac{1}{4} - 4\frac{1}{8} = 8\frac{1}{8}\)

7. \(3\frac{2}{3} - 1\frac{5}{6} = 1\frac{5}{6}\)

8. \(6\frac{1}{5} - 2\frac{1}{4} = 3\frac{3}{20}\)

9. \(41\frac{1}{4} - 27\frac{5}{6} = 13\frac{5}{12}\)

10. \(70\frac{7}{10} - 45\frac{4}{5} = 24\frac{9}{10}\)

11. \(10\frac{1}{10} - 3\frac{5}{6} = 6\frac{7}{10}\)

12. \(3\frac{5}{8} - 1\frac{3}{4} = 1\frac{5}{8}\)

13. \(4\frac{5}{12} - 1\frac{1}{2} = 2\frac{11}{12}\)

14. \(6\frac{1}{5} - 2\frac{3}{5} = \frac{3}{5}\)

15. \(5\frac{2}{3} - 1\frac{4}{3} = 1\frac{11}{12}\)

16. \(18\frac{1}{2} - 1\frac{2}{3} = 16\frac{5}{6}\)

17. \(4\frac{3}{6} - 1\frac{7}{16} = 2\frac{15}{16}\)

18. \(3\frac{1}{16} - 2\frac{1}{2} = \frac{9}{16}\)

19. \(4\frac{1}{4} - 1\frac{2}{3} = \frac{7}{12}\)

20. \(25\frac{5}{8} - 17\frac{15}{16} = \frac{7}{16}\)
Skills Practice
Subtracting Mixed Numbers with Renaming

Subtract. Write in simplest form.

1. \(10 \frac{11}{16} - 3 \frac{7}{8}\)  
2. \(8 \frac{1}{2} - 2 \frac{3}{8}\)  
3. \(9 - 3 \frac{1}{2}\)  
4. \(5 \frac{3}{5} - 2 \frac{3}{5}\)

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

9. \(5 \frac{1}{5} - 1 \frac{1}{4}\)
10. \(10 \frac{2}{3} - 7 \frac{3}{4}\)
11. \(7 \frac{1}{4} - 2 \frac{5}{6}\)
12. \(12 \frac{2}{5} - 6 \frac{3}{4}\)

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

Solve.

21. Anna has \(3 \frac{1}{2}\) yards of fabric. She plans to use \(2 \frac{1}{2}\) yards for curtains. Does she have enough left to make 2 pillows that each use \(\frac{3}{8}\) yard of fabric? Explain.

No; \(3 \frac{1}{4} - 2 \frac{1}{2} = \frac{3}{8} + \frac{5}{8} = 1 \frac{1}{4}\) yd left; \(1 \frac{1}{4} < 1 \frac{1}{2}\)

22. Paula has 2 yards of elastic. One project needs a \(\frac{3}{4}\) yard piece. Does she have enough for another project that needs \(1 \frac{1}{2}\) yards? Explain.

No; \(\frac{3}{4} + 1 \frac{1}{2} = \frac{9}{8} + \frac{5}{8} = 1 \frac{3}{4} < 2\frac{1}{2}\)

Homework Practice
Subtracting Mixed Numbers with Renaming

Subtract. Write in simplest form.

1. \(7 - 4 \frac{1}{2}\)
2. \(9 - 5 \frac{3}{5}\)
3. \(6 - 2 \frac{2}{3}\)
4. \(14 - 5 \frac{1}{4}\)

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

9. \(8 - 2 \frac{7}{8}\)
10. \(5 \frac{1}{7}\)

11. \(9 \frac{3}{5} - 3 \frac{1}{6}\)
12. \(2 \frac{1}{10} - 1 \frac{2}{5}\)
13. \(15 \frac{1}{2} - 8 \frac{1}{2}\)
14. \(6 \frac{7}{16} - 3 \frac{9}{16}\)

Spiral Review

Add or subtract. Write in simplest form. (Lesson 5-7)

15. \(2 \frac{2}{4} + 7 \frac{3}{4}\)
16. \(5 \frac{1}{5} + 3 \frac{2}{5}\)

17. \(1 \frac{3}{10} + 11 \frac{8}{10}\)
18. \(6 \frac{6}{8} - 4 \frac{5}{8}\)

19. \(9 \frac{4}{6} + 6 \frac{1}{6}\)
20. \(7 \frac{2}{3} - 5 \frac{3}{3}\)

21. \(5 \frac{2}{5} + 4 \frac{3}{5}\)
22. \(9 \frac{5}{9} - 3 \frac{1}{9}\)

23. \(7 \frac{6}{7} + 5 \frac{1}{7}\)
24. \(11 \frac{5}{8} - 4 \frac{3}{8}\)
**Problem-Solving Practice**

Subtracting Mixed Numbers with Renaming

Solve.

