Investigation 1 Additional Practice

1. a. i. \( \frac{5}{12} \) ii. \( \frac{3}{4} \) iii. \( \frac{1}{3} \) iv. \( \frac{5}{8} \) v. \( \frac{11}{12} \) vi. \( \frac{5}{6} \)
   
   b. i. \( \frac{7}{12} \) ii. \( \frac{1}{4} \) iii. \( \frac{3}{8} \) iv. \( \frac{3}{4} \) v. \( \frac{11}{12} \) vi. \( \frac{1}{6} \)
   
   c. The sum of the fractions is 1.

2. a. \( \frac{1}{2} \) b. \( \frac{1}{3} \) c. 1 to 2
   
   d. 3 to 1 e. \( \frac{2}{3} \), twice \( \frac{1}{3} \) is \( \frac{2}{3} \).

3. a. \( \frac{8}{24} \) or \( \frac{1}{3} \)
   
   b. 16 to 8 or 2 to 1

4. a. 6 b. \( \frac{3}{4} \) c. \( \frac{1}{4} \)

5. a. \( \frac{1}{8} \) b. \( \frac{5}{6} \)

6. a. Shade 8, 16, and 24 squares, respectively, on the three grids.
   
   Equivalent fractions: \( \frac{8}{16} \frac{24}{30} \)
   
   b. Shade 9 and 12 squares, respectively, on the two grids. Equivalent fractions:
   
   \( \frac{9}{12} \frac{27}{28} \)
   
   c. Shade 4 and 3 squares, respectively, on the two grids. Equivalent fractions:
   
   \( \frac{4}{3} \frac{24}{18} \)

7. \( \frac{23}{4} \) tanks of gas will be needed for the trip.
   
   Two full tanks will be used for the first 800 miles. The last 300 miles will use \( \frac{3}{4} \) tank.

8. a. \( \frac{1}{5} \) b. 4 to 3

9. a. 3 b. \( \frac{3}{4} \) c. \( \frac{1}{4} \)

10. [Diagram]

11. \( \frac{3}{12} \) \( \frac{1}{4} \)

Investigation 2 Additional Practice

1. a. Diagrams may vary. Students should divide the sandwich into six equal sections.
   
   b. \( \frac{1}{12} \) sections

2. a. Diagrams may vary. Students should divide the sandwich into eight equal sections.
   
   b. \( \frac{3}{4} \) sections

3. a. Possible answer: 300 : 4
   
   b. 25 : 1

4. a. 90 minutes; 210 minutes
   
   b. Jacob: 70 minutes; Matthew: 50 minutes
   
   c. Possible answer: Hannah could be 16 and Michael could be 10.

5. a. 12 hours; 60 hours
   
   b. James: 72 hours; Becky: 36 hours
   
   c. Sample answer: Kelly has 3 years of experience and Mitchell has 5 years of experience.

6. a. \( \frac{90}{5} \) \( \frac{1}{6} \) gallons
   
   b. \( \frac{288}{12} \) miles

7. a. \( \frac{7}{28} \) : \( \frac{1}{4} \)

8. a. 
   
<table>
<thead>
<tr>
<th>Hours</th>
<th>1</th>
<th>10</th>
<th>20</th>
<th>25</th>
<th>30</th>
<th>0.25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pay ($)</td>
<td>4</td>
<td>40</td>
<td>80</td>
<td>100</td>
<td>120</td>
<td>1</td>
</tr>
</tbody>
</table>

   b. 
   
<table>
<thead>
<tr>
<th>Hours</th>
<th>1</th>
<th>5</th>
<th>15</th>
<th>30</th>
<th>38</th>
<th>0.22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pay ($)</td>
<td>5</td>
<td>25</td>
<td>75</td>
<td>150</td>
<td>190</td>
<td>1</td>
</tr>
</tbody>
</table>

   c. 
   
<table>
<thead>
<tr>
<th>Hours</th>
<th>1</th>
<th>3</th>
<th>15</th>
<th>36</th>
<th>48</th>
<th>0.25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pay ($)</td>
<td>4</td>
<td>12</td>
<td>60</td>
<td>144</td>
<td>192</td>
<td>1</td>
</tr>
</tbody>
</table>

   d. 
   
<table>
<thead>
<tr>
<th>Hours</th>
<th>1</th>
<th>4</th>
<th>9</th>
<th>11</th>
<th>16</th>
<th>0.125</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pay ($)</td>
<td>8</td>
<td>32</td>
<td>72</td>
<td>88</td>
<td>128</td>
<td>1</td>
</tr>
</tbody>
</table>

9. a. \( D : A \) or \( A : F \)
   
   b. \( D : F \)
   
   c. \( F : B \) or \( C : A \)
   
   d. \( B : A \) or \( F : C \)

10. a. 
   
