Reteaching 5-4

Multiplying and Dividing Fractions

Find \(3\frac{2}{3} \cdot 1\frac{2}{3}\).

\[
3\frac{2}{3} \cdot 1\frac{2}{3} = \frac{11}{3} \cdot \frac{5}{3}
\]

Change to improper fractions.

\[
= \frac{11 \cdot 5}{3 \cdot 3}
\]

Divide the common factors.

\[
= \frac{55}{9}
\]

Simplify.

Find \(-1\frac{1}{2} \div 2\frac{1}{4}\).

\[
-1\frac{1}{2} \div 2\frac{1}{4} = \frac{-3}{2} \div \frac{9}{4}
\]

Change to improper fractions.

\[
= \frac{-3 \cdot 4}{2 \cdot 9}
\]

Divide by the reciprocal.

\[
= \frac{-12}{18} \div \frac{9}{4}
\]

Divide the common factors.

\[
= \frac{-12}{18} \cdot \frac{4}{9}
\]

Simplify.

Check your sign with the original problem. A negative times a positive has a negative product.

---

Find each product.

1. \(\frac{7}{9} \cdot \frac{3}{7} = \) ________________

2. \(2\frac{1}{3} \cdot (-1\frac{1}{3}) = \) ________________

3. \(-3\frac{7}{8} \cdot 2\frac{2}{3} = \) ________________

4. \(5\frac{1}{4} \cdot 4\frac{2}{3} = \) ________________

Find each quotient.

5. \(-\frac{6}{11} \div \frac{4}{11} = \) ________________

6. \(1\frac{1}{6} \div 2\frac{1}{3} = \) ________________

7. \(-4\frac{1}{5} \div (-1\frac{3}{4}) = \) ________________

8. \(-6\frac{1}{8} \div \frac{7}{3} = \) ________________
Reteaching 5-6

Jody, Karl, and Kara want to buy a pizza. Jody said she can pay half the cost. Karl said he can pay \( \frac{1}{3} \) of what was left after Jody paid half. Kara said she could pay the remaining $4. How much does the pizza cost?

Work backward.

Kara will pay $4. This is \( \frac{2}{3} \) of what is left after Jody pays half, since Karl pays \( \frac{1}{3} \) and \( 1 - \frac{1}{3} = \frac{2}{3} \). Let \( h \) equal half the cost of the pizza.

\[ \frac{2}{3}h = 4 \]

Use the Try, Test, Revise strategy to find \( h = 6 \).

Thus, Jody pays $6 and Karl pays \( \frac{1}{3} \cdot 6 = $2 \).

The pizza costs \( 6 + 2 + 4 = $12 \).

1. Steven, Lisa, and Mark want to buy a pizza. Steven said he could pay twice as much as Lisa. Mark said he could pay the remaining $3, which is $1 less than Lisa’s share. How much does the pizza cost?
   a. How much is Mark paying?
   b. How much is Lisa paying?
   c. How much is Steven paying?
   d. How much does the pizza cost?

2. On Wednesday, Olga’s parents said she owed them too much money to borrow any more. On Thursday, she paid her parents $15 she had earned babysitting. On Friday, she borrowed $5 to go to a movie. On Saturday, she paid them the $12 she earned babysitting. Then her debt was down to $22. How much did she owe on Wednesday?

3. Yuki, Mollie, Brandon, and Anna share an apple pie for dessert. Brandon eats half the amount Mollie eats. Yuki eats four times as much pie as Brandon. Mollie eats \( \frac{1}{4} \) of the pie. How much does Anna eat?
Practice 6-1

Ratios and Unit Rates

Find each unit rate.
1. 52 mi on 2 gal
2. $60.00 in 8 h
3. 260 mi in 5 h

Write each ratio as a fraction in simplest form.
4. 8th-grade boys to 9th-grade boys
5. 8th-grade girls to 8th-grade boys
6. 8th graders to 9th graders

Write three different ratios for each model.
7. □ □ □
   ○○○○
8. ● ● ●
   ○ ○
9. 

Write each ratio as a fraction in simplest form.
10. 14 : 24
11. 2 is to 4
12. 2 : 9
13. 13 out of 14
14. 16 is to 12
15. 3 out of 12
Practice 6-2

Write a proportion for each phrase. Then solve. When necessary, round to the nearest hundredth.

