Answers

Chapter 8

Lesson 8.1
1. 2.045
2. 6.308
3. 0.175
4. 0.05 0.06 0.07 0.08 0.09
5. 0.053 0.059 0.068 0.073 0.085
6. 2.041 2.047 2.053 2.059 2.065
7. 2.001 2.007 2.013 2.028 2.034
8. greatest: 5.69; least: 5.069
9. greatest: 80.202; least: 80.002
10. 0.569, 0.956, 0.965
11. 6.309, 6.903, 9.036
12. 0.088, 0.8, 0.808, 0.88
13. 0.029, 0.1, 0.999, 1
14. 4.33, 4.32
15. 7.00 or 7; 7.01
16. 3.46
17. 12.015; 12.02
18. 2.295; 2.30
19. Decimal Rounded to the Nearest Whole Number Tenth Hundredth
   2.768 3 2.8 2.77
   3.184 3 3.2 3.18
   0.476 0 0.5 0.48
   8.695 9 8.7 8.70
20. Any answer from 1.45 to 1.54.
22. Any answer from 8.031 to 8.034.
23. Any answer from 7.905 to 7.909.

Lesson 8.2
1. 5.078 is greater than 4.087; 5.078
2. 0.654 is less than 0.945; 0.654
3. 4.720 is greater than 4.270; 4.720
4. <
5. >
6. <
7. >
8. greatest: 5.69; least: 5.069
9. greatest: 80.202; least: 80.002
10. 0.569, 0.956, 0.965
11. 6.309, 6.903, 9.036
12. 0.088, 0.8, 0.808, 0.88
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20. Any answer from 1.45 to 1.54.
22. Any answer from 8.031 to 8.034.
23. Any answer from 7.905 to 7.909.

Lesson 8.3
1. 16 — 25
2. 11 — 50
3. 29 — 50
4. 9 — 100
5. 9 — 250
6. 111 — 1000
7. 9 — 250
8. 200
9. 2 16 — 25
   10. 3 4
   11. 7 125
   12. 10 357

Put on Your Thinking Cap!
Thinking skill: Classifying
1. 58
2. 209
3. 402
4. 2,067
5. 3,504
6. 953

Thinking skill: Classifying
7. 17
8. 17.0
9. 17.00

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Lesson 9.4
1. 0.236  2. 3.015  3. 5.082
4. 2.1  5. 0.78  6. 82.3
7. 10  8. 345  9. 100
10. 6,920  11. 1,000
12. 48,000
13. 10; 1,990; 19,900
14. 82.35; 100; 1,000
15. 40.1; 401; 4,010
16. 10; 100; 1,000
17. 2; 149; 14.9
18. 8; 4; 0.04
19. 6; 200; 0.2
20. 7.5
21. 0.81
22. 0.092
23. 0.64
24. 0.35
25. 2.08
26. 125 L
27. 370 m
28. Cost of 1 file = $97.50 ÷ 30 = $3.25
Cost of 1 book = $3.25 × 10 = $32.50
The cost of each book is $32.50.
29. Cost of 10 pears and 10 oranges = $0.94 × 10 = $9.40
Cost of 1 orange = $10.05 − $9.40 = $0.65
The cost of 1 orange was $0.65.

Lesson 9.5
1. $16  2. $70
3. $80  4. $70
5. 50  6. 320
7. 270  8. 7
9. 11  10. 24
11. 23.1 km 12. 4.3 kg
13. 68.4 kg 14. 1.2 L
15. $4.95 × 4 = $5 × 4 = $20
The cost of 4 tins is about $20.
16. 175 cm ÷ 18.5 cm = 180 cm ÷ 20 cm = 9
Vivien uses her handspan 9 times to measure the length.
Lesson 9.6

1. 1.25 L × 8 = 10 L
   There are 10 liters of orange juice in 8 bottles.

2. 
   \[
   \begin{array}{c|c|c}
   \text{Start} & \times 6 & - 19.85 \\
   \hline
   29.77 & 19.85 & 29.77
   \end{array}
   \]
   \[29.77 + 19.85 = 49.62\]
   \[49.62 \div 6 = 8.27\]
   The number is 8.27.

3. 1.38 km × 2 = 2.76 km
   2.76 km ÷ 3 = 8.28 km
   Brian rides his bike 8.28 kilometers in all.

4. a. 0.85 L × 9 = 7.65 L
   Teresa adds 7.65 liters of water.
   b. 7.65 L + 0.85 L = 8.5 L
   1 L of drinks → 4 cups
   8.5 L of drinks → 8.5 × 4 = 34 cups
   Teresa can make 34 cups of juice.

5. 4 pencils → $1.90
   14 pencils → \[\frac{1.90}{4} \times 14 = 6.65\]
   The cost of 14 pencils is $6.65.

6. (5.81 – 3.8) ÷ 3 = 0.67
   3 – 0.67 × 5 = 0.45
   The mass of the empty container is 0.45 kilogram.

7. 100 g of ham → $1.50
   1,000 g (1 kg) → $1.50 × 10 = $15
   1.2 kg → $15 + $1.50 × 2 = $18
   1.2 kilograms of ham cost $18.
   100 g of sausages → $1.50 + $0.85
   = $2.35
   600 g → $2.35 × 6 = $14.10
   600 grams of sausages cost $14.10.
   $18 + $14.10 = $32.10
   Paul pays $32.10.

8. 30.0 – (2.7 × 4) m = 19.2 m
   \[\frac{1920}{75} = 25\]
   The maximum number of presents she could tie is 25.

9. 12 cakes → 10 × $1.50 = $15
   100 ÷ 12 = 8 R 4
   ($15 × 8) + ($1.50 × 4) = $126
   Maria will need to spend $126 in all.

10. $5,120 – (160 × $3.50) = $4,560
    $4,560 ÷ $8.50 = 380 adults
    380 + 160 = 540
    540 children visited the exhibition.

11. \[\bigcirc \bigcirc \bigcirc \bigcirc \bigcirc = 1,020 g\]
    \[\bigcirc \bigcirc \bigcirc \bigcirc \bigcirc = 2,160 g\]
    6 balls → 2.16 kg – 1.02 kg = 1.14 kg
    3 balls → 1.14 kg ÷ 2 = 0.57 kg
    Empty box → 1.02 kg – 0.57 kg = 0.45 kg
    The mass of the empty box is 0.45 kilogram.

