Lesson Practice 101

5. \[
\frac{60 \text{ girls}}{200 \text{ students}} \div \frac{2}{2} = \frac{30 \text{ girls}}{100 \text{ students}} = 30% 
\]

6. a. 9.8
   b. 9.08
   c. 9.8

7. \[20 \div 4 = 5\]

8. \[
\frac{10}{50} \times \frac{2}{2} = \frac{20}{100} = 20% 
\]

9. \[
\frac{1}{3} \times \frac{2}{2} = \frac{2}{6} \\
\frac{1}{6} + \frac{2}{6} = \frac{3}{6} = \frac{1}{2} 
\]

10. \[A = l \times w \\
= 3.2 \times 3.2 \\
= 10.24 \text{ cm}^2 + 360 \\
= 10.24 
\]

11. a. \[
0.19 \times 0.7 = 0.133 
\]
   b. \[
0.06 \times 0.4 = 0.024 
\]
   c. \[
0.14 \times 0.8 = 0.112 
\]

12. C

Written Practice 101

1. 63.8 seconds - 1.0 seconds = 62.8 seconds

2. Area: 10 in. \times 7 in. = 70 in²

3. \[
16 R 5 \\
15 \overbrace{\underline{\underline{245}}} \\
- 15 \overbrace{\underline{\underline{95}}} \\
- 90 \underline{\underline{5}} 
\]

16 bundles; sample: \[245 \div 15 = 16 \text{ R } 5\]; since the problem asks for the number of full bundles, we ignore the remainder in the division.

4. \[7 \times 8 = 56\]

13. a. \[
\frac{3}{2} \times \frac{2.7}{224} + 640 = 86.4 
\]
   b. \[
\frac{7}{3.8} \times \frac{2}{984} + 3690 = 46.74 
\]

14. \[4\frac{10}{10} - 3\frac{7}{10} = 1\frac{3}{10}\]

15. \[
\frac{4}{5.0} - 3.7 = 1.3 
\]

16. \[10 \times 3.65 = 36.50\]

Saxon Math Intermediate 5 213 © Harcourt Achieve Inc. and Stephen Hake. All rights reserved.
17. \[
\begin{align*}
\frac{33}{45} & \times 579 \\
\times 468 & \\
\hline
4632 & \\
34740 & \\
+ 231600 & \\
\hline
270,972 & 
\end{align*}
\]

18. $3.65$

\[
\begin{align*}
10 \times 36.50 & \\
- 30 & \\
\hline
65 & \\
- 60 & \\
\hline
50 & \\
- 50 & \\
\hline
0 & 
\end{align*}
\]

19. See student work.

20. \[
\begin{align*}
20 & \\
32 \div 640 & \\
- 64 & \\
\hline
0 & \\
- 0 & \\
\hline
0 & 
\end{align*}
\]

21. \[
\frac{3}{10} \times \frac{7}{10} = \frac{21}{100}
\]

22. \[
\frac{4 \times \frac{3}{5}}{\frac{4}{3} \times \frac{5}{3}} = \frac{20}{9} = 2 \frac{2}{9}
\]

23. See student work.

24. \[
\frac{25 \div 25}{100 \div 25} = \frac{1}{4}
\]

25. \[
10^3 - \sqrt{100} = 1000 - 10 = 990
\]

26. C

27. A(4, 3), B(2, 3), C(1, 6)

28. \[
V = l \times w \times h \\
= 4 \times 2 \times 8 \\
= 64 \text{ in}^3
\]

29. \[
\frac{3}{4} + \frac{1}{4} = 1 \frac{1}{4} = 2 \text{ pounds}; \text{ sample: } 1 \frac{1}{4} + \frac{3}{4} = 1 \frac{3}{4}, \text{ and } 1 \frac{3}{4} \text{ is the same as } 1 + 1, \text{ or } 2.
\]

30. a. 15 yr (lion), 12 yr (moose), 4 yr (grey squirrel), 1 yr (meadow mouse)

b. Sample: A moose lives 3 times longer.

Early Finishers

a. \[0.095 \times 100 = 9.5 \text{ mm}\]

b. \[0.095 \times 10 = 0.95 \text{ mm}\]

\[0.095 \times 1000 = 95 \text{ mm}\]

Lesson Practice 102

a. We change 9% to the decimal number 0.09 and then multiply.

\[
\begin{align*}
2.00 & \\
\times 0.09 & \\
\hline
18.00 & = 18
\end{align*}
\]

b. We change 85% to the decimal number 0.85 and then multiply.

\[
\begin{align*}
$30 & \\
\times 0.85 & \\
\hline
150 & \\
+ 2400 & \\
\hline
2550 & \text{ or }$25.50
\end{align*}
\]

c. We change 4% to the decimal number 0.04 and then multiply.

\[
\frac{\frac{1}{25}}{\frac{0.04}{1.00}} = \frac{25}{0.04} = 100
\]

d. We change 25% to the reduced fraction \(\frac{1}{4}\) and then multiply.

\[
\frac{1}{4} \times \frac{70}{4} = \frac{70}{1} = 17.50
\]

e. We change 80% to the reduced fraction \(\frac{4}{5}\) and then multiply.

\[
\frac{4}{5} \times \frac{50}{1} = \frac{200}{5} = 40
\]

f. We change 75% to the reduced fraction \(\frac{3}{4}\) and then multiply.

\[
\frac{3}{4} \times \frac{120}{1} = \frac{360}{4} = 90
\]

g. We may change 15% to the decimal number 0.15 and substitute $10 for \(r\).

\[
d = (0.15)(10)
\]

We multiply 0.15 and 10, which is 1.50.

\[
d = $1.50
\]

Since the discount is $1.50, then the sale price of the belt is $10 - $1.50 or $8.50.
1. \((-5) - 6 + (-7) - (8) + 4\)
   \([-5 + (-6)] + (-7) - (8) + 4\)
   \([-11 + (-7)] - (8) + 4\)
   \([-18 - (8)] + 4\)
   \([-18 + (-8)] + 4\)
   \(-26 + 4\)
   \(-22\)

2. \(\frac{2}{12}\)
   \(\frac{1}{12}\)
   \(\frac{1}{4}\)
   \(\frac{1}{4}\)
   \(\frac{1}{2}\)
   \(\frac{0.24}{0.24}\)
   \(\frac{4.23}{4.23}\)

3. 2.5 miles + 2.5 miles = 5 miles

4. \(4y = 20\). Since \(20 \div 4 = 5\), then \(y = 5\).
   \(2y - 1.2(5) - 1 = 9\)

5. a. \(\frac{1}{16} \times \frac{1}{2} = \frac{0.16}{0.32}\)
   b. \(0.5 \times 7 = 3.5\)
   c. \(0.26 \times 0.3 = 0.078\)

6. a. \(\frac{15}{25} \times \frac{4}{4} = \frac{60}{100} = 60\%\)
   b. \(\frac{15}{10} = \frac{3}{2}\)

7. \(13 + 8 = 21\)

8. \(80\% = \frac{80}{100} = \frac{4}{5}\)

9. \(50\% = \frac{1}{2}\)

10. \(45 \cdot 45 = 2025\)

11. 76,345: seventy-six and three hundred forty-five thousandths; 3

12. \(\frac{1}{2} \div \frac{2}{3} = \frac{1}{2} \times \frac{3}{2} = \frac{3}{4}\)

13. \(\frac{3}{10} \times \frac{3}{10} = \frac{9}{100}\)

14. \(\frac{4}{11} + \frac{5}{11} = \frac{9}{11}\)

15. a. Perimeter: \(7 + 7 + 6 + 6 = 26\) units
   b. Area: \(7 \times 6 = 42\) units²

16. Area = \(\frac{b \times h}{2}\)
   \(= \frac{11.04 \text{ cm} \times 4.25 \text{ cm}}{2}\)
   \(= \frac{46.92 \text{ cm}^2}{2}\)
   \(= 23.46 \text{ cm}^2\)