1. When Shane and her family went on vacation, the pilot announced that it would take 4 ½ hours to reach their destination. When the flight snack was served, they had been in flight 2 3/4 hours. How much longer was the flight after the snack was served?

   \[ 1 \frac{1}{2} \text{ hours} \]

2. Mark bought 5 1/4 pounds of yellow cheese and 3 3/4 pounds of white cheese. How much more yellow cheese than white cheese did he buy?

   \[ 1 \frac{13}{20} \text{ pounds} \]

3. Stella made 4 quarts of lemon tea for the weekend barbecue. Vincent made 3 1/2 quarts of mint tea for the barbecue. How much more tea did Stella make than Vincent?

   \[ 5 \, \text{quart} \]

4. Taylor’s puppy weighs 9 pounds. Belinda’s kitten weighs 3 5/6 pounds. How much more does Taylor’s puppy weigh than Belinda’s kitten?

   \[ 5 \frac{2}{5} \text{ pounds} \]

5. Jillian has a piece of leather cord that is 12 1/4 inches long. She only needs 8 3/10 inches of cord to make a bracelet. How much leather cord will she trim?

   \[ 3 \frac{3}{10} \text{ inches} \]

6. The Department of Education prohibits a student from doing more than 50 hours of homework in a 7-day period. Silvio has done 30 3/4 hours in the last 5 days. How many more hours is he allowed to do homework in the next 2 days?

   \[ 19 \frac{3}{4} \text{ hours} \]

---

**Enrich**

Evaluations with Fractions and Decimals

Sometimes an equation involves both fractions and decimals. To solve an equation like this, you probably want to work with numbers in the same form. One method of doing this is to start by expressing the decimals as fractions. The example at the right shows how you might solve the equation.

\[ m + \frac{2}{5} = 0.6 \]  \[ m + \frac{2}{5} = \frac{3}{5} \]  \[ m = \frac{3}{5} - \frac{2}{5} \]  \[ m = \frac{1}{5} \]

Name the number that is a solution of the given equation.

1. \[ z = \frac{1}{8} + 0.375; 1 \frac{1}{8}, \frac{3}{8}, \frac{1}{2} \]

2. \[ 0.75 - \frac{3}{4} = b; 0, \frac{1}{4}, 1, \frac{1}{4} \]

3. \[ c + 0.6 = \frac{4}{5}, \frac{3}{5}, \frac{1}{2}, \frac{1}{5} \]

4. \[ 0.6 = j - \frac{1}{5}, \frac{1}{4}, \frac{4}{5}, 1, \frac{1}{2} \]

5. \[ \frac{1}{4} + r = 0.75; \frac{1}{4}, \frac{3}{8}, \frac{1}{2} \]

6. \[ d - 0.1 = \frac{7}{10}, \frac{1}{2}, \frac{3}{4}, \frac{9}{10} \]

Solve each equation. If the solution is a fraction or a mixed number, be sure to express it in simplest form.

7. \[ \frac{2}{5} + 0.4 = k \]

8. \[ s = \frac{7}{8} - 0.125 \]

9. \[ 0.6 - n = \frac{2}{5} \]

10. \[ t + 0.2 = \frac{4}{5} \]

11. \[ 0.375 + g = \frac{5}{8}, \frac{1}{4} \]

12. \[ y - 0.25 = \frac{3}{4} \]

13. \[ 0.8 - \frac{1}{5} = x \]

14. \[ q + 0.125 = \frac{5}{8} \]

15. \[ w = \frac{1}{8} + 0.375 + \frac{5}{8} \]

16. \[ 0.7 + \frac{1}{10} - 0.3 = \sigma \]

17. \[ p = \frac{1}{8} = 0.8 - \frac{3}{5} \]

18. \[ k - 0.875 = 0.375 + \frac{1}{8} \]

Answers (Lesson 5–8)
**Vocabulary Test**

Using the word bank below, complete each sentence by writing the correct word or words on the line provided.