12. Paul’s Stall → $2.20 × 10 = $22 per kg
    Sam’s Stall → $11.00 × 2 = $22 per kg
   a. Paul’s stall and Sam’s stall sell shrimp for $22 per kilogram.
   b. $(22 – 19) × 2.5 kg = $7.50
      You would save $7.50.

13. \[\frac{1,140}{30} = 38\] days
    $1.20 × 38 = $45.60
    Mark saved $45.60.

14. a. Cost of an orange → \[\frac{\$2.10}{3} = \$0.70\]
    Cost of a mango → $0.70 × 4 = $2.80
    The cost of an orange is $0.70 and the cost of a mango is $2.80.
   b. $(30.80 – 2.80 × 8 = \$8.40
    Number of oranges Fiona bought = 840 ÷ 70 = 12
    Total number of fruits bought = 8 + 12 = 20
    Number of oranges = \[\frac{12}{3}\]
    Total number of fruits = \[\frac{12 + 8}{5}\]

15. a. (1.75 kg + 0.5 kg) ÷ 3 = 0.75 kg
    0.75 kilogram of flour was needed for each loaf of bread.
   b. 0.75 × 10 × $0.90 = $6.75
    Mrs. Belen would pay $6.75 for the flour needed to bake 10 loaves of bread.

Put on Your Thinking Cap!

1. Thinking skill: Analyzing parts and whole
   Strategy: Solve part of the problem
   Solution:
   12 – 9 = 3 books
   Thickness of 12 books = 9 × 9.5 cm = 85.5 cm
   Remaining thickness = 120 cm – 85.5 cm = 34.5 cm
   Thickness of each book = 34.5 cm ÷ 3 = 11.5 cm
   Each book is 11.5 centimeters thick.
2. Thinking skill: Analyzing parts and whole
Strategy: Solve part of the problem
Solution:
\[
\frac{4}{5} \div 5 = \frac{4}{25}
\]
Each sibling pays \(\frac{4}{25}\) of the cost of the present.
\[
\frac{1}{5} - \frac{4}{25} = \frac{1}{25}
\]
\(\frac{1}{25}\) of the cost of the present is $9.50.
\[9.50 \times 25 = 237.50\]
The cost of the present is $237.50.

3. Thinking skill: Analyzing parts and whole
Strategy: Solve part of the problem
Solution:
1 carton = 2 cups
3 cups + 2 cartons = 1.8 L
3 cups + 4 cups = 1.8 L
7 cups = 1.8 L
1 cup = \(\frac{1.8}{7}\)
\(\approx 0.26\) L
The capacity of a cup is about 0.26 liter.

4. Thinking skill: Analyzing parts and whole
Strategy: Solve part of the problem
Solution:
4M + 7J \(\rightarrow\) 2.38 kg
2M + 3J \(\rightarrow\) 1.1 kg
4M + 6J \(\rightarrow\) 2.2 kg
1J \(\rightarrow\) 2.38 kg = 2.2 kg = 0.18 kg
3J \(\rightarrow\) 0.18 kg \(\times\) 3 = 0.54 kg
2M \(\rightarrow\) 1.1 kg - 0.54 kg = 0.56 kg
0.56 kg \(\div\) 2 = 0.28 kg
The mass of a carton of milk is 0.28 kilogram.

5. Thinking skill: Analyzing parts and whole
Strategy: Use a model
Solution:
Coffee
\[\begin{array}{|c|}
\hline
\text{Coffee} \\
\hline \$12.50
\end{array}\]
Tea
\[\begin{array}{|c|}
\hline
\text{Tea} \\
\hline \$1.25
\end{array}\]
a. \(\$12.50 \div 10 = \$1.25\)
\(\$1.25 \times 3 = \$3.75\)
Each cup of coffee cost $3.75.
b. \(\$1.25 \times 8 = \$10\)
Leon paid $10 for 2 cups of coffee and 1 cup of tea.

6. Thinking skill: Analyzing parts and whole
Strategy: Solve part of the problem
Solution:
9 cans of mango juice = 6 cans of orange juice
\(= 6\) cans of mango juice
\(+ (0.16\ \text{kg} \times 6)\)
3 cans of mango juice = 0.16 kg \(\times\) 6
\(= 0.96\ \text{kg}\)
a. \(0.96\ \text{kg} \div 3 = 0.32\ \text{kg}\)
The mass of each can of mango juice is 0.32 kilogram.
b. \(0.32\ \text{kg} + 0.16\ \text{kg} = 0.48\ \text{kg}\)
The mass of each can of orange juice is 0.48 kilogram.

7. Thinking skill: Analyzing parts and whole
Strategy: Use a model
Solution:
Kerrie
\[\begin{array}{|c|}
\hline
\text{Kerrie} \\
\hline \text{N} \text{N} \text{N} \text{N} \text{N} \text{P} \text{P} \text{P} \text{P}
\end{array}\]
Devon
\[\begin{array}{|c|}
\hline
\text{Devon} \\
\hline \text{N} \text{N} \text{N} \text{N} \text{N} \text{N} \text{P} \text{P} \text{P}
\end{array}\]
1 pen \(\rightarrow\) 3 notebooks
1 notebook + $3.70 \(\rightarrow\) 3 notebooks
2 notebooks \(\rightarrow\) $3.70
a. \(\$3.70 \div 2 = \$1.85\)
Each notebook cost $1.85.
b. \$1.85 + $3.70 = $5.55
Each pen cost $5.55.
8. Thinking skill: Analyzing parts and whole
Strategy: Use a model
Solution:

\[
0.8 = \frac{4}{5}
\]

<table>
<thead>
<tr>
<th>Chicken sandwich</th>
<th>Cheese sandwich</th>
</tr>
</thead>
<tbody>
<tr>
<td>$4 \times 9 = 36$</td>
<td>$5 \times 7 = 35$</td>
</tr>
<tr>
<td>$36 + 35 = 71$</td>
<td>$71$ units</td>
</tr>
<tr>
<td>$1$ unit $\rightarrow$ $\frac{$46.15}{71} = $0.65$</td>
<td>$a. $0.65 \times 4 = $2.60$</td>
</tr>
<tr>
<td>$b. $0.65 \times 5 = $3.25$</td>
<td>The cost of each chicken sandwich is $$2.60$.</td>
</tr>
<tr>
<td>The cost of each cheese sandwich is $$3.25$.</td>
<td></td>
</tr>
</tbody>
</table>

9. Thinking skill: Comparing
Strategy: Simplify the problem
Solution:

<table>
<thead>
<tr>
<th>Difference in the price of an alarm clock</th>
<th>Difference in price of a patch</th>
</tr>
</thead>
<tbody>
<tr>
<td>$$16.00 - $15.50 = $0.50$ (gained)</td>
<td>$$2.30 - $2.00 = $0.30$ (lost)</td>
</tr>
</tbody>
</table>

| 3 alarm clocks $\rightarrow$ gained $\$1.50 |
| 5 patches $\rightarrow$ lost $\$1.50 |
| 5 patches (loss) $\rightarrow$ 3 alarm clocks (gain) |
| 30 patches (loss) $\rightarrow$ 18 alarm clocks (gain) |

James sold 18 alarm clocks.