17. 2,386
   1,200
   16,250
   + 10,000
   \(\underline{29,836}\)

18. \(4.2 - (3 - 0.45)\)
   \(4.2 - 2.55\)
   \(1.65\)

19. \(\frac{1}{2} \times \frac{3}{3} = \frac{3}{6}\)
   \(\frac{3}{6} + \frac{1}{6} = \frac{4}{6}\)
   \(\frac{2}{3}\)

20. \(\$ 2.47\)
   15\$37.05
   \(-30\)
   \(-70\)
   \(-60\)
   \(-105\)
   \(-105\)
   \(\underline{0}\)

21. a. \(4.378 \times 10 = 43.78\)
   b. \(4.378 \times 1000 = 4378\)
   c. \(4.378 \times 100 = 437.8\)

22. \(\frac{5}{6} \times \frac{24}{1} = \frac{120}{6} = 20\) juice bars

23. Sample:

24. \(V = l \times w \times h\)
   \(= 2 \times 5 \times 8\)
   \(= 80\) ft³
25. \(\frac{2}{3} \times \frac{100\%}{1} = \frac{200\%}{3}\)

\[
\begin{array}{c}
\frac{66.2}{3} \\
\frac{200}{3} \\
-18 \\
\frac{-18}{2} \\
\end{array}
\]

\[
\frac{200\%}{3} = 66.3\%
\]

26. a. 5 lines of symmetry

b. 10 sides; decagon

27. a. 17

b. 25 - 24 = 1 student

c. Range: 20 - 13 = 7

d. 12 students scored more than 18, and 12 scored less than 18. 18

28. a. 6% of 400

\[
\begin{array}{c}
400 \\
\times 0.06 \\
\hline
24.00 = 24
\end{array}
\]

b. 62% of $50

\[
\begin{array}{c}
$50 \\
\times 0.62 \\
\hline
31.00
\end{array}
\]

29. a. 20% = \(\frac{20}{100}\)

\[
\frac{1}{5} \times \frac{90}{1} = \frac{90}{5} = $18
\]

b. 75% = \(\frac{75}{100}\)

\[
\frac{3}{4} \times \frac{160}{1} = \frac{480}{4} = 120
\]

30. 105°F - (-50°F)

105°F + (±50°F) = 155°F

**Lesson Practice 103**

a. We list the first few multiples of each number, and then we circle the multiples they have in common.

Multiples of 3: 3, 6, 9, ...
Multiples of 6: 6, 12, 18, ...

The LCM is 6.

b. Multiples of 5: 5, 10, 15, 20, 25, 30, 35, 40, 45, ...
Multiples of 8: 8, 16, 24, 32, 40, 48, ...

The LCM is 40.

c. Multiples of 5: 5, 10, 15, ...
Multiples of 10: 10, 20, 30, ...

The LCM is 10.

d. Multiples of 4: 4, 8, 12, 16, ...
Multiples of 6: 6, 12, 18, ...

The LCM is 12.

e. Multiples of 3: 3, 6, 9, ...
Multiples of 6: 6, 12, 18, ...

The LCM is 6.

f. Multiples of 6: 6, 12, 18, 24, 30, 36, ...
Multiples of 10: 10, 20, 30, 40, ...

The LCM is 30.

g. Multiples of 8: 8, 16, 24, 32, 40, 48, ...
Multiples of 10: 10, 20, 30, 40, 50, ...

The LCM is 40.

h. No; sample: The LCM of 3 and 4, and the product of 3 and 4 is 12. The numbers 24, 36, 48, and so on, are common multiples of 3 and 4, not the LCM.

i. We find the prime factorization of 12 and 14.

\[
\begin{array}{c}
12 \\
\times 3 \\
\hline
4 \\
2 \\
1
\end{array}
\]

\[
\begin{array}{c}
14 \\
\times 7 \\
\hline
2 \\
1
\end{array}
\]
We circle the greatest number of times a prime factor appears in either prime factorization.

\[
\begin{align*}
12 &= 2^2 \times 3 \\
14 &= 2 \times 7
\end{align*}
\]

Then we find the product of the circled factors.

The LCM = \(2^2 \times 3 \times 7\) or 84.

1. a. \[
\begin{array}{c}
0.16 \\
\times 0.3 \\
\hline
0.048
\end{array}
\]

b. \[
\begin{array}{c}
0.7 \\
\times 0.3 \\
\hline
0.21
\end{array}
\]

2. \[
\frac{40}{50} \times \frac{\mathbf{2}}{\mathbf{2}} = \frac{80}{100} = 80\% 
\]

3. \[
\begin{align*}
\frac{1}{10} & \times \frac{1}{10} = \frac{1}{100} \\
\text{and } 0.1 \times 0.1 &= 0.01.
\end{align*}
\]

\[
\frac{1}{10} \times \frac{1}{10} = 0.1 \times 0.1
\]

4. a. \[
\begin{array}{crc}
3.5 & \div & 16 \\
\div & & 210 \\
\text{and } & & 350 \\
+ & & 56.0 = 56
\end{array}
\]

b. \[
\begin{array}{c}
8.2 \\
\times 6.3 \\
\hline
246 \\
+ 4920 \\
\hline
51.66
\end{array}
\]

5. One hundred one and one hundred one thousandths: 101.101

6. \((500 \text{ g} + 100 \text{ g}) \div 3 = 200 \text{ g}

7. See student work.

8. $16; sample: Round both amounts to the nearest dollar, then subtract; a reasonable estimate is $23 − $7 or $16.

9. a. Perimeter: \(5 + 5 + 6 + 6 = 22 \text{ units}\)

b. Area: \(5 \times 6 = 30 \text{ units}^2\)

10. \[
\begin{align*}
d &= (20\%)(r) \\
&= (0.2)(80) \\
&= 16.00
\end{align*}
\]

Sale price: \$80 − \$16 = \$64

11. \[
\begin{array}{c}
52.30 \\
\downarrow \\
4.96 \\
\downarrow \\
7.50 \\
\downarrow \\
+ 11.00 \\
\hline
55.76
\end{array}
\]

12. \[
\begin{align*}
1 &− (1.36 − 0.8) \\
&= 1 − 0.56 \\
&= 0.44
\end{align*}
\]

13. \[
\begin{array}{c}
1.2 \\
\times 12 \\
\hline
24 \\
+ 120 \\
\hline
14.4
\end{array}
\]

14. \[
\begin{array}{c}
0.45 \\
\times 0.9 \\
\hline
0.135
\end{array}
\]

15. \(0.16 \times 10 = 1.6\)

16. \(13m = 3705\) \[
\begin{array}{c}
m = 285 \\
13|3705 \\
-26 \\
110 \\
-104 \\
65 \\
-65 \\
0
\end{array}
\]

17. a. Multiples of 3: 3, 6, 9, 12, 15, ...

Multiples of 4: 4, 8, 12, 16, ...

The LCM is 12.

b. Multiples of 6: 6, 12, 18, 24, ...

Multiples of 9: 9, 18, 27, ...

The LCM is 18.

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

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

The LCM is 8.

18. \[
\begin{array}{c}
35 \\
28|980 \\
-84 \\
140 \\
-140 \\
0
\end{array}
\]

19. \(180^\circ − 43^\circ = 137^\circ\)
Solutions

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

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

22. $\frac{2}{3} \times \frac{2}{2} = \frac{4}{6}$
   $\frac{1}{2} \times \frac{3}{3} = \frac{3}{6}$
   $\frac{4}{6} \times \frac{3}{6} = \frac{1}{6}$

23. $\frac{3}{10} \times \frac{1}{3} = \frac{3}{30} = \frac{1}{10}$

24. $\frac{3}{4} + \frac{3}{5}$
   $\frac{3}{4} \times \frac{5}{3} = \frac{15}{12}$
   $\frac{15}{12} = 1 \frac{3}{4}$

25. $\frac{3}{10} \times \frac{3}{10} = \frac{3}{30} = \frac{1}{10}$

26. a. $12 \times 15 = 180$ tiles
   b. $12 \text{ ft} + 12 \text{ ft} + 15 \text{ ft} + 15 \text{ ft} = 54 \text{ feet}$

27. $V = l \times w \times h$
   $= 3 \times 2 \times 6$
   $= 36 \text{ ft}^3$

28. $\frac{12}{4}$
   $\frac{3}{2}$

   $15$
   $\frac{3}{5}$

   $12 = (2) \times (3)$
   $15 = 3 \times (5)$

   $2^2 \times 3 \times 5 = 60$

29. 110 minutes is 1 hour 50 minutes. Count on 1 hour from 6:45 to 7:45 and count on 50 minutes from 7:45 to 8:35. Then count on 40 minutes from 8:35 to 9:15 p.m.