<table>
<thead>
<tr>
<th>like fractions</th>
<th>unlike fractions</th>
<th>simplest form</th>
</tr>
</thead>
<tbody>
<tr>
<td>fraction</td>
<td>numerator</td>
<td>denominator</td>
</tr>
<tr>
<td>mixed number</td>
<td>renaming</td>
<td></td>
</tr>
</tbody>
</table>

1. The _____ is the number above the bar in a fraction; the part of the fraction that tells how many of the equal parts are being used.
2. A _____ has a whole number part and a fraction part.
3. A fraction in which the numerator and the denominator have no common factor greater than 1 is in ______.
4. The bottom number in a fraction is the ______.
5. When subtracting mixed numbers, sometimes the fraction part of the larger number is less than the fraction part of the smaller number. When this happens, you must use ______.
6. ______ are fractions with different denominators.
7. A number that represents part of a whole or part of a set is a ______.
8. Fractions that have the same denominator are ______.

**Oral Assessment**

Draw pictures of a square and a circle on the board. Divide each shape into 4 equal parts. For the square, shade in 1 section. For the circle, shade in 3 sections.

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 on the first square?
   
   ______ part is shaded

2. What is the fraction that represents the amount of parts shaded on the first square?
   
   ______

3. How many parts are shaded on the first circle?
   
   ______ parts are shaded

4. What is the fraction that represents the amount of parts shaded on the first circle?
   
   ______

5. Tell how you got your answer.
   
   I know there are 4 total pieces of the circle and 3 are shaded.

6. If you add the two fractions for the first square and the first circle, what is the sum?
   
   ______
Name __________________________ Date __________________

**Oral Assessment (continued)**

7. Tell how you got your answer.
   \[
   \frac{1}{4} + \frac{3}{4} = 1
   \]

Using a piece of paper or the chalkboard, draw 2 circles. The first circle should be shaded to represent \(\frac{2}{4}\) and the second circle should be shaded to represent \(\frac{1}{4}\).

8. What is the sum of the shaded area of both circles?
   \[
   \frac{3}{4}
   \]

9. Tell how you got your answer.
   \[
   \text{I added } \frac{2}{4} \text{ and } \frac{1}{4}. \frac{2}{4} + \frac{1}{4} = \frac{3}{4}
   \]

Using a piece of paper or the chalkboard, draw 2 squares. The first square should be shaded to represent \(\frac{4}{6}\) and the second circle should represent \(\frac{2}{6}\).

10. What is the sum of the shaded areas of both squares?
    \[
    \frac{6}{6} \text{ or } 1
    \]

11. Tell how you got your answer.
    \[
    \text{I added } \frac{2}{6} + \frac{4}{6} = \frac{6}{6}, \text{ which equals } 1.
    \]
### Chapter 5 Assessment Answer Key

#### Chapter Diagnostic Assessment
Page 49

1. \(2 + 8 = 10\)
2. \(7 + 4 = 11\)
3. \(10 - 5 = 5\)
4. \(8 - 3 = 5\)
5. \$15 + $5 = $20

#### Chapter Pretest
Page 50

1. \(\frac{1}{2}\)
2. \(\frac{4}{7}\)
3. \(1 \frac{1}{4}\)
4. \(\frac{14}{55}\)
5. \(1\)
6. \(\frac{13}{18}\)
7. \(8 \frac{27}{40}\)
8. \(5 \frac{1}{28}\)
9. \(3 \frac{1}{2}\)
10. \(1\)
11. \(5 \frac{1}{2}\)
12. \(1 \frac{1}{2}\)
13. \(1 \frac{1}{2}\)
14. \(1 \frac{1}{3}\)
15. \(\frac{7}{8}\)
16. \(1 \frac{11}{12}\) feet long.

#### Quiz 1 (5–1 through 5–3)
Page 51

1. \(\frac{1}{2}\)
2. \(\frac{4}{7}\)
3. \(1 \frac{1}{4}\)
4. \(8 \frac{1}{2}\)
5. \(1\)
6. \(6 \frac{1}{2}\)
7. \(1\) foot
8. \(\frac{5}{8}\)
9. \(\frac{2}{5}\)
10. \(1\)
Chapter 5 Assessment Answer Key

Quiz 2 (5–4 through 5–6)
Page 52

1. 7 students

2. 8 combinations

3. No

4. 4 hours

Quiz 3 (5–7 through 5–8)
Page 53

1. \( \frac{2}{21} \)

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

3. \( \frac{11}{30} \)

4. \( 47\frac{1}{2} \)

5. \( \frac{5}{22} \)

6. \( \frac{5}{8} \)

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

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

9. \( 1\frac{13}{20} \) quarts

10. \( 1\frac{3}{4} \) hours

Mid-Chapter Review
Page 54

1. A

2. J

3. B

4. F

5. C

Round each fraction to the nearest half, then add or subtract.