10. Thinking skill: Comparing
Strategy: Make a table
Solution:

Method 1:

<table>
<thead>
<tr>
<th>Number of Days</th>
<th>Jessica</th>
<th>Sarah</th>
<th>Difference in Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>0</td>
<td>$1.50 \times 10 = $15$</td>
<td>$$1.50 \times 10 - $15 = -$</td>
</tr>
<tr>
<td>20</td>
<td>$2.50 \times 10 = $25$</td>
<td>$1.50 \times 20 = $30$</td>
<td>$$30 - $25 = $5$</td>
</tr>
<tr>
<td>30</td>
<td>$2.50 \times 20 = $50$</td>
<td>$1.50 \times 30 = $45$</td>
<td>$$45 - $50 = -$</td>
</tr>
<tr>
<td>35</td>
<td>$50 + $12.50 = $62.50$</td>
<td>$45 + $7.50 = $52.50$</td>
<td>$$52.50 - $62.50 = -$</td>
</tr>
<tr>
<td>37</td>
<td>$$62.50 + $5 = $67.50$</td>
<td>$$52.50 + $3 = $55.50$</td>
<td>$$67.50 - $62.50 = $5$</td>
</tr>
</tbody>
</table>

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11. Thinking skill: Analyzing parts and whole
Strategy: Use a model
Solution:

<table>
<thead>
<tr>
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| 5 patches $\rightarrow$ lost $\$1.50 |
| 5 patches (loss) $\rightarrow$ 3 alarm clocks (gain) |
| 30 patches (loss) $\rightarrow$ 18 alarm clocks (gain) |

b. Jessica has saved $\$67.50$ so far.

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| 30 patches (loss) $\rightarrow$ 18 alarm clocks (gain) |

James sold 18 alarm clocks.

12. Chicken Sandwiches
Apple Pies

<table>
<thead>
<tr>
<th>Chicken Sandwiches</th>
<th>Apple Pies</th>
</tr>
</thead>
<tbody>
<tr>
<td>$$12.50</td>
<td></td>
</tr>
</tbody>
</table>

| 25 units $\rightarrow$ $\$12.50 |
| 1 unit $\rightarrow$ $\$12.50 \div 25$ |

| 1 chicken sandwich $\rightarrow$ $\$0.50 \times 4$ |

| 1 chicken sandwich is $\$2. |

**Chapter 10**

**Lesson 10.1**

1. $0.5; 50\%$
2. $0.25; 25\%$
3. $0.2; 20\%$
4. $\frac{3}{10}; 30\%$
5. $\frac{9}{20}; 45\%$
6. $\frac{8}{25}; 32\%$
7. $\frac{3}{4}; 0.75$
8. $\frac{3}{5}; 0.6$
9. $\frac{3}{20}; 0.15$
10. a. $100\% - 84\% = 16\%$
   16% of the questions were not completed by Jerry.
b. $\frac{84}{100} = \frac{21}{25}$
   Jerry completed $\frac{21}{25}$ of the questions.

11. $1 - \frac{36}{100} = \frac{64}{100}$
   64% of the students are boys.

Lesson 10.2
1. 50 2. 25 3. 40 4. 37.5
5. 62.5 6. 55 7. 64 8. 74
9. 24 10. 46 11. 90 12. 88
13. $300 - 240 = 60$
   $\frac{60}{300} \times 100 = 20\%$
   20% of the participants did not complete their drawings.
14. $250 - 60 = 190$
   $\frac{95}{250} \times 100 = 38\%$
   38% of the beads in the box are yellow.

15. Amount of money Maria spent
   = $6.75 + $1.25 = $8$
   Amount of money Maria had at first
   = $8 + $12 = $20$
   $\frac{8}{20} \times 100\% = 40\%$
   Maria spent 40% of her money.

16. Number of big marbles = $45 \times 4 = 180$
   Number of small marbles = $24 \times 5 = 120$
   Total number of marbles = $180 + 120 = 300$
   $\frac{180}{300} = \frac{60}{100} = 60\%$
   60% of the marbles are big.

17. Indian □ □ □ □ □ □
   British □ □ □ □ □ □
   8 units → 100% − 52% = 48%
   1 unit → 48% ÷ 8 = 6%
   3 units → $3 \times 6\% = 18\%$
   $18\% \times 450 = 81$
   a. Glen has 81 Indian stamps.
   b. $5 \times 6\% = 30\%$
   30% of his collection are British stamps.

18. Strawberry pie □ □ □ □ □
   Apple pie □ □ □
   1 unit → 24 pies
   9 units → $24 \times 9 = 216$ pies
   $144 + 216 = 360$
   $\frac{144}{360} = \frac{40}{100} = 40\%$
   40% of the pies are blueberry pies.

Lesson 10.3
1. $90
2. 18 h
3. 96 km
4. 4,480 people
5. 3.6 kg
6. 711 mL
7. 100%
   30%
   45%
   25%
   25%
   480
   120
   144 — 360
   100% — 30%
   40% of the pies are blueberry pies.

Lesson 10.4
1. Interest in 1 year → 2% of $30,000
   = $600$30,000 + $600 = $30,600
   Leon withdrew $30,600.
2. Price of 1 flower = $10 ÷ 4 = $2.50
   Price of 12 flowers = $12 \times $2.50
   = $30
   During the sale, price of 1 flower
   = 80% of $2.50 = $2
   30 ÷ 2 = 15 flowers
   Mrs. Watson could buy 15 flowers with the amount of money she usually spends.