30. Sample:

   See student work.

Lesson Practice 104

a. We divide the whole circle into pieces the same size as those in the divided circle (fourths), and then we count the total number of fourths.

   $\frac{4}{4} + \frac{3}{4} = \frac{7}{4} = 1 \frac{3}{4}$

b. We divide the whole circles into pieces the same size as those in the divided circle (halves), and then we count the total number of halves.

   $\frac{2}{2} + \frac{2}{2} + \frac{1}{2} = \frac{7}{2} = 3 \frac{1}{2}$

c. We divide the whole circles into pieces the same size as those in the divided circle (thirds), and then we count the total number of thirds.

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

d. Each whole is $\frac{2}{2}$, so the 4 of $4 \frac{1}{2}$ is equal to $\frac{2}{2} + \frac{2}{2} + \frac{2}{2}$, which is $\frac{8}{2}$. Then we add $\frac{8}{2}$ to $\frac{1}{2}$ and get $\frac{9}{2}$. 
e. Each whole is $\frac{3}{5}$, so the 1 of $1\frac{2}{3}$ is equal to $\frac{3}{3}$.
   Then we add $\frac{3}{5}$ to $\frac{2}{3}$ and get $\frac{5}{3}$.

f. Each whole is $\frac{4}{4}$, so the 2 of $2\frac{3}{4}$ is equal to
   $\frac{4}{4} + \frac{4}{4}$, which is $\frac{8}{4}$. Then we add $\frac{8}{4}$ to $\frac{3}{4}$ and get $\frac{11}{4}$.

g. Each whole is $\frac{8}{8}$, so the 3 of $3\frac{1}{8}$ is equal to
   $\frac{8}{8} + \frac{8}{8} + \frac{8}{8}$, which is $\frac{24}{8}$. Then we add $\frac{24}{8}$ to $\frac{1}{8}$ and get $\frac{25}{8}$.

h. We change the mixed number $3\frac{1}{4}$ to the improper fraction $\frac{13}{4}$ and then we multiply:
   \[ \frac{3}{1} \times \frac{13}{4} = \frac{39}{4} = 9\frac{3}{4} \]

i. We change $2\frac{1}{5}$ to the improper fraction $\frac{11}{5}$ and we change $2\frac{3}{5}$ to the improper fraction $\frac{13}{5}$.
   Then we multiply:
   \[ \frac{11}{5} \times \frac{5}{2} = \frac{55}{10} \]
   \[ = 5\frac{5}{10} = 5\frac{1}{2} \]

j. We change the mixed number $2\frac{2}{5}$ to the improper fraction $\frac{12}{5}$ and then we multiply.
   \[ \frac{8}{3} \times \frac{6}{1} = \frac{48}{3} = 16 \]

k. We change $3\frac{1}{2}$ to the improper fraction $\frac{7}{2}$ and then we divide.
   \[ \frac{16}{5} \div 2 \]
   \[ = \frac{16}{5} \times \frac{1}{2} = \frac{16}{10} \]
   \[ = 1\frac{6}{10} = 1\frac{3}{5} \]

l. We change $1\frac{1}{2}$ to the improper fraction $\frac{3}{2}$ and then we divide.
   \[ \frac{4}{1} \div \frac{3}{2} = \frac{8}{3} = 2\frac{2}{3} \]

m. We change $2\frac{1}{4}$ to the improper fraction $\frac{9}{4}$, and we change $1\frac{1}{8}$ to the improper fraction $\frac{9}{8}$.
   Then we divide.
   \[ \frac{9}{4} \div \frac{9}{8} = \frac{72}{36} = 2 \]
10. \[
\begin{align*}
  &\frac{59}{600} \\
  &- 4.32 \\
  &= 1.68
\end{align*}
\]

11. \[
\begin{align*}
  &0.12 \\
  \times &0.11 \\
  &= \frac{12}{10} \\
  \pm &= 120 \\
  0.0132
\end{align*}
\]

12. \[
\begin{align*}
  &0.28 \\
  \times &0.04 \\
  &= 0.0112
\end{align*}
\]

13. \[10 \times 0.25 = 2.5\]

14. \[
\begin{align*}
  19x &= 3705 \\
  x &= 195 \quad \left(\frac{19\times3705}{19}\right) \\
  &- 19 \\
  &180 \\
  &- 171 \\
  &95 \\
  &- 95 \\
  &0
\end{align*}
\]

15. Since \(20 \times 20\) is 400, then the square root of 400 is 20.

16. \[30 \cdot 30 = 900\]

17. \[
\begin{align*}
  \frac{5}{13} + \frac{10}{13} &= \frac{15}{13} = \frac{12}{13}
\end{align*}
\]

18. \[
\begin{align*}
  \frac{11}{12} - \frac{7}{12} &= \frac{4}{12} = \frac{1}{3}
\end{align*}
\]

19. (a) Multiples of 5: 5, 10, 15, 20, 25, 30, 35, 40, 45, ..., LCM = 40

(b) Multiples of 4: 4, 8, 12, 16, 20, 24, 28, 32, 40, ..., LCM = 40

(c) Multiples of 2: 2, 4, 6, 8, 10, 12, ..., LCM = 10

20. \[
\begin{align*}
  2 + \frac{5}{6} \\
  \frac{2}{1} \times \frac{6}{5} &= \frac{12}{5} = 2 \frac{2}{5}
\end{align*}
\]

21. \[
\begin{align*}
  \frac{5}{6} + 2 \\
  \frac{5}{6} \times \frac{1}{2} &= \frac{5}{12}
\end{align*}
\]

22. (a) \[
\begin{align*}
  &\frac{1}{50} \\
  &\frac{1}{25} \\
  &\frac{1}{14} \\
  &\pm \frac{1}{11} \\
  &= \frac{1}{100}
\end{align*}
\]

(b) A

(c) \(\frac{1}{2}\)

23. [Diagram]

24. (a) Greene, Bolden, Thompson

(b) \[
\begin{align*}
  &\frac{99}{10} \\
  &- 9.87 \\
  &= 0.17 \text{ second}
\end{align*}
\]

25. \(-1 + 1 = 0\)

26. The numbers 21, 22, and 24 have more than two factors; 23 is prime. 1 prime number; 3 composite numbers

27. \[
\begin{align*}
  \frac{2}{3} \text{ lb} + \frac{2}{3} \text{ lb} &= \frac{4}{3} \text{ lb or } 1\frac{1}{3} \text{ pounds}
\end{align*}
\]

28. \(22 + (-23) = -1\)

29. Sample: Use compatible numbers; since 277 is close to 280 and \(280 \div 4 = 70\), then Jessie made a reasonable estimate.

30. Since 1 batch requires \(2\frac{1}{4}\) cups, then 4 batches require \(4 \times \frac{2}{4}\) cups.

\[
\begin{align*}
  4 \times \frac{2}{4} &= \frac{8}{4} = \frac{36}{4} \text{ cups} = 9 \text{ cups}
\end{align*}
\]

**Early Finishers 104**

(a) Mr. Dunn will walk on January 1st, 5th, 9th, 13th, 17th, 21st, 25th, and 29th. Mr. Nguyen will walk on January 1st, 8th, 15th, 22nd, and 29th. They will both walk around the park on January 29th.