1. 420 ft\(^2\) painted in 36 min; \(f\) ft\(^2\) painted in 30 min

2. 50 points scored in 4 games; \(p\) points scored in 2 games

3. 3 lemons for $.50; 15 lemons for \(d\) dollars

Tell whether each pair of ratios forms a proportion.

4. \(\frac{3}{4}\) and \(\frac{9}{12}\)

5. \(\frac{25}{40}\) and \(\frac{5}{8}\)

6. \(\frac{9}{16}\) and \(\frac{1}{3}\)

7. \(\frac{7}{3}\) and \(\frac{7}{8}\)

Solve each proportion. Where necessary, round to the nearest tenth.

8. \(\frac{4}{5} = \frac{20}{x}\)

9. \(\frac{15}{30} = \frac{x}{34}\)

10. \(\frac{4}{36} = \frac{21}{27}\)

11. \(\frac{11}{6} = \frac{f}{60}\)

12. \(\frac{5}{23} = \frac{17}{34}\)

13. \(\frac{36}{f} = \frac{7}{20}\)

14. Jon can do 12 math problems in 45 min. How long should it take Jon to do 20 math problems?
Practice 6-3

Similar Figures and Scale Drawings

The scale of a map is $\frac{1}{2}$ in. : 8 mi. Find the actual distance for each map distance.

1. 2 in.  
   
2. $3\frac{1}{2}$ in.  
   
3. 5 in.  
   
4. 1 in.  
   
Each pair of figures is similar. Find the missing length. Round to the nearest tenth where necessary.

5. \[ \triangle \begin{array}{c} 15 \\ 24 \end{array} \sim \triangle \begin{array}{c} x \\ 8 \end{array} \]

   \[ x = \ldots \]

6. \[ \text{rectangle} \begin{array}{c} 30 \\ 6 \end{array} \sim \begin{array}{c} p \\ 8.5 \end{array} \]

   \[ p = \ldots \]

7. \[ \triangle \begin{array}{c} 28 \\ 63 \end{array} \sim \triangle \begin{array}{c} n \\ 81 \end{array} \]

   \[ n = \ldots \]

8. \[ \text{irregular quadrilateral} \begin{array}{c} 8 \\ 24 \end{array} \sim \begin{array}{c} e \\ 6 \end{array} \]

   \[ e = \ldots \]

   \[ f = \ldots \]

A scale drawing has a scale of $\frac{1}{4}$ in. : 6 ft. Find the length on the drawing for each actual length.

9. 18 ft  
   
10. 66 ft  
   
11. 24 ft  
   

Practice 6-4

Find each probability for choosing a letter at random from the word \textit{PROBABILITY}.

1. $P(I)$
2. $P(L)$

3. $P(T \text{ or } B)$
4. $P(\text{not } O)$

A child is chosen at random from the Williams and Hernandez families. Find the odds in favor of each of the following being chosen.

5. a girl
6. a Williams

7. not a Hernandez boy
8. a Hernandez

\begin{tabular}{|c|c|c|}
\hline
& Williams Family & Hernandez Family \\
\hline Girls & 2 & 5 \\
Boys & 4 & 3 \\
\hline
\end{tabular}

A container holds 7 orange, 14 red, 21 purple, 42 green, and 84 blue marbles. A marble is drawn at random from the container. Find each probability.

9. $P(\text{purple or green})$
10. $P(\text{red})$

11. $P(\text{not purple})$
12. $P(\text{blue, red, or orange})$

Find the odds in favor of each selection when a marble is chosen at random from the container described above.

13. green
14. blue

15. not orange
16. not purple or green
Practice 6-5

Fractions, Decimals, and Percents

Write each decimal or fraction as a percent. Round to the nearest tenth of a percent where necessary.

1. 0.25 _______
2. 0.72 _______
3. \(\frac{31}{40}\) _______
4. \(\frac{403}{1000}\) _______
5. 2.56 _______
6. 1.67 _______
7. In the United States in 1990, about one person in twenty was 75 years old or older. Write this fraction as a percent.
   _______

Write each percent as a decimal.

8. 95% _______
9. 0.07% _______
10. \(\frac{3\frac{1}{2}}{2}\)% _______
11. \(\frac{20\frac{1}{4}}{4}\)% _______

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

12. 60% _______
13. 5% _______
14. 32% _______
15. 140% _______

Use >, <, or = to complete each statement.