Answers
3. Thinking skill: Analyzing parts and whole
Strategy: Use before and after concept
Solution:
Before:
Female \(60\%\) of 150 \(= \frac{60}{100} \times 150 = 90\)
a. \(150 - 90 = 60\)
   There were 60 male goldfish.
After:

4. Thinking skill: Analyzing parts and whole
Strategy: Use before and after concept
Solution:
Before:
Female \(40\%\) of 280 \(= \frac{40}{100} \times 280 = 112\)
There were 112 corn muffins.
280 - 112 = 168
There were 168 other muffins.
After:

Put on Your Thinking Cap!

1. Thinking skill: Analyzing parts and whole
Strategy: Use a model
Solution:

2. Thinking skill: Analyzing parts and whole
Strategy: Use a model
Solution:

3. $432 \div 12 = 36$
\[\frac{36}{150} \times 100\% = 24\%
Peter saves 24% of his allowance every month.

4. Shoes

<table>
<thead>
<tr>
<th>Dress</th>
<th>$60</th>
<th>$132</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 units</td>
<td>$60 + $132 = $192</td>
<td></td>
</tr>
<tr>
<td>5 units</td>
<td>$192 + \frac{192}{4} \times 5 = $240</td>
<td></td>
</tr>
</tbody>
</table>

60% of her money \(\rightarrow\) $240
100% of her money \(\rightarrow\) \(\frac{240}{60} \times 100 = \$400\)
Cheryl had \$400 at first.

3. Thinking skill: Analyzing parts and whole
Strategy: Use before and after concept
Solution:

There were 72 aquatic animals in the eco-garden.

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18. Mother’s age = \(9 \times 4 = 36\) years
   Ivy’s age 9 years from now
   \(= 9 + 9 = 18\) years
   Mother’s age 9 years from now
   \(36 + 9 = 45\) years
   Ivy’s age as a percent of her mother’s age
   9 years from now
   \(= \frac{18}{45} \times 100\% = 40\%\)

19. Total number of students who scored an A
   \(= 20\% \times 300 = 60\)
   Remaining students = \(300 - 60 = 240\)
   Total number of students who scored a B
   \(= 45\% \times 240 = 108\)

20. Total percent of boys
   \(= 100\% - 40\% - 5\% = 55\%\)
   Difference between percent of boys and girls
   \(= 55\% - 40\% = 15\% = \frac{3}{20}\)
   3 units \(\rightarrow 270\)
   1 unit \(\rightarrow 90\)
   90 adults participated in the survey.

21. Tennis racket
   Badminton racket
   \(\begin{array}{c|c|c}
   \multicolumn{1}{c|}{1\text{ unit}} & \multicolumn{1}{c|}{\text{\$7.60}} \\
   \multicolumn{1}{c|}{4\text{ units}} & \multicolumn{1}{c|}{\text{\$30.40}} \\
   \end{array}
   \)
   The cost of the badminton racket is \$30.40.

22. 13 units \(\rightarrow 100\% - 48\% = 52\%\)
   1 unit \(\rightarrow 4\%\)
   8 units \(\rightarrow 32\%\) (apples)
   5 units \(\rightarrow 20\%\) (pears)
   \(48\% - 32\% = 16\%\)
   16\% \(\rightarrow 128\)
   4\% \(\rightarrow 32\)
   20\% \(\rightarrow 32 \times 5 = 160\)
   There are 160 pears in the basket.

23. **Before:**
   apple pies \(\rightarrow 55\% \times 160 = 88\)
   cherry pies \(\rightarrow 160 - 88 = 72\)

   **After:**
   60\% \(\rightarrow 72\)
   100\% \(\rightarrow 120\)
   a. 120 pies were left.
      \(120 - 72 = 48\)
      48 apple pies were left.
   b. 88 - 48 = 40
      40 apple pies were sold.

**Chapter 11**

**Lesson 11.1**

1. \(700 + 600 = 1,300\)
2. \(700 - 300 = 400\)
3. \(\frac{300}{900} = \frac{1}{3}\)
4. Total = \(600 + 400 = 1,000\)
   \(\frac{600}{1,000} \times 100\% = 60\%\)
5. \(A : B : D = 400 : 600 : 800 = 2 : 3 : 4\)

**Lesson 11.2**

1. \((3, 7)\) 2. \((0, 4)\) 3. \((4, 0)\)
4. \((1, 8)\) 5. \((5, 2)\) 6. \((6, 1)\)
13. 9 ft
14. 16.5 ft
15. 4 yd
16. 7 yd
17. $Y = 6.5$; $F = 19.5$
18. Width ($W$) inch: 4; 6
    Length ($L$) inch: 10; 16

3. Let A, B, C, D, E, and F represent 6 people
   (Ms. Beckham and her 5 friends).
   A shakes hands with B, C, D, E, F = 5 handshakes
   B shakes hands with C, D, E, F = 4 handshakes
   C shakes hands with D, E, F = 3 handshakes
   D shakes hands with E, F = 2 handshakes
   E shakes hands with F = 1 handshake
   Total number = 1 + 2 + 3 + 4 + 5 = 15
   There are 15 handshakes.

4. Make a list in order:
   V S F V S A V S I
   V F F V F A V F I
   V L F V L A V L I
   C S F C S A C S I
   C F F C F A C F I
   C L F C L A C L I
   M S F M S A M S I
   M F F M F A M F I
   M L F M L A M L I
   $9 + 9 + 9 = 27$
   The restaurant has 27 different three-course
   meals.

Lesson 11.3

1. Pies
   sizes
<table>
<thead>
<tr>
<th>fish</th>
<th>beef</th>
<th>chicken</th>
<th>mushroom</th>
</tr>
</thead>
<tbody>
<tr>
<td>small</td>
<td>small</td>
<td>small</td>
<td>small</td>
</tr>
<tr>
<td>fish</td>
<td>beef</td>
<td>chicken</td>
<td>mushroom</td>
</tr>
<tr>
<td>medium</td>
<td>medium</td>
<td>medium</td>
<td>medium</td>
</tr>
<tr>
<td>fish</td>
<td>beef</td>
<td>chicken</td>
<td>mushroom</td>
</tr>
<tr>
<td>large</td>
<td>large</td>
<td>large</td>
<td>large</td>
</tr>
</tbody>
</table>

   $3 \times 4 = 12$
   She can bake 12 different pies.