(b) Mr. Dunn will walk 8 times; Mr. Nguyen will walk 5 times. **Mr. Dunn**
Lesson Practice 105

a. The wall is 12 feet long and 10 feet wide. We use an area formula to find the amount of wallpaper needed.

\[ A = l \times w \]
\[ = 12 \text{ ft} \times 10 \text{ ft} \]
\[ = 120 \text{ ft}^2 \]

b. The toy box is 36 inches long, 30 inches wide, and has a height of 24 inches. We use a volume formula to find the capacity.

\[ V = l \times w \times h \]
\[ = 3 \text{ ft} \times 2.5 \text{ ft} \times 2 \text{ ft} \]
\[ = 15 \text{ ft}^3 \]

c. The house is 25 feet + 15 feet or 40 feet long. The house is 35 feet wide. We use a perimeter formula to find the perimeter.

\[ P = 2l + 2w \]
\[ = 2(40 \text{ ft}) + 2(35 \text{ ft}) \]
\[ = 80 \text{ ft} + 70 \text{ ft} \]
\[ = 150 \text{ ft} \]

Written Practice 105

1. \[ \begin{array}{c|c|c}
23 & 26 \text{ students} \\
25 & 378 \\
\hline
30 & -6 \\
\hline
78 & 18 \\
\hline
& -18 \\
\hline
& 0
\end{array} \]

2. \[ 1914 + 40 = 1954 \]

3. a. \[ 25\% = \frac{25}{100} = \frac{1}{4} \]
   b. \[ 50\% = \frac{50}{100} = \frac{1}{2} \]

4. a. \[ A = l \times w \]
   \[ = 6 \times 6 \]
   \[ = 36 \text{ cm}^2 \]
   b. \[ 6 \times 36 \text{ cm}^2 = 216 \text{ cm}^2 \]

5. \[ \frac{50}{100} = 50\%; \ 0.50; \frac{1}{2} \]

6. See student work.

7. a. \[ \frac{3}{5} \times 0.75 \]
   \[ = 10.50 = 10.5 \]

    b. \[ \frac{\$5}{48} \times 0.75 \]
   \[ = \frac{240}{3360} \]
   \[ = \$36.00 \]

8. a. Perimeter: \[ 3 + 3 + 2 + 2 + 3 + 3 + 2 \]
   \[ + 2 = 20 \text{ units} \]
   b. \[ 17 \text{ units}^2 \]

9. \[ \begin{array}{c|c|c|c}
15 & 3 & 5 \\
\hline
16 & \div & \div & \div \\
4 & 4 & 2 & 2 \\
\hline
15 & \div & \div & \div \\
3 & 5 & 16 & 2 \\
\hline
2^4 \times 3 \times 5 = 240
\end{array} \]

10. \[ 1.23 \times 10 = 12.3 \]

11. \[ 3.42 \times 1000 = 3420 \]

12. \[ \frac{5}{5} + \frac{5}{5} + \frac{5}{5} + \frac{2}{5} = 17 \div 5 = 3\frac{2}{5} \]

13. \[ 4.30 \times 0.7 \\
\[ = 3.09 \]

14. \[ 0.14 \times 0.6 \\
\[ = 0.084 \]

15. \[ \frac{4}{8} \times 0.7 \\
\[ = 0.336 \]

16. \[ 0.735 \times 10^2 = 73.5 \]

17. \[ \frac{3}{4} \times \frac{2}{8} = \frac{6}{8} \\
\[ = \frac{9}{8} = 1\frac{1}{8} \]
18. \[
\begin{array}{c}
250 \\
16 \times 10000 \\
- \underline{32} \\
\underline{80} \\
- \underline{80} \\
0 \\
0
\end{array}
\] = 120 ft²

19. \[A = l \times w\]
\[= 12 \times 10\]
\[= 120 \text{ ft}²\]

20. \[\begin{array}{c}
7 \\
11
\end{array}
\]
\[+ \begin{array}{c}
8 \\
11
\end{array}\]
\[\begin{array}{c}
15 \\
11
\end{array} = \begin{array}{c}
14 \\
11
\end{array}\]

21. \[\begin{array}{c}
3712
\end{array}
\]
\[+ \begin{array}{c}
112
\end{array}\]
\[\begin{array}{c}
3812 = \begin{array}{c}
323
\end{array}\]

22. \[\begin{array}{c}
5910
\end{array}
\]
\[- \begin{array}{c}
5310
\end{array}\]
\[- \begin{array}{c}
810 = \begin{array}{c}
35
\end{array}\]

23. \[\begin{array}{c}
72 \times \begin{array}{c}
12
\end{array}
\end{array} = \begin{array}{c}
74 = \begin{array}{c}
134
\end{array}\]

24. \[\begin{array}{c}
23 \div \begin{array}{c}
14
\end{array}
\end{array} = \begin{array}{c}
83 = \begin{array}{c}
23
\end{array}\]

25. \[\begin{array}{c}
3 \div \begin{array}{c}
34
\end{array}
\end{array} = \begin{array}{c}
13 = 4
\end{array}\]

26. \[\begin{array}{c}
\sqrt{9} + \sqrt{16} = \sqrt{9+16}
\end{array} = \begin{array}{c}
3 + 4 = \sqrt{25}
\end{array} = \begin{array}{c}
7 > 5
\end{array}\]

27. \[\begin{array}{c}
\frac{2}{12} \times \frac{100\%}{1} = \frac{200\%}{12}
\end{array} = \begin{array}{c}
\frac{168}{12} = 16\frac{2}{3}\%
\end{array}\]

28. Area of 1 wall:
\[A = l \times w\]
\[= 10 \times 8\]
\[= 80 \text{ ft}²\]
Area of 4 walls: \[4 \times 80 \text{ ft}² = 320 \text{ ft}²\]

29. a. The 10:10 a.m. flight arrives in Philadelphia before 8 p.m. and does not require Elizabeth to wake up early.

b. The 5:40 p.m. flight arrives in Los Angeles before 9 p.m. and leaves Philadelphia as late as possible.

c. Sample: Three hours of the difference can be attributed to the fact that Philadelphia is in a time zone that is 3 hours ahead of Los Angeles. About half an hour of difference may be due to the west-to-east direction of the jet stream.

30. \[\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}\] hour = 15 minutes

Lesson Practice 106

a. We can think of the figure as two rectangles, A and B.

\[\begin{array}{c}
6 \text{ cm}
\end{array} \]
\[\begin{array}{c}
16 \text{ cm}
\end{array} \]
\[\begin{array}{c}
A
\end{array} \]
\[\begin{array}{c}
16 \text{ cm}
\end{array} \]
\[\begin{array}{c}
B \quad 8 \text{ cm}
\end{array} \]
\[\begin{array}{c}
20 \text{ cm}
\end{array} \]

We find the area of each rectangle, and then add the areas to find the total area of the original figure.

Area A = 6 cm × 16 cm = 96 cm²
Area B = 8 cm × 20 cm = 160 cm²
Total area = 96 cm² + 160 cm² = 256 cm²

b. We subtract the area of the square from the area of the original rectangle.

Area of the square: 4 in. × 4 in. = 16 in²
Area of the rectangle: 10 in. × 12 in. = 120 in²
Area of the shaded region = 120 in² − 16 in²
= 104 in²
c. To find the perimeter, we will only use the outside measurements.

\[ P = 8 \text{ yd} + 6 \text{ yd} + 4 \text{ yd} + 3 \text{ yd} + 5 \text{ yd} + 6 \text{ yd} = 32 \text{ yd} \]

We can think of the figure as a rectangle and a triangle. We find the area of the rectangle and add it to the area of the triangle to find the total area of the original figure.

Area of rectangle: \(8 \text{ yd} \times 6 \text{ yd} = 48 \text{ yd}^2\)

Area of triangle: \(\frac{1}{2}(3)(4) = 6 \text{ yd}^2\)

Total area: \(48 \text{ yd}^2 + 6 \text{ yd}^2 = 54 \text{ yd}^2\)

The three angles of every triangle have measures that total 180°. The measure of angle \(x\) is \(180° - (90° + 53°)\) or \(37°\).