<table>
<thead>
<tr>
<th>Gallons of Gas</th>
<th>Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>36</td>
</tr>
<tr>
<td>2</td>
<td>72</td>
</tr>
<tr>
<td>3</td>
<td>108</td>
</tr>
<tr>
<td>4</td>
<td>144</td>
</tr>
<tr>
<td>5</td>
<td>180</td>
</tr>
<tr>
<td>6</td>
<td>216</td>
</tr>
</tbody>
</table>

   b. 12 gallons
   
   c. 288 miles
Comparing Bits and Pieces Practice Answers

11. a. 

<table>
<thead>
<tr>
<th>Gallons of Gas</th>
<th>Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>24</td>
</tr>
<tr>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

b. 4 : 1 ($4 per gallon)
c. 0.25 : 1 (0.25 gallon per dollar)

12. 6 24 = 72 36, 60 for every 140

13. 

<table>
<thead>
<tr>
<th>Hours</th>
<th>Pay ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>5</td>
<td>40</td>
</tr>
<tr>
<td>15</td>
<td>120</td>
</tr>
<tr>
<td>25</td>
<td>200</td>
</tr>
<tr>
<td>1 6</td>
<td>1</td>
</tr>
</tbody>
</table>

14. a. 60
b. $1.80
c. 12

Skill: Ratios and Rates

1–10. Sample answers.
1. 3 : 9, 2 : 6
2. 4 : 10, 8 : 20
3. 10 : 16, 20 : 32
4. 8 : 18, 28 : 63
5. 7 : 10, 70 : 100
6. 1 : 2, 50 : 100
7. 15 : 18, 5 : 6
8. 8 : 12, 2 : 3
9. 1 : 3, 10 : 30
10. 7 : 21, 1 : 3

11. 50 miles per hour or 1 mile in 0.02 hour
12. $0.80 per can or 1.25 cans per dollar
13. 2 batteries per smoke detector or 1 1/2 smoke detector for every battery
14. $13.95 per ticket or about 0.07 ticket per dollar
15. 7.5 minutes or 1 1/8 hour per tire or 8 tires per hour
16. 105 calories per banana or about 0.01 banana per calorie

Investigation 3 Additional Practice

1. a. 0.3 or 3/10 b. 0.15 or 3/20
c. 0.3 or 3/10 d. 0.25 or 1/4

2. a. 0.305 < 0.35 b. 0.123 > 0.1002
c. 0.25 = 0.25000 d. 0.25 > 0.025
e. 3.45 > 3.045 f. 12.03 < 12.30

3. a. 2.5 > 2 3/5 b. 0.65 < 2/3 c. 0.8 > 4/7
d. 5/8 = 0.625 e. 0.3 < 3/7 f. 2.1 > 9/10
g. 11/12 < 11/11 h. 3/6 = 0.5 i. 9 > 8 8/10

4. a. 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1 1

5. Answers will vary. All fractions equivalent to these sample responses are correct.

a. 6/10 = 3/5 = 9/15 b. 7/10 = 1 14/20 = 1 21/30
c. 5/100 = 1/20 = 10/200 d. 2 3/10 = 2 6/20 = 2 12/40
e. 15/100 = 3/20 = 30/500 f. 5/8 = 10/16 = 15/24

6. a. 0.5 b. 0.2 c. 1.75 d. 0.375 e. 5.55 f. 0.75

7. a. 2 3/8 = 2.375 miles; 30 min = 0.5 hr and 4.75 x 0.5 = 2.375.
b. 2 1/8 = 2.125 miles
c. 3/8 or 0.375 mile; the difference in their speed is 0.5 mph. The difference between how far they can travel in 0.75 hr is 0.75 x 0.5 = 0.375.

8. a. 4 b. 2.6
9. a. 10 b. 4.75
10. a. Agree; possible explanation: 0.3 = 3/10 is close to 1/3 = 3/9.
Comparing Bits and Pieces Practice Answers

b. Greater than; possible explanation:
   Paul’s estimate is greater than 0.3
   because $\frac{1}{3}$ is about 0.33, and $0.33 > 0.3$.

11. Greater than; possible explanation:
   Paul’s estimate is greater than 0.3
   because $\frac{1}{3}$ is about 0.33, and $0.33 \approx 0.3$.

12. Answers will vary. Possible answers:
   a. The diver is 120 meters below sea level.
   b. The business had a loss of $1,200 in one day.
   c. The temperature is 7° below zero.
   d. A song moved down 6 positions on the music chart.