   2.
   Manual 1600 c.c. blue | Automatic 1600 c.c. blue
   Manual 1600 c.c. white | Automatic 1600 c.c. white
   Manual 1600 c.c. grey  | Automatic 1600 c.c. grey
   Manual 2000 c.c. white | Automatic 2000 c.c. white
   Manual 2000 c.c. grey  | Automatic 2000 c.c. grey

   $2 \times 2 \times 3 = 12$
   Mr. Samuel needs to consider 12 combinations.

Lesson 11.4

1. $\frac{1}{4}$
2. 1
3. $\frac{1}{4}$
4. $\frac{1}{4}$

5. Answers vary.
6. Answers vary.
7. Answers vary.
8. Answers vary.
10. $1^{st}$ cube
    +
    1 2 3 4 5 6
    1 2 3 4 5 6
    2 3 4 5 6 7
    3 4 5 6 7 8
    4 5 6 7 8 9
    5 6 7 8 9 10
    6 7 8 9 10 11
    $11 + 1 = 12$

   2nd cube

   11. 7; Answer varies.
   12. 2 or 12; Answer varies.
   13. $\frac{5}{36}$
   14. $\frac{9}{40}$

Extra Practice 5B 169
Chapter 12

Lesson 12.1
1. 55° 2. 53° 3. 56° 4. 90°

Lesson 12.2
1. 136° 2. 131° 3. 84°
4. m∠d = 62°; m∠e = 124°

Lesson 12.3
1. 97° 2. 35° 3. 142° 4. 24°
5. Angles at a Point: 
   ∠e, ∠f, ∠m, and ∠n; ∠i, ∠g, ∠h, and ∠p; ∠j, ∠k, ∠r, and ∠q
   Vertical Angles:
   ∠a and ∠c; ∠e and ∠m; ∠i and ∠p; ∠g and ∠h; ∠j and ∠q; ∠k and ∠r
   Angles on a Line:
   ∠a and ∠d; ∠a and ∠b; ∠c and ∠d; ∠f and ∠n; ∠e and ∠m; ∠e and ∠f; ∠m and ∠n; ∠i and ∠h; ∠g and ∠p; ∠i and ∠g; ∠h and ∠p; ∠j and ∠r; ∠k and ∠q; ∠j and ∠k; ∠r and ∠q
6. 138° 7. 147°

Put on Your Thinking Cap!
1. Thinking skill: Spatial visualization
   Solution:
   m∠x = 90° – 49° = 41°
2. Thinking skill: Spatial visualization
   Solution:
   m∠x + m∠y + m∠z = 180°
   m∠x = 180° – 142° = 38°
   m∠y = 180° – 94° = 86°
   m∠z = 180° – 124° = 56°

3. Thinking skill: Spatial visualization
   Solution:
   m∠x + m∠y = (51° ÷ 3) × 7 = 119°
   m∠z = 360° – 119° = 241°
4. Thinking skill: Spatial visualization
   Solution:
   m∠x + m∠y → 7 units = 180° – 54° = 126°
   m∠y = (126° ÷ 7) × 2 = 36°
   m∠z = 180° – 36° – 38° = 106°
5. Thinking skill: Spatial visualization
   Solution:
   m∠p + m∠q + m∠r → 12 units = 180°
   m∠p = (180° ÷ 12) × 7 = 105°
   m∠r = (180° ÷ 12) × 4 = 60°
6. Thinking skill: Spatial visualization
   Solution:
   m∠a + m∠b + m∠c → 12 units
   = 360° – 132°
   = 228°
   m∠a = (228° ÷ 12) × 3 = 57°
   m∠b = (228° ÷ 12) × 4 = 76°
   m∠c = (228° ÷ 12) × 5 = 95°
7. Thinking skill: Spatial visualization
   Solution:
   ∠a ☐ ☐ ☐
   ∠d ☐ ☐ ☐
   ∠b ☐ ☐ ☐ ☐
   ∠c ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
   18 units → 360°
   1 unit → 360° ÷ 18 = 20°
   m∠a = 20° × 2 = 40°
   m∠b = 20° × 4 = 80°
   m∠c = 20° × 9 = 180°
   m∠d = 20° × 3 = 60°
8. Thinking skill: Spatial visualization
   Solution:
   m∠AOE = 180° – 108° = 72°
   m∠AOC = 130° – 72° = 58°
   m∠BOC = 90° – 58° = 32°
   m∠BOD = m∠AOC = 58°
   m∠DOF = 90° – 58° = 32°
   m∠BOC and m∠DOF are equal.

170 Answers
Chapter 13

Lesson 13.1
1. Scalene triangles: LMN, XYZ, STU
   Equilateral triangles: ABC, PQR
   Isosceles triangles: DEF, GHK, KFC
2. Right triangles: DEF, LMN, XYZ
   Equilateral triangles: GHK, STU
   Isosceles triangles: ABC, PQR, VWX

Lesson 13.2
1. 96° 2. 26° 3. 133° 4. 59°
   5. 62° 6. 251° 7. 25° 8. 67°

Lesson 13.3
1. 32° 2. 53° 3. 101° 4. 29°
   5. 33° 6. 30° 7. 120° 8. 106°

Lesson 13.4
1. 2; 2; 3 2. 4
   3. 5 4. 5
   5. Yes 6. Yes
   7. Yes 8. 6; 3; 5
   9. 9 10. 8
   11. 11 12. AC
   13. BC 14. AB
15. Answers vary. Accept any possible answer:
   3 in., 4 in., or 5 in.
   16. Answers vary. Accept any possible answer:
   5 cm, 6 cm, 7 cm, or 8 cm
   17. Answers vary. Accept any possible answer:
   2 cm, 3 cm, 4 cm, 5 cm, 6 cm, 7 cm, 8 cm, or 9 cm
   18. 4 inches

Lesson 13.5
1. 16° 2. 118°; 62°
   3. 131° 4. 116°
   5. 154° 6. 44°
   7. 76° 8. 46°