---

\(d.\) \(\left(\frac{-8}{9}\right) - \left(\frac{-2}{9}\right)\)

\[
\begin{align*}
\frac{-8}{9} + \frac{2}{9} &= \frac{10}{9} = 1 \frac{1}{9}
\end{align*}
\]

6. \(12 \frac{1}{2}\)

7. \(\frac{25}{100} = 25\%; 0.25; \frac{1}{4}\)

8. \(a.\) \(\frac{40}{100} = \frac{2}{5}\)

\[
\begin{align*}
\frac{2}{5} \times \frac{50}{1} &= \frac{2 \times 50}{5} = \frac{100}{5} = 20
\end{align*}
\]

\(b.\) \(90\% = \frac{90}{100} = \frac{9}{10}\)

\[
\begin{align*}
\frac{9}{10} \times \frac{300}{1} &= \frac{9 \times 300}{10} = 270
\end{align*}
\]

9. Perimeter: \(\frac{1}{2} \text{ in.} + \frac{1}{2} \text{ in.} + \frac{1}{2} \text{ in.} = 1 \frac{1}{2} \text{ in.}\)

10. Multiples of 6: 6, 12, 18, 24, ...
    Multiples of 9: 9, 18, 27, ...
    LCM of 6 and 9: 18

11. \(a.\) Multiples of 3: 3, 6, 9, 12, 15, 18, 21, 24, ...
    Multiples of 7: 7, 14, 21, 28, ...
    LCM of 3 and 7: 21

\(b.\) Multiples of 8: 8, 16, 24, 32, 40, 48, ...
    Multiples of 10: 10, 20, 30, 40, 50, ...
    LCM of 8 and 10: 40

12. \(9.2 - (4.2 + 3) = 2 \text{ cm}\)

13. \(2 \frac{1}{2} \times 4.380\)

\[
\begin{align*}
7.525 &+ \frac{9}{10} \\
44.605
\end{align*}
\]

14. \(5 - (4.3 - 0.21)\)

\[
\begin{align*}
5 - 4.09 &= 0.91
\end{align*}
\]

15. \(\frac{3}{6} \times 40\)

\[
\begin{align*}
144.0 &= 144
\end{align*}
\]

16. \(0.15 \times 0.5\)

\[
\begin{align*}
0.075
\end{align*}
\]

17. \(10 \times 0.125 = 1.25\)

18. \(4w = 300\)

Since \(300 \div 4 = 75\), then \(w = 75\).
19. 75
   40)3000
   -280
    200
    -200
     0
20. 132
   25)13300
    -25
     80
    -75
     50
    -50
     0
21. \(3\frac{3}{7} + \left(4\frac{7}{9} - 1\frac{2}{7}\right)\)
    \(3\frac{3}{7} + 3\frac{5}{7}\)
    \(6\frac{2}{7} = 7\frac{1}{7}\)
22. \(1\frac{1}{2} - \left(\frac{3}{1} \times \frac{1}{2}\right)\)
    \(1\frac{1}{2} - \frac{3}{2}\)
    \(1\frac{1}{2} - 1\frac{1}{2}\)
    \(0\)
23. a. \(3\frac{1}{2} \times 5\)
    \(\frac{7}{2} \times 5 = \frac{35}{2} = 17\frac{1}{2}\)
   b. \(3\frac{2}{3} \times 1\frac{1}{5}\)
    \(\frac{11}{3} \times \frac{6}{5} = \frac{66}{15} = 4\frac{2}{5}\)
24. A(0, 3), B(2, 0), C(2, 3)
25. Blue crate Green crate
    36 \times 32 \times 20 30 \times 30 \times 24
    36 \times 640 900 \times 24
    23,040 in\(^3\) 21,600 in\(^3\)
Blue crate
26. \(\frac{1}{8} \times \frac{100\%}{1} = \frac{100\%}{8}\)
    \(\frac{12\frac{4}{8}}{8}\) = \(12\frac{1}{2}\%\)
27. Area: 9 cm \times 7 cm = 63 cm\(^2\)
    Area: 3 cm \times 5 cm = 15 cm\(^2\)
    Total area: 63 cm\(^2\) + 15 cm\(^2\) = 78 cm\(^2\)
28. \(\frac{1}{2} \times \frac{3}{4} = \frac{3}{8}\) cup
29. Warmer; 10\(^\circ\)F
30. Area of rectangle: 8 cm \times 14 cm = 112 cm\(^2\)
    Area of triangle: \(\frac{1}{2}(12)(5) = 30\) cm\(^2\)
    Total area: 112 cm\(^2\) + 30 cm\(^2\) = 142 cm\(^2\)

Lesson Practice 107
a. 5
   1 \times 2
   6
b. 5 and 6
   \(\frac{1}{3} \preccurlyeq \frac{2}{5}\)
c. 15 and 16
   \(\frac{3}{4} \preccurlyeq \frac{4}{5}\)
d. 18 and 18
   \(\frac{2}{3} \preccurlyeq \frac{6}{9}\)
d. 15
\[
\begin{array}{ccc}
\frac{5}{6} & \times & \frac{2}{3} \\
\hline
\frac{3}{2} & \rightarrow & \frac{5}{3} \\
\hline
15 \text{ and } 12
\end{array}
\]

\[
\begin{array}{ccc}
\frac{5}{6} & \times & \frac{2}{3} \\
\hline
\frac{10}{18} & = & \frac{1}{3} \\
\hline
\text{and/or} \\
\frac{3}{8} & \times & \frac{3}{4} \\
\hline
\frac{3}{2} & \rightarrow & \frac{3}{4} \\
\hline
24 \text{ and } 24
\end{array}
\]

e. 24
\[
\begin{array}{ccc}
\frac{3}{4} & \times & \frac{3}{2} \\
\hline
\frac{9}{8} & = & \frac{3}{4} \\
\hline
24 \text{ and } 24
\end{array}
\]

\[
\begin{array}{ccc}
\frac{3}{4} & \times & \frac{3}{2} \\
\hline
\frac{9}{8} & = & \frac{3}{4} \\
\hline
24 \text{ and } 24
\end{array}
\]

f. 16
\[
\begin{array}{ccc}
\frac{2}{5} & \times & \frac{3}{8} \\
\hline
\frac{3}{5} & = & \frac{3}{8} \\
\hline
16 \text{ and } 15
\end{array}
\]

g. Multiply each fraction by a name for 1 that uses the denominator of the other fraction.
\[
\frac{2}{3} \times \frac{4}{4} = \frac{8}{12} \text{ and } \frac{1}{3} \times \frac{3}{3} = \frac{3}{12}
\]
\[
\frac{1}{2} \times \frac{1}{4} = \frac{1}{4}
\]

\[
\frac{3}{5} \times \frac{4}{4} = \frac{12}{20} \text{ and } \frac{3}{5} \times \frac{5}{5} = \frac{15}{20}
\]
\[
\frac{2}{3} \times \frac{1}{2} = \frac{3}{6}
\]

\[
\frac{3}{4} \times \frac{3}{3} = \frac{9}{12}
\]
\[
- \frac{1}{3} \times \frac{4}{4} = \frac{4}{12}
\]
\[
\frac{5}{12}
\]

\[
\frac{4}{5} \times \frac{4}{4} = \frac{16}{20}
\]
\[
+ \frac{3}{5} \times \frac{5}{5} = \frac{15}{20}
\]
\[
\frac{31}{20} = 1\frac{11}{20}
\]

\[
\frac{1}{2} \times \frac{3}{3} = \frac{3}{6}
\]
\[
+ \frac{1}{3} \times \frac{2}{2} = \frac{2}{6}
\]
\[
\frac{5}{6}
\]

m. \[
\frac{2}{5} \times \frac{6}{6} = \frac{12}{30}
\]
\[
- \frac{1}{6} \times \frac{5}{5} = \frac{5}{30}
\]
\[
\frac{7}{30}
\]