16. 0.7 [ ] 7%
17. 80% [ ] \(\frac{4}{2}\)
Reteaching 7-1  

Solving Two-Step Equations

Solve \( \frac{k}{3} - 9 = -7 \).

\[
\begin{align*}
\frac{k}{3} - 9 &= -7 \\
\frac{k}{3} - 9 + 9 &= -7 + 9 & \text{Add 9 to each side.} \\
\frac{k}{3} &= 2 & \text{Simplify.} \\
\frac{k}{3} \cdot 3 &= 2 \cdot 3 & \text{Multiply each side by 3.} \\
k &= 6 & \text{Simplify.}
\end{align*}
\]

Complete the example.

1. \( 4n + 13 = 1 \)

Subtract 13 from each side.

Simplify.

Divide each side by 4.

Simplify.

Solve each equation.

2. \( 3x - 5 = 10 \) \( x = \) ________

3. \( \frac{n}{2} + 10 = 7 \) \( n = \) ________

4. \( \frac{m}{7} - 9 = -5 \) \( m = \) ________

5. \( 5w - 2 = -12 \) \( w = \) ________

6. \( 4a + 12 = -8 \) \( a = \) ________

7. \( \frac{b}{3} + 8 = -7 \) \( b = \) ________
eteaching 7-2

Solving Multi-Step Equations

Solve $6 - 2(x + 5) = 8$

$-2(x + 5) = 8$
$-2x - 10 = 8$
$-2x = 18$
$x = -9$

Distribute. Simplify. Think of $6 - 2x$ as $6 + (-2x)$. Then subtract $6 - 10$.

Add 4 to each side. Simplify.

Divide each side by $-2$. Simplify.

Solve each equation.

1. $3(a - 4) = 9$


2. $n + 5n = 30$ $n =$

Solve each equation.

3. $y - 4y = 33$ $y =$

4. $12 = 4(b - 2)$ $b =$

5. $-3(k - 4) = -6$ $k =$

6. $m - 3m + 3 = 11$ $m =$

7. $2(x - 9) + 5 = 1$ $x =$

Lesson 7-2 Reteaching

Pre-Algebra Chapter 7
Solve $0.25x - 0.4 = 1.6$

You can clear the decimals first. Since 0.25 is the decimal with the greatest number of decimal places and $0.25 = \frac{25}{100}$, multiply each side by 100.

$$0.25x - 0.4 = 1.6$$

$$100(0.25x - 0.4) = 100(1.6)$$

$$25x - 40 = 160$$

Multiply each side by 100.

$$25x - 40 + 40 = 160 + 40$$

Distribute and simplify.

$$25x = 200$$

Add 40 to each side.

$$\frac{25x}{25} = \frac{200}{25}$$

Simplify.

$$x = 8$$

Divide each side by 25.

Solve each equation.

1. $0.8x + 2.1 = 5.3$

2. $0.5k - 3.4 = 0.1$

3. $2.7n + 4.1 = 36.5$

4. $0.96m - 1.8m = -12.6$

5. $0.7b + 6 - 0.3b = 6.8$

6. $1.4a + 3.5a - 4.3 = 44.7$
Reteaching 8-1

Graph the relation. Is the relation a function? Explain.

<table>
<thead>
<tr>
<th>x</th>
<th>y</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>-1</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>-3</td>
</tr>
<tr>
<td>-4</td>
<td>-2</td>
</tr>
</tbody>
</table>

First, plot the point (3, 4). Start at the origin, where the x-axis and the y-axis cross. Go right 3 units and up 4 units.
To plot (-1, 2), from the origin go left one unit and up 2 units.
To plot (4, -3), from the origin, go right 4 units and down 3 units.
To plot (-4, -2), from the origin, go left 4 units and down 2 units.
Next, use the vertical line test. Hold a pencil vertically to the left of the graph. Slowly move it to the right. If you can find a vertical line that passes through two graphed points, then the relation is not a function. If you cannot find such a line, the relation is a function. This relation is a function because the vertical pencil does not pass through two points anywhere on the graph.

Graph the relation. Is the relation a function? Explain.

<table>
<thead>
<tr>
<th>x</th>
<th>y</th>
</tr>
</thead>
<tbody>
<tr>
<td>-4</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>-2</td>
</tr>
</tbody>
</table>
Directions: This graph shows how many students have certain objects in their backpacks. Use the graph to answer 3–5.