Put on Your Thinking Cap!
1. Thinking skill: Spatial visualization
   Solution:
   \[ \angle UPT = 180° - 118° = 62° \]
   \[ \angle PUT = (180° - 62°) ÷ 2 = 59° \]
   \[ \angle TUV = \angle TSV = 118° - 59° = 59° \]
   \[ \angle RSV = 118° - 59° = 59° \]
2. Thinking skill: Spatial visualization
   Solution:
   \[ \angle QPS = \angle PST = 106° \]
   \[ \angle SPT = (180° - 106°) ÷ 2 = 37° \]
   \[ \angle a = 180° - 106° = 37° \]
3. Thinking skill: Spatial visualization
   Solution:
   \[ \angle FDE = 180° - 54° = 126° \]
   \[ \angle ADE = 126° ÷ 2 = 63° \]
   \[ \angle CDE = 90° - 63° = 27° \]
4. Thinking skill: Spatial visualization
   Solution:
   \[ \angle ABC = (180° - 32°) ÷ 2 = 74° \]
   \[ \angle x = 180° - 54° = 106° \]
   \[ \angle x = \angle AFE = 106° \]
   \[ \angle y = (180° - 106°) ÷ 2 = 37° \]
5. Thinking skill: Spatial visualization
   Solution:
   \[ \angle PRQ = 180° - 27° × 2 = 126° \]
   \[ \angle PRS = 180° - 126° = 54° \]
   \[ \angle x = 180° - 54° × 2 = 72° \]
   \[ 3 × \angle TPS = 180° - 72° - 27° - 27° = 54° \]
   \[ \angle TPS = 18° \]
   \[ \angle STP = 2 × 18° = 36° \]
   \[ \angle y = 180° - 36° = 144° \]
6. Thinking skill: Spatial visualization
   Solution:
   \[ \angle CEF = (180° - 118°) ÷ 2 = 31° \]
   \[ \angle x = 180° - 60° - 60° - 31° = 29° \]
   \[ \angle EFG = 180° - 31° - 54° = 95° \]
   \[ \angle EFG = 180° - 118° = 62° \]
   \[ \angle y = 180° - 95° - 62° = 23° \]
7. Thinking skill: Spatial visualization
   Solution:
   \[ \angle EAF = \angle AEF = 90° - 34° = 56° \]
   \[ \angle AFE = \angle BFG = 180° - 56° × 2 = 68° \]
   \[ \angle FBG = \angle FGB = (180° - 68°) ÷ 2 = 56° \]
   \[ \angle EBA = 90° - 58° = 32° \]
   \[ \angle y = 56° + 32° = 88° \]
   \[ \angle x = 180° - 56° - 88° = 36° \]
8. Thinking skill: Spatial visualization

Solution:
\[ m\angle ABC = m\angle CDE = 56^\circ \]
\[ m\angle x = 180^\circ - 56^\circ - 90^\circ = 34^\circ \]
\[ m\angle CFD = 180^\circ - 103^\circ = 77^\circ \]
\[ m\angle DCF = 180^\circ - 77^\circ - 56^\circ = 47^\circ \]
\[ m\angle y = 90^\circ - 47^\circ = 43^\circ \]

Chapter 14

Lesson 14.1

<table>
<thead>
<tr>
<th>Solid</th>
<th>Number of Faces (F)</th>
<th>Number of Vertices (V)</th>
<th>Number of Edges (E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. cube</td>
<td>6</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>2. rectangular prism</td>
<td>6</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>3. triangular prism</td>
<td>5</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>4. square pyramid</td>
<td>5</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>5. triangular pyramid</td>
<td>4</td>
<td>4</td>
<td>6</td>
</tr>
</tbody>
</table>

6. For any prism and pyramid, subtracting the number of edges from the sum of the number of faces and the number of vertices, equals 2.

7.
Lesson 14.2

1. 2:1

2. 1

Put on Your Thinking Cap!

Thinking skill: Identifying patterns and relationship
Strategy: Look for a pattern
Solution:

<table>
<thead>
<tr>
<th>Solid</th>
<th>Number of Faces (F)</th>
<th>Number of Edges (E)</th>
<th>Number of Vertices (V)</th>
<th>F + V - E</th>
</tr>
</thead>
<tbody>
<tr>
<td>cube</td>
<td>6</td>
<td>12</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>cone</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>triangular prism</td>
<td>5</td>
<td>9</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>square pyramid</td>
<td>5</td>
<td>8</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>triangular pyramid</td>
<td>4</td>
<td>6</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>cylinder</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

3. (triangular pyramid)  (cone)  (sphere)

4. F
5. T
6. F
7. F
8. T
9. T

Lesson 15.1

1. 8
2. 10
3. 12
4. 13
5. 10

Lesson 15.2

1.

Extra Practice 5B
Lesson 15.3

1. \(4 \text{ cm} \times \text{ 4 cm} = \text{ 16 cm}^2\)
\[16 \text{ cm}^2 \times 6 = 96 \text{ cm}^2\]

The surface area of the cube is 96 square centimeters.

2. \(5 \text{ cm} \times 3 \text{ cm} = \text{ 15 cm}^2\)
\(3 \text{ cm} \times 2 \text{ cm} = \text{ 6 cm}^2\)
\(5 \text{ cm} \times 2 \text{ cm} = \text{ 10 cm}^2\)

\((15 \text{ cm}^2 + 6 \text{ cm}^2 + 10 \text{ cm}^2) \times 2 = \text{ 62 cm}^2\)

The surface area of the rectangular prism is 62 square centimeters.

3. \(5 \text{ cm} \times 5 \text{ cm} = \text{ 25 cm}^2\)
\[25 \text{ cm}^2 \times 6 = \text{ 150 cm}^2\]

4. \(8 \text{ in.} \times 8 \text{ in.} = \text{ 64 in.}^2\)
\[64 \text{ in.}^2 \times 6 = \text{ 384 in.}^2\]

5. \(20 \text{ cm} \times 6 \text{ cm} = \text{ 120 cm}^2\)
\(10 \text{ cm} \times 6 \text{ cm} = \text{ 60 cm}^2\)

\(20 \text{ cm} \times 10 \text{ cm} = \text{ 200 cm}^2\)

\((120 + 60 + 200) \text{ cm}^2 \times 2 = 760 \text{ cm}^2\)

6. \(10 \text{ cm} \times 10 \text{ cm} = \text{ 100 cm}^2\)
\(18 \text{ cm} \times 10 \text{ cm} = \text{ 180 cm}^2\)

\(100 \text{ cm}^2 \times 2 + 180 \text{ cm}^2 \times 4 = \text{ 920 cm}^2\)

7. \(7 \text{ in.} \times 7 \text{ in.} = \text{ 49 in.}^2\)
\[49 \text{ in.}^2 \times 6 = \text{ 294 in.}^2\]