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

o. \[
\frac{3}{5} \times \frac{2}{2} = \frac{6}{10}
\]
\[
- \frac{1}{2} \times \frac{5}{5} = \frac{5}{10}
\]
\[
\frac{1}{10}
\]

Written Practice

1. See student work.

2. \[
\frac{600}{200} = \frac{120,000}{1000}
\]

3. a. \[
\frac{1}{10} = \frac{10}{100}
\]
   b. \[
\frac{1}{10} = \frac{10}{100} = 10%
\]

4. 108 pounds \div 6 = 18 pounds
   About 18 lb

5. \[
\frac{2}{2} + \frac{1}{2} = \frac{4}{2} = 2\frac{1}{2}
\]

6. a. Perimeter: 1 in. + 1 in. + 1 in. + 1 in.
   = 4 in; About 10 cm
   b. Area: 1 in. \times 1 in. = 1 in^2
   Area: 2.5 cm \times 2.5 cm = 6.25 cm^2; About
   6.25 cm^2

7. \[
\frac{3}{12} = \frac{1}{4} = 25%
\]

8. \[
P = 2l + 2w
\]
   = 2(10 ft) + 2(12 ft)
   = 20 ft + 24 ft
   = 44 ft

9. Multiples of 6: 6, 12, 18, 24, ...
   Multiples of 4: 4, 8, 12, 16, ...
   The LCM of 6 and 4 is 12.

10. \[
\frac{5}{6} = 5\frac{1}{3}
\]
11. \[ \frac{11}{4} \times 239 \]
   \[
   25,000 \\
   6,790 \\
   + 12,500 \\
   \mathbf{48,529}
   \]

12. \[ 6.875 - (4 - 3.75) \]
   \[
   6.875 - 0.25 \\
   \mathbf{6.625}
   \]

13. \[ \frac{5}{8} \times 3.7 \]
   \[
   \frac{5}{8} \times 0.8 \\
   \mathbf{2.96}
   \]

14. \[ 0.125 \times 100 = 12.5 \]

15. \[ 0.32 \times 0.04 \]
   \[
   0.0128
   \]

16. \[ \frac{24}{17} \div 108 \\
    - 34 \\
    \underline{68} \\
    - 68 \\
    \underline{0}
   \]

17. \[ \text{R 26} \]
   \[
   27 \div 705 \\
   - 54 \\
   \underline{165} \\
   - 162 \\
   \underline{3}
   \]

18. a. \[ \begin{array}{c}
   9 \\
   4 \\
   3 \\
   2 \\
   3
   \end{array} \]
   \[ \frac{3}{4} \times \frac{2}{3} \]
   \[ \frac{3}{4} \times \frac{2}{3} = \frac{3 \times 2}{4 \times 3} = \frac{6}{12} = \frac{1}{2} \]

b. \[ \begin{array}{c}
   6 \\
   1 \\
   3 \\
   2 \\
   6
   \end{array} \]
   \[ \frac{1}{3} \div \frac{2}{6} \]
   \[ \frac{1}{3} \div \frac{2}{6} = \frac{1 \times 6}{3 \times 2} = \frac{6}{6} = 1 \]

c. \[ \begin{array}{c}
   18 \\
   3 \\
   5 \\
   3 \\
   6
   \end{array} \]
   \[ \frac{3}{5} \div \frac{3}{6} \]
   \[ \frac{3}{5} \div \frac{3}{6} = \frac{3 \times 6}{5 \times 3} = \frac{6}{15} = \frac{2}{5} \]

19. a. \[ \frac{1}{3} \times \frac{2}{5} = \frac{1 \times 2}{3 \times 5} = \frac{2}{15} \]
   \[ \frac{1}{3} \times \frac{2}{5} = \frac{2}{15} \]

b. \[ \frac{3}{8} \times \frac{4}{4} = \frac{12}{32} \times \frac{8}{8} = \frac{24}{32} \]
   \[ \frac{3}{8} \times \frac{3}{4} \]

20. \[ \frac{5}{5} \div \frac{1}{5} \]
   \[ \frac{5}{5} \div \frac{1}{5} = \frac{5}{5} \times \frac{5}{1} = \frac{25}{5} = 5 \]

21. \[ \frac{6}{10} \div \frac{3}{10} \]
   \[ \frac{6}{10} \div \frac{3}{10} = \frac{6}{10} \times \frac{10}{3} = \frac{60}{30} = 2 \]

22. \[ \frac{5}{6} \times \frac{4}{1} = \frac{20}{6} = \frac{10}{3} \]
   \[ \frac{5}{6} \times \frac{1}{3} = \frac{5}{18} = \frac{3}{3} \]

23. \[
\begin{array}{c}
\text{Area of rectangle: } 12 \text{ cm} \times 19 \text{ cm} = 228 \text{ cm}^2 \\
\text{Area of triangle: } \frac{1}{2}(5)(12) = 30 \text{ cm}^2 \\
\text{Area of figure: } 228 \text{ cm}^2 - 30 \text{ cm}^2 = 198 \text{ cm}^2
\end{array}
\]

24. \[ \frac{3}{8} \div \frac{1}{2} \]
   \[ \frac{3}{8} \times \frac{2}{1} = \frac{6}{8} = \frac{3}{4} \]

25. \[ \frac{1}{6} \times \frac{2}{2} = \frac{2 \times 1}{12 \times 3} = \frac{2}{12} \]
   \[ \frac{2}{12} + \frac{3}{12} = \frac{5}{12} \text{ hr} \]
   \[ \frac{5}{12} \times \frac{60 \text{ min}}{1} = \frac{300 \text{ min}}{12} \]
   \[ \frac{300 \text{ min}}{12} = 25 \text{ min} \]

26. a. From 9:30 a.m. to 5:30 p.m. is 8 hours.

b. Count on 15 minutes from 1:40 p.m. to 1:55 p.m.

c. 320 miles \div 8 \text{ hr} = 40 \text{ miles per hour}. B
27. a. Volume: 5 ft × 2 ft × 3 ft = 30 ft³
   
b. Area: 5 ft × 2 ft = 10 ft²
   
c. Perimeter: 2(5 ft) + 2(2 ft) = 14 ft

28. Since Mackenzie sold 10, then Stephanie sold 2 × 10 or 20. Since Shaquana sold 20, then Cherise sold 20 + 4 or 24 shirts.

29. Yes; sample: \(2\frac{1}{4} + 3\frac{3}{4} = 5\frac{4}{4}\) and \(5\frac{4}{4}\) is equal to \(5 + 1\) or 6.

30. a. 243
   
   \[\begin{array}{ccc}
   243 & 218 \frac{1}{4} \\
   230 & 4 \frac{1}{8} \\
   220 & -8 \\
   + 180 & -4 \\
   873 & -32 \\
   \end{array}\]

   b. Range: 243 days – 180 days = 63 days

31. a. Two sheets of foolscap have an area of
   
   \[2 \times 13\frac{1}{2} \text{ in.} \times 17 \text{ in.} = 459 \text{ in}^2.\]
   
   One sheet of atlas paper has an area of 26 in. × 34 in.
   
   \[= 884 \text{ in}^2, \text{ so one sheet of atlas paper has a greater area.}\]
   
   b. No. 27 in. × 40 in. = 1080 in², which is less than 2 × 23 in. × 28 in. = 1288 in².

32. a. We list the first few multiples of 2 and 6, and then we identify the least number that is common to both lists.
   
   Multiples of 2: 2, 4, 6, ...
   
   Multiples of 6: 6, 12, 18, ...

   The least common denominator is 6. Since the denominator of \(\frac{3}{6}\) is the least common denominator, we only need to change \(\frac{1}{2}\) to sixths.

   \[\frac{1}{2} \times \frac{3}{3} = \frac{3}{6}\]

   Since \(\frac{3}{6} < \frac{5}{6}\), then \(\frac{1}{2} < \frac{5}{6}\).

   b. We list the first few multiples of 8 and 4, and then we identify the least number that is common to both lists.
   