Like fractions are fractions with the same denominator.

Add the numerators. Use the same denominator in the sum.

Subtract the numerators. Use the same denominator in the difference.

You are able to make a reliable prediction of what will happen in the problem.
# Chapter 5 Assessment Answer Key

## Chapter Test, Form 1

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<th>Page 61</th>
<th>Page 62</th>
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<td><strong>9.</strong> B</td>
<td><strong>1.</strong> B</td>
</tr>
<tr>
<td><strong>2.</strong> H</td>
<td><strong>10.</strong> F</td>
<td><strong>2.</strong> H</td>
</tr>
<tr>
<td><strong>3.</strong> B</td>
<td><strong>11.</strong> B</td>
<td><strong>3.</strong> C</td>
</tr>
<tr>
<td><strong>4.</strong> G</td>
<td><strong>12.</strong> H</td>
<td><strong>4.</strong> G</td>
</tr>
<tr>
<td><strong>5.</strong> C</td>
<td><strong>13.</strong> B</td>
<td><strong>5.</strong> B</td>
</tr>
<tr>
<td><strong>6.</strong> J</td>
<td><strong>14.</strong> H</td>
<td><strong>6.</strong> H</td>
</tr>
<tr>
<td><strong>7.</strong> D</td>
<td><strong>15.</strong> D</td>
<td><strong>7.</strong> A</td>
</tr>
<tr>
<td><strong>8.</strong> J</td>
<td><strong>16.</strong> H</td>
<td><strong>8.</strong> H</td>
</tr>
</tbody>
</table>

(continued on the next page)
Chapter 5 Assessment Answer Key

Chapter Test, Form 2A
Page 63

9. B
10. H
11. B
12. H
13. B
14. F
15. B
16. H

Chapter Test, Form 2B
Page 64

1. B
2. H
3. B
4. G
5. B
6. G
7. A
8. G
9. A
10. G
11. B
12. H
13. B
14. F
15. C
16. G

(continued on the next page)
### Chapter 5 Assessment Answer Key

**Chapter Test, Form 2C**  
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**Chapter Test, Form 2D**  
Page 67

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## Chapter 5 Assessment Answer Key

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# Chapter 5 Assessment Answer Key

**Page 72, Extended-Response Test**

**Scoring Rubric**

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<th>Specific Criteria</th>
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<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>
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(continued on the next page)
Chapter 5 Assessment Answer Key

Page 72, Extended-Response Test
Sample Answers

In addition to the scoring rubric found on page A30, the following sample answers may be used as guidance in evaluating open-ended assessment items.

1. a. Answer will vary. Sample answer: To round fractions and mixed numbers to the nearest half, there are 3 rules to follow:

(1) If the numerator is almost as large as the denominator, round the number up to the next whole number.
Example: $\frac{9}{10}$ rounds to 1

(2) If the numerator is about half of the denominator, round the fraction to $\frac{1}{2}$.
Example: 2 and $\frac{3}{7}$ rounds to 2 and $\frac{1}{2}$

(3) If the numerator is much smaller than the denominator, round the number down to the previous whole number.
Example: $\frac{1}{9}$ rounds to 0

b. A situation where it would make sense to round a fraction up to the nearest unit would be if you were buying food for a dinner party. In that situation it would be better to round up and have more.

2. $3 \frac{1}{4}$ would round to 3 since it is closer to 3 on the number line.

3. a. To subtract fractions with the same denominators, subtract the numerators. Use the same denominator in the difference. For example: $\frac{4}{5} - \frac{2}{5} = \frac{2}{5}$.

b. To add fractions with unlike denominators you have to rename the fractions using the least common denominator, then you can add as you would like fractions.

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 5 Assessment Answer Key

Cumulative Standardized Test Practice
Page 75

1. B

2. J

3. C

4. G

5. A

Cumulative Standardized Test Practice
Page 76

6. H

7. C

8. $\frac{5}{9}$

9. $\frac{13}{24}$

10. 120

11. $2^3 \times 7$

12. $\frac{12}{9}$

13. Randy

14. 35

15. 5