8. \(10 \text{ cm} \times 10 \text{ cm} = \text{ 100 cm}^2\)
\[100 \text{ cm}^2 \times 6 = \text{ 600 cm}^2\]

9. \(10 \text{ in.} \times 9 \text{ in.} = \text{ 90 in.}^2\)
\(10 \text{ in.} \times 6 \text{ in.} = \text{ 60 in.}^2\)
\[9 \text{ in.} \times 6 \text{ in.} = \text{ 54 in.}^2\]

\((90 + 60 + 54) \text{ in.}^2 \times 2 = 408 \text{ in.}^2\)

10. \(20 \text{ cm} \times 15 \text{ cm} = \text{ 300 cm}^2\)
\(20 \text{ cm} \times 10 \text{ cm} = \text{ 200 cm}^2\)

\(15 \text{ cm} \times 10 \text{ cm} = \text{ 150 cm}^2\)

\((300 + 200 + 150) \text{ cm}^2 \times 2 = \text{ 1,300 cm}^2\)

11. \(8 \text{ in.} \times 6 \text{ in.} = \text{ 48 in.}^2\)
\(8 \text{ in.} \times 12 \text{ in.} = \text{ 96 in.}^2\)
\[12 \text{ in.} \times 6 \text{ in.} = \text{ 72 in.}^2\]

\((48 + 96 + 72) \text{ in.}^2 \times 2 = 432 \text{ in.}^2\)

12. \(12 \text{ cm} \times 12 \text{ cm} = \text{ 144 cm}^2\)
\(12 \text{ cm} \times 20 \text{ cm} = \text{ 240 cm}^2\)

\(144 \text{ cm}^2 \times 2 + 240 \text{ cm}^2 \times 4 = \text{ 1,248 cm}^2\)

13. \(216 \text{ cm}^2 \div 6 = \text{ 36 cm}^2\)
\[6 \times 6 = 36\]

The length of the cube is 6 centimeters.

14. \(6 \text{ cm} \times 6 \text{ cm} = \text{ 36 cm}^2\)
\(30 \text{ cm} \times 6 \text{ cm} = \text{ 180 cm}^2\)

\(36 \text{ cm}^2 \times 2 + 180 \text{ cm}^2 \times 4 = \text{ 792 cm}^2\)

The surface area of the wood is 792 square centimeters.

15. \(20 \text{ in.} \times 18 \text{ in.} = \text{ 360 in.}^2\)
\(20 \text{ in.} \times 16 \text{ in.} = \text{ 320 in.}^2\)

\(18 \text{ in.} \times 16 \text{ in.} = \text{ 288 in.}^2\)

\(360 \text{ in.}^2 + (320 \text{ in.}^2 \times 2) + (288 \text{ in.}^2 \times 2) = \text{ 1,576 in.}^2\)

The total surface area of the tank in contact with the water is 1,576 square inches.

Lesson 15.4

1. 12 2. 9 3. 12 4. 11
5. B 6. A; C 7. 12 8. 12
13. E and F 14. 5; 2; 3; 30
15. 4; 3; 4; 48 16. 8; 5; 4; 160
17. 8; 6; 4; 192

Lesson 15.5

1. 8; 5; 7
    \(\text{Volume} = 8 \times 5 \times 7 = 280\)

2. 14; 7; 10
    \(\text{Volume} = 14 \times 7 \times 10 = 980\)

3. 32; 28; 20
    \(\text{Volume} = 32 \times 28 \times 20 = 17,920\)

4. 25.8 \(\times 12 \times 18 = 5,572.8\)

5. 15 \(\times 15 \times 28.6 = 6,435\)

6. 8 7. 12
8. 18 9. 8

10. 390 11. 1,125
12. 2,600 13. 4,080
14. 5,050 15. 2,006
16. 0; 890 17. 1; 850
18. 3; 65 19. 0.53
20. 0.755 21. 1.65
22. 2.075 23. 6,552 mL
24. 7,200 mL 25. 3.24 L
26. 8.4 L

Extra Practice 5B 175
27. Volume of fish tank = 38 cm $\times$ 23 cm $\times$ 18 cm = 15,732 cm$^3$
\[
\frac{2}{3} \times 15,732 \text{ cm}^3 = 10,488 \text{ cm}^3 = 10 \text{ L} 488 \text{ mL}
\]
When the tank is $\frac{2}{3}$ full, there is
10 liters 488 milliliters of water in it.

28. Fraction of water left = $\frac{3}{4} \times \frac{4}{5} = \frac{3}{5}$
Volume of tank = 30 cm $\times$ 22 cm $\times$ 25 cm = 16,500 cm$^3$
\[
\frac{3}{5} \times 16,500 \text{ cm}^3 = 9,900 \text{ cm}^3 = 9.9 \text{ L}
\]
The volume of water left in the tank is 9.9 liters.

29. Height of water needed = 24 cm − 7 cm = 17 cm
Volume of water needed = 42 cm $\times$ 20 cm $\times$ 17 cm
= 14,280 cm$^3$
= 14.28 L
The volume of water needed is 14.28 liters.

Put on Your Thinking Cap!

1. Thinking skill: Identifying patterns and relationships
Strategy: Look for a pattern
Solution:
7 $\times$ 7 = 49
Jessica will need 49 cubes.

2. Thinking skill: Identifying patterns and relationships
Strategy: Look for a pattern
Solution:
\[
\begin{array}{c|cccc}
\text{T-Shaped Pattern} & 1 & 2 & 3 & 4 \\
\hline
\text{Number of Unit Cubes} & 5 & 5 + 3 & 8 & 11 + 3 \\
\hline
\end{array}
\]
b. Pattern 5: 14 $+$ 3 = 17
   Pattern 6: 17 $+$ 3 = 20
c. Pattern 10: 3 $\times$ 10 $+$ 2 = 32 cubes

3. Thinking skill: Spatial visualization
Strategy: Simplify the problem
Solution:
Volume of each cube = $\frac{960 \text{ cm}^3}{15} = 64 \text{ cm}^3$
4 cm $\times$ 4 cm $\times$ 4 cm = 64 cm$^3$
Length of each cube is 4 centimeters.
The solid has 42 exposed faces.
Surface area of solid = $2(4 \times 4) \text{ cm}^2$
= 672 cm$^2$
The surface area that is painted blue is 672 square centimeters.

4. Thinking skill: Spatial visualization
Strategy: Simplify the problem
Solution:
6 $\times$ 3 = 18 cubes (1 layer)
126 $\div$ 18 = 7 layers
7 $\times$ 3 cm = 21 cm
The height of the box is 21 centimeters.