   Multiples of 8: 8, 16, 24, ...
   
   Multiples of 4: 4, 8, 12, ...

   The least common denominator is 8. Since the denominator of \(\frac{4}{8}\) is the least common denominator, we only need to change \(\frac{1}{2}\) to eightths.

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

   We add the fractions.

   \[\frac{3}{8} + \frac{4}{8} = \frac{7}{8}\]

   e. We list the first few multiples of 3 and 6, and then we identify the least number that is common to both lists.
   
   Multiples of 3: 3, 6, 9, ...
   
   Multiples of 6: 6, 12, 18, ...
The least common denominator is 6. Since the denominator of \( \frac{1}{6} \) is the least common denominator, we only need to change \( \frac{1}{3} \) to sixths.

\[
\frac{1}{3} \times \frac{2}{2} = \frac{2}{6}
\]

We subtract the fractions.

\[
\frac{2}{6} - \frac{1}{6} = \frac{1}{6}
\]

f. We list the first few multiples of 8 and 4, and then we identify the least number that is common to both lists.

Multiples of 8: 8, 16, 24, ...
Multiples of 4: 4, 8, 12, ...

The least common denominator is 8. Since the denominator of \( \frac{5}{8} \) is the least common denominator, we only need to change \( \frac{1}{4} \) to eighths.

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

We add the fractions.

\[
\frac{5}{8} + \frac{2}{8} = \frac{7}{8}
\]

g. We list the first few multiples of 9 and 3, and then we identify the least number that is common to both lists.

Multiples of 9: 9, 18, 27, ...
Multiples of 3: 3, 6, 9, ...

The least common denominator is 9. Since the denominator of \( \frac{8}{9} \) is the least common denominator, we only need to change \( \frac{1}{3} \) to ninths.

\[
\frac{1}{3} \times \frac{3}{3} = \frac{3}{9}
\]

We subtract the fractions.

\[
\frac{8}{9} - \frac{3}{9} = \frac{5}{9}
\]

h. We list the first few multiples of 6 and 12, and then we identify the least number that is common to both lists.

Multiples of 6: 6, 12, 18, 24, ...
Multiples of 12: 12, 24, 36, ...

The least common denominator is 12. Since the denominator of \( \frac{7}{12} \) is the least common denominator, we only need to change \( \frac{1}{6} \) to twelfths.

\[
\frac{1}{6} \times \frac{2}{2} = \frac{2}{12}
\]

We add the fractions then simplify.

\[
\frac{2}{12} + \frac{7}{12} = \frac{9}{12} = \frac{3}{4}
\]

i. We list the first few multiples of 3 and 12, and then we identify the least number that is common to both lists.

Multiples of 3: 3, 6, 9, 12, ...
Multiples of 12: 12, 24, 36, ...

The least common denominator is 12. Since the denominator of \( \frac{5}{12} \) is the least common denominator, we only need to change \( \frac{2}{3} \) to twelfths.

\[
\frac{2}{3} \times \frac{4}{4} = \frac{8}{12}
\]

We subtract the fractions and then simplify.

\[
\frac{8}{12} - \frac{5}{12} = \frac{3}{12} = \frac{1}{4}
\]

j. No; sample: The first multiple of any number is the number itself. The first multiple of 5 is 5.

k. Sample: The least common denominator will be equal to the least common multiple.
b. The least common denominator is 6.
\[
\frac{2}{3} \times \frac{2}{4} = \frac{4}{6} \\
4 + 1 = 5 \\
6 + 6 = 6
\]
c. The least common denominator is 8.
\[
\frac{1}{2} \times \frac{4}{4} = \frac{4}{8} \\
4 + 2 = 6 \\
8 + 8 = 8
\]
10. \[
\frac{211}{1} \\
45.000 \\
16.700 \\
8.290 \\
+ 4.325 \\
\frac{74.315}{5}
\]
11. \[
4.2 - (3.2 - 1) \\
4.2 - 2.2 = 2
\]
12. \[
0.75 \\
\times 0.05 \\
\frac{0.0375}{5}
\]
13. \[
\frac{3}{8} \\
\times 0.6 \\
\frac{22.8}{8}
\]
14. \[
100 \times 7.5 = 750
\]
15. \[
\frac{1}{6} \times \frac{100}{1} = \frac{100}{6} \\
16\frac{4}{3} = 16\frac{2}{3}
\]
25. \[
\frac{1}{6} \times \frac{100}{1} = \frac{100}{6} \\
6 \frac{100}{6} = 6 \frac{2}{3}
\]
26. 5; sample: Double 7 is 14 and double 8 is 16, so double 7 is about 15 and 15 + 3 is 5.
27. a. The least common denominator is 8.
\[
\frac{7}{9} \times \frac{2}{2} = \frac{14}{18} \\
\frac{4}{8} \times \frac{3}{3} = \frac{12}{18}
\]
\[
\frac{7}{9} \geq \frac{4}{6}
\]
18. \[
5\frac{4}{9} + 3\frac{5}{9} = 8\frac{9}{9} = 9
\]
19. \[
4 \div \frac{1}{8} = \frac{32}{1} = 32
\]
20. \[
\frac{4}{1} \div \frac{1}{8} = \frac{4}{8} = \frac{1}{2}
\]
21. \[
\frac{18}{30} = \frac{3}{5}
\]
22. a. \[
\frac{3}{3} \times \frac{30}{100} = \frac{30}{30} = 30\%
\]
b. \[
\frac{7}{10} = \frac{70}{100} = 70\%
\]
23. a. \[
60\% = \frac{60}{100} = \frac{3}{5}
\]
b. \[
70\% = \frac{70}{100} = \frac{7}{10}
\]
24. a. \[
(12 \text{ in.} + 12 \text{ in.} + 6 \text{ in.} + 6 \text{ in.}) \div 4 = 9 \text{ in.}
\]
b. Area: \[
6 \text{ in.} \times 16 \text{ in.} = 72 \text{ in}^2
\]
c. Area: \[
9 \text{ in.} \times 9 \text{ in.} = 81 \text{ in}^2
\]
25. \[
\frac{1}{6} \times \frac{100}{1} = \frac{100}{6} \\
16\frac{4}{3} = 16\frac{2}{3}
\]
26. 5; sample: Double 7 is 14 and double 8 is 16, so double 7 is about 15 and 15 + 3 is 5.
27. a. The least common denominator is 8.
\[
\frac{7}{8} \geq \frac{4}{8}
\]
\[
\frac{7}{8} \geq \frac{4}{8}
\]
27. b. The least common denominator is 15.
\[
\frac{4}{3} \times \frac{3}{5} = \frac{12}{15} \\
\frac{3}{5} \times \frac{5}{5} = \frac{15}{15}
\]
\[
\frac{12}{15} \\
\frac{5}{15} \\
\frac{7}{15}
\]
Saxon Math Intermediate 5 229 © Harcourt Achieve Inc. and Stephen Hake. All rights reserved.
Solutions

c. The least common denominator is 9.
\[ \frac{2}{3} \times \frac{3}{3} = \frac{6}{9} \]

\[ \frac{6}{9} \]

\[ + \frac{1}{9} \]

\[ \frac{7}{9} \]

28. \( 3 + (-10) = -7 \)

29. 400 in\(^3\); sample: Use rounding and compatible numbers; since \( 11 \frac{3}{8} \) rounds to 11, \( 8 \frac{3}{4} \) rounds to 9, and the product of 11 \times 9 is 99 in\(^2\) (about 100 in\(^2\)), then a reasonable estimate is 100 in\(^2\) \times 4 in or about 400 in\(^3\).