13. Answers will vary. All numbers between the two given numbers are correct.
   a. $\frac{11}{30}$  b. $\frac{3}{4}$  c. $-0.5$  d. 0.55

14. a. 0.2  b. 2.84  c. $\frac{1}{3}$  d. $\frac{5}{6}$

15. a. $-2.56$, $-0.3$, 0.261, 2.1
   b. $-3$, $-2\frac{1}{3}$, $\frac{1}{2}$, $\frac{3}{3}$

16. a. $2.5$, $-0.3$, 0.261, 2.1
   b. $3$, $2\frac{1}{3}$, $\frac{1}{2}$, $\frac{3}{3}$

17. a. $>$
   b. $<$
   c. $<$
   d. $=$
   e. $>$

18. 0.15, $\frac{3}{5}$, 0.60, $\frac{3}{5}$

19. Greater than; possible explanation:
   Paul’s estimate is greater than 0.3
   because $\frac{1}{3}$ is about 0.33, and $0.33 > 0.3$.

Skill: Comparing and Ordering Decimals

1. $>$, $<$, $<$, $<$
2. $>$
3. $=$
4. $>$

10. Answers will vary. Possible answers:
   a. The diver is 120 meters below sea level.
   b. The business had a loss of $1,200 in one day.
   c. The temperature is 7° below zero.
   d. A song moved down 6 positions on the music chart.

13. Answers will vary. All numbers between the two given numbers are correct.
   a. $\frac{11}{30}$  b. $\frac{3}{4}$  c. $-0.5$  d. 0.55

Investigation 4 Additional Practice

1. a. $4:10$, $\frac{2}{5}$, 40%  b. $11:20$, $\frac{11}{20}$, 55%
   c. $9:25$, $\frac{9}{25}$, 36%  d. $3:8$, $\frac{3}{8}$, 37.5%
   e. $8:16$, $\frac{1}{2}$, 50%  f. $9:12$, $\frac{3}{4}$, 75%

2. a. 30%, because 100% − 70% = 30%.
   b. Half of 70% = 35% = $\frac{35}{100}$ = $\frac{7}{20}$ of the class does homework 5 nights each week.
   c. 35%, because 70% − 35% = 35%.
   d. No, because percents are comparisons “out of 100.” You do not know the actual number represented in the whole.

3. a. 3, because $\frac{1}{4}$ of 24 = 6.
   b. 3, because $\frac{1}{8}$ of 24 = 3.
   c. 8  d. 7:24
   e. 100%, because each student takes one of the four means of getting to school.

4. a. $\frac{5}{8}$ = 0.625 = 62.5%
   b. $\frac{3}{4}$ = 0.75 = 75%
   c. $\frac{1}{2}$ = 0.5 = 50%  d. $\frac{2}{5}$ = 0.4 = 40%

5. a. $\frac{42}{50}$; 0.84; 84%  b. $\frac{37}{50}$; 0.74; 74%
   c. $\frac{18}{50}$; 0.36; 36%
Comparing Bits and Pieces Practice Answers

6. 

<table>
<thead>
<tr>
<th>Fraction</th>
<th>Decimal</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\frac{3}{8}$</td>
<td>0.375</td>
<td>37.5%</td>
</tr>
<tr>
<td>$\frac{23}{25}$</td>
<td>0.88</td>
<td>88%</td>
</tr>
<tr>
<td>$\frac{7}{20}$</td>
<td>0.35</td>
<td>35%</td>
</tr>
<tr>
<td>$1\frac{1}{4}$</td>
<td>1.25</td>
<td>125%</td>
</tr>
<tr>
<td>$\frac{5}{8}$</td>
<td>0.625</td>
<td>62.5%</td>
</tr>
<tr>
<td>$2\frac{3}{4}$</td>
<td>2.75</td>
<td>275%</td>
</tr>
</tbody>
</table>

7. a. 40%  
b. $\frac{1}{3}$

8. Six students participate in a volunteer activity after school; More students participate in an arts-based activity than a volunteer activity after school; The fraction of the students that do not participate in an after school activity is $\frac{1}{15}$.

Skill: Percents

1. 2. 3.

Skill: Percents, Fractions, and Decimals

1. 0.46; $\frac{23}{50}$  
2. 0.17; $\frac{17}{100}$  
3. 0.9; $\frac{9}{10}$  
4. 0.05; $\frac{1}{20}$  
5. 2%; $\frac{1}{50}$  
6. 45%; $\frac{9}{20}$  
7. 40%; $\frac{2}{5}$  
8. 92%; $\frac{23}{25}$  
9. 0.6; 60%  
10. 0.7; 70%  
11. 0.52; 52%  
12. 0.85; 85%  
13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 64%