5. Thinking skill: Spatial visualization
Strategy: Simplify the problem
Solution:
a. $(3 \times 3 \times 3) cm^3 \times 12 = 324 \text{ cm}^3$
   The volume of the solid is 324 cubic centimeters.
b. The solid has 38 exposed faces.
   $38 \times (3 \times 3) cm^2 = 342 \text{ cm}^2$
   The total surface area of the solid is 342 square centimeters.
c. i. 2 cubes
   ii. 6 cubes
   iii. 4 cubes

6. Thinking skill: Analyzing parts and whole
Strategy: Solve part of the problem
Solution:
3 units $\Rightarrow$ 12 cm $\times$ 10 cm $\times$ 6 cm = 720 cm$^3$
7 units $\Rightarrow$ $\frac{720 \text{ cm}^3}{3} \times 7 = 1,680 \text{ cm}^3$.
a. The volume of block B is 1,680 cubic centimeters.
   \[
   \frac{1,680 \text{ cm}^3}{10 \text{ cm} \times 12 \text{ cm}} = 14 \text{ cm}
   \]
b. The width of block B is 14 centimeters.
7. Thinking skill: Deduction
   Strategy: Use a model
   Solution:
   
   Cubic container
   
   Tank

   12 units − 4 units = 8 units
   8 units → 1,024 mL
   4 units → 512 mL
   Volume of the cubic container
   = 8 cm × 8 cm × 8 cm = 512 cm³
   The length of the cubic container is 8 centimeters.

8. Thinking skill: Analyzing parts and whole
   Strategy: Solve part of the problem
   Solution:
   
   \[ \frac{4}{9} \times 252 = 112 \]
   John will need 112 blocks to complete the wall.

9. Thinking skill: Comparing, Spatial visualization
   Strategy: Simplify the problem
   Solution:
   
   \[ \frac{7}{30} \]

10. Thinking skill: Comparing, Spatial visualization
    Strategy: Simplify the problem
    Solution:
    
    \[ \frac{3}{5} \times 84 = 18 \]
    Karen gets 18 beads.

11. Thinking skill: Analyzing parts and whole, Deduction
    Strategy: Simplify the problem
    Solution:
    
    a. Dimensions: 5 cm by 5 cm by 12 cm
    b. Dimensions: 3 cm by 3 cm by 20 cm
    Accept possible drawings.
    c. Volume of one solid
    = 5 cm × 5 cm × 12 cm = 300 cm³
    Volume of the other solid
    = 20 cm × 3 cm × 3 cm = 180 cm³

End-of-Year Test

Multiple choice

Short Answer
21. Factors of 6 are: 1, 2, 3, and 6.
    \[ \frac{4}{8} = \frac{1}{2} \]
22. 19.4
23. \[ \frac{7}{30} \]
24. 2d + 6
25. 19y − 6
26. 5 × 10 = 50
27. \[ \frac{7}{8} \times \frac{3}{5} = \frac{21}{40} \] kg
    21 \[ \frac{40}{40} \] kilogram of beef is left.
28. \[ \frac{2}{7} \times \frac{3}{4} = \frac{3}{14} \]
    \[ \frac{3}{14} \times 84 = 18 \]
    Karen gets 18 beads.
29. \[ \frac{38}{0.2} = 190 \]
30. Photo B measures 16 cm by 12 cm.
   \[16 \text{ cm} \times 12 \text{ cm} = 192 \text{ cm}^2\]
   The area of Photo B is 192 square centimeters.

31. Area of shaded region
   \[= \frac{1}{2} \times 26 \times (20 - 10) = 130 \text{ cm}^2\]

32. Surface area of the rectangular prism
   \[= (12 + 8) \times 2 \times 6 + 12 \times 8 \times 2 = 432 \text{ cm}^2\]

33. Volume of each cube
   \[= \frac{1,620}{60} = 27 \text{ cm}^3\]
   Length of each cube
   \[L = 3 \text{ cm}\]

34. Volume of water
   \[= 24 \text{ cm} \times 20 \text{ cm} \times 15 \text{ cm} = 7\frac{1}{5} \text{ L}\]

35. 3 L

36. Total number of computers sold
   \[= 35 + 30 + 40 + 25 + 45 = 175\]

37. Shop 4
   \[40 - 25 = 15 \text{ (increase)}\]

38. \[180^\circ - 35^\circ \times 2 = 110^\circ\]
   \[\text{m} \angle ACD = 110^\circ - 60^\circ = 50^\circ\]

39. \[(180^\circ - 86^\circ) \div 2 = 47^\circ\]
   \[\text{m} \angle RQT = 180^\circ - 86^\circ - 47^\circ - 28^\circ = 19^\circ\]

40. \[58^\circ - 23^\circ = 35^\circ\]
   \[(180^\circ - 42^\circ) \div 2 = 69^\circ\]
   \[180^\circ - 69^\circ = 111^\circ\]
   \[\text{m} \angle AEF = 180^\circ - 111^\circ - 35^\circ = 34^\circ\]

41. \[\$95 - \$75 = \$20\]
   \[40\% \rightarrow \$20\]
   \[100\% \rightarrow \$50 \text{ (his savings)}\]
   \[$95 + \$50 = \$145\]
   Lincoln has $145 every month.

42. Area (cm²)  Common Factors
| 40, 25  | 1, 5 |
| 40, 32  | 1, 2, 4, 8 |
| 25, 30  | 1, 5 |

By deduction,

3 cm 6 cm 4 cm
8 cm 8 cm
6 cm 4 cm

43. a. The total area of P and Q is 68 square centimeters.
   \[(13 \text{ cm} + 15 \text{ cm}) \times 2 = 56 \text{ cm}^2\]
   b. The perimeter of the figure is 56 centimeters.

44. A  B  C
   Before: 3 5 2
   After: \[\frac{1}{2} 5\frac{1}{2} 3\]

45. Participants
   \[2 \times 5 = 10 \text{ units}\]
   Spectators
   \[3 \times 7 = 21 \text{ units}\]

a. The number of participants is \(\frac{10}{21}\) of the number of spectators.

   11 units \[\rightarrow 253\]
   1 unit \[\rightarrow 253 \div 11 = 23\]
   \[23 \times 21 = 483\]

b. 483 spectators were at the meet.