Objects in Students' Backpacks

<table>
<thead>
<tr>
<th>Number of Students</th>
<th>Textbooks</th>
<th>Library Books</th>
<th>Pencils</th>
<th>Erasers</th>
<th>Money</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Types of Objects

3. How many students have erasers in their backpacks?
   - A 10
   - B 20
   - C 25
   - D 30

4. How many more students have pencils than library books?
   - A 5
   - B 10
   - C 15
   - D 20

5. Which of these was found in the least number of backpacks?
   - A money
   - B textbooks
   - C pencils
   - D erasers

Directions: This graph shows where students in grades 5 and 6 held their birthday parties last year. Use the graph to answer 6–7.

Where Birthday Parties Were Held

<table>
<thead>
<tr>
<th>At home</th>
<th>Movie Theaters</th>
<th>Bowling Alleys</th>
<th>Mini-golf Centers</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Icon]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>![Icon]</td>
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</tr>
<tr>
<td>![Icon]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- ![Icon] = 10 Students

6. How many students held their parties at a bowling alley?
   - A 10
   - B 15
   - C 20
   - D 25

7. The greatest number of parties were held at -
   - A students' homes
   - B movie theaters
   - C bowling alleys
   - D mini-golf centers
Directions: This graph shows how many sixth-grade students in Oak Brook participated in basketball and soccer in recent years. Use the graph to answer questions 8–11.

### Oak Brook Students Who Played Sports

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>40</td>
</tr>
<tr>
<td>1994</td>
<td>80</td>
</tr>
<tr>
<td>1995</td>
<td>120</td>
</tr>
<tr>
<td>1996</td>
<td>100</td>
</tr>
<tr>
<td>1997</td>
<td>125</td>
</tr>
</tbody>
</table>

8. In what year did more students participate in basketball than in soccer?
   - (A) 1993
   - (B) 1994
   - (C) 1995
   - (D) 1996

9. How many students played soccer in 1997?
   - (A) 100
   - (B) 115
   - (C) 120
   - (D) 125

10. How many more students played soccer than basketball in 1997?
    - (A) 115
    - (B) 25
    - (C) 15
    - (D) 5

11. In which year did the fewest students play basketball?
    - (A) 1993
    - (B) 1994
    - (C) 1995
    - (D) 1996
Directions: This graph shows how many sixth-grade girls and boys passed the different parts of the Presidential Fitness Test. Use the graph to answer questions 12–13.

**Presidential Fitness Test Results**

<table>
<thead>
<tr>
<th>Event</th>
<th>Girls</th>
<th>Boys</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sit-ups</td>
<td>180</td>
<td>160</td>
</tr>
<tr>
<td>1-Mile run</td>
<td>140</td>
<td>120</td>
</tr>
<tr>
<td>Pull-ups</td>
<td>120</td>
<td>100</td>
</tr>
<tr>
<td>Stretch</td>
<td>100</td>
<td>80</td>
</tr>
</tbody>
</table>

12. Which part of the test did more girls pass than boys?
   A) Sit-ups       C) Pull-ups
   B) 1-Mile run    D) Stretch

13. How many more boys than girls passed the pull-ups test?
   A) 110          C) 60
   B) 70           D) 40

Directions: This medical chart shows how Brendan’s height compared with national averages over several years. Use the chart to answer questions 14–16.

**Height Comparison**

<table>
<thead>
<tr>
<th>Year</th>
<th>Height (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>42</td>
</tr>
<tr>
<td>1994</td>
<td>54</td>
</tr>
<tr>
<td>1995</td>
<td>58</td>
</tr>
<tr>
<td>1996</td>
<td>60</td>
</tr>
<tr>
<td>1997</td>
<td>66</td>
</tr>
</tbody>
</table>

14. What was the average height for boys of Brendan’s age in 1996?
   A) 54 in.       C) 60 in.
   B) 56 in.       D) 62 in.

15. How much taller than the national average was Brendan in 1993?
   A) 2 in.        C) 6 in.
   B) 4 in.        D) 8 in.

16. What can you conclude about Brendan’s height in 1996–1997?
   A) He was taller than average.
   B) He grew rapidly.
   C) He was of average height.
   D) He was shorter than average.