30. a. Area of large square: 6 cm \times 6 cm
   \[ = 36 \text{ cm}^2 \]
   Area of small square: 3 cm \times 3 cm
   \[ = 9 \text{ cm}^2 \]

   b. \( 36 \text{ cm}^2 + 9 \text{ cm}^2 = 45 \text{ cm}^2 \)

Lesson Practice 109

a. We place the decimal point in the answer “straight up” and then divide.

\[ 0.13 \]

\[ 4 \overline{)0.52} \]

\[ -4 \]

\[ -12 \]

\[ -12 \]

\[ 0 \]

b. \( 0.6 \)

\[ 6 \overline{)3.6} \]

\[ -3.6 \]

\[ 0 \]

c. We rewrite the problem with a division box.

\[ 0.17 \]

\[ 5 \overline{)0.85} \]

\[ -5 \]

\[ 35 \]

\[ -35 \]

\[ 0 \]

d. \( 1.5 \)

\[ 5 \overline{)7.5} \]

\[ -5 \]

\[ 25 \]

\[ -25 \]

\[ 0 \]

e. \( 0.13 \)

\[ 5 \overline{)0.65} \]

\[ -5 \]

\[ 15 \]

\[ -15 \]

\[ 0 \]

f. \( 0.7 \)

\[ 3 \overline{)2.1} \]

\[ -2 \]

\[ 1 \]

\[ 0 \]

g. \( 0.04 \)

\[ 4 \overline{)0.16} \]

\[ -0 \]

\[ 16 \]

\[ -16 \]

\[ 0 \]

h. \( 0.05 \)

\[ 7 \overline{)0.35} \]

\[ -0 \]

\[ 35 \]

\[ -35 \]

\[ 0 \]

i. \( 0.0005 \)

\[ 5 \overline{)0.0025} \]

\[ -0 \]

\[ 25 \]

\[ -25 \]

\[ 0 \]

j. \( 0.02 \)

\[ 4 \overline{)0.08} \]

\[ -8 \]

\[ 0 \]

k. \( 0.04 \)

\[ 6 \overline{)0.24} \]

\[ -0 \]

\[ 24 \]

\[ -24 \]

\[ 0 \]

l. \( 0.0048 \)

\[ 3 \overline{)0.0144} \]

\[ -0 \]

\[ 14 \]

\[ -12 \]

\[ 24 \]
m. 1.89; About 1.89 liters

2 | 3.78
-2
1 7
-1 6
18
-18
0

n. We round 11.76 to 12 and divide, 12 ÷ 3 is 4. To find the exact quotient, we write the problem with a division box.

3.92
3|11.76
- 9
2 7
- 2 7
6
- 6
0

Written Practice

1. 7% = \frac{7}{100} = 0.07

\$4.50
\times 0.07
Tax = $31.50

\$450.00
+ $31.50
Total = $481.50

2. \frac{2}{2} + \frac{2}{2} + \frac{1}{2} = \frac{5}{2} = 2 \frac{1}{2}

3. a. Since sector A represents \frac{1}{2} of the spinner, then the probability is \frac{1}{2}.

b. Since sector B represents \frac{1}{4} of the spinner, then the probability is \frac{1}{4}.

4. a. \frac{4}{5} \times \frac{3}{3} = \frac{12}{15}

- \frac{2}{3} \times \frac{5}{5} = \frac{10}{15}

\frac{2}{15}

b. \frac{5}{6} \times \frac{3}{3} = \frac{15}{18}

+ \frac{1}{3} \times \frac{5}{5} = \frac{6}{18}

\frac{21}{18} = 1 \frac{1}{6}

5. Count on 1 hour from 11:40 a.m. to 12:40 p.m. Count on 30 minutes from 12:40 p.m. to 1:10 p.m.

6. The least common denominator is 30.

\frac{9}{10} \times 3 = \frac{27}{30} \times \frac{2}{10} = \frac{20}{30}

Since \frac{27}{30} > \frac{20}{30}, then \frac{9}{10} > \frac{2}{3}.

Moeshia studied longer.

7. Multiples of 5: 5, 10, 15, ...
Multiples of 3: 3, 6, 9, 12, 15, ...
The LCM of 5 and 3 is 15.

8. a. Perimeter: 4 m + 4 m + 3 m + 3 m = 14 m

b. Area: 4 m \times 3 m = 12 m^2

9. \frac{1}{2} \times 10 = \frac{10}{20} = 0.50
50.000
+ 23.500
+ 0.025
116.505

10. \frac{5}{8} \times 1.5
- 5.18
0.82

Eighty two hundredths

11. 0.375 \times 10 = 3.75

12. \frac{2}{14} \times \frac{0.06}{0.0084}

13. \frac{7}{8} \times 1.9
702
+ 790
148.2

14. \frac{78}{30} = \frac{2340}{90} = \frac{240}{240}

- 210
- 240
0
15. \[\frac{130}{2340} \]
\[\begin{array}{c}
18 \\
-18 \\
54 \\
-54 \\
0 \\
-0 \\
0
\end{array}\]

16. \[\frac{1.27 \text{ cm}}{2/2.54} \]
\[\begin{array}{c}
-2 \\
5 \\
-4 \\
14 \\
-14 \\
0
\end{array}\]

17. The least common denominator is 10.
\[\frac{1}{2} \times \frac{5}{5} = \frac{5}{10} \]
\[\frac{2}{3} + \frac{9}{10} = \frac{8}{10} = \frac{4}{5} \]

18. The least common denominator is 12.
\[\frac{2}{3} \times \frac{8}{12} = \frac{16}{36} \]
\[\frac{7}{12} \times \frac{3}{12} = \frac{1}{4} \]

19. \[\frac{4}{5} \times \frac{2}{5} = \frac{8}{15} \]

20. \[\frac{4}{5} \times \frac{1}{2} = \frac{2}{5} \]
\[\frac{3}{2} \times \frac{2}{3} = \frac{1}{1} = \frac{1}{1} \]

21. \[\frac{2}{5} = \frac{6}{15} \]

22. \[\frac{2}{3} = \frac{10}{15} \]

23. \[\frac{6}{15} + \frac{10}{15} = \frac{16}{15} = 1\frac{1}{15} \]

24. a. \[0.081 \]
\[\begin{array}{c}
2 \times 0.162 \\
0 \\
16 \\
-16 \\
2 \\
-2 \\
0
\end{array}\]

b. \[0.88 \]
\[\begin{array}{c}
4 \times 3.52 \\
3 \times 2 \\
32 \\
-32 \\
0
\end{array}\]

25. a. \[\text{Area: } 1 \text{ ft} \times 2 \text{ ft} \times 3 \text{ ft} \]
\[= 5 \text{ ft}^2 \]

b. \[1 \text{ ft} + 2 \text{ ft} + 2 \text{ ft} + 1 \text{ ft} + 3 \text{ ft} + 3 \text{ ft} \]
\[= 12 \text{ ft} \]

26. Area: \[\frac{1}{2} \times \frac{1}{4} = \frac{1}{8} \text{ mi}^2 \]

27. Sample: Sasha's answer is reasonable because \(4\frac{1}{8}\) is close to 4, and 1 subtracted from the product of \(4 \times 3\) is 11.

28. \[-24 + 7 = -17 \]

29. a. The rectangular faces have parallel line segments. Yes

b. Two rectangular faces form a right angle. Yes

30. \[\begin{array}{c}
\text{Perimeter: } 9 \text{ cm} + 6 \text{ cm} + 6 \text{ cm} + 3 \text{ cm} + 3 \text{ cm} + 3 \text{ cm} = 30 \text{ cm}
\end{array}\]

Lesson Practice

a. As we divide, we attach a zero and continue dividing.

\[0.15 \]
\[\begin{array}{c}
4 \times 0.60 \\
-4 \\
20 \\
-20 \\
0
\end{array}\]
b. \(0.024\)
\[
\begin{array}{c}
5)0.120 \\
 0 \\
12 \\
-10 \\
20 \\
-20 \\
0
\end{array}
\]

c. \(0.025\)
\[
\begin{array}{c}
4)0.100 \\
0 \\
10 \\
-8 \\
20 \\
-20 \\
0
\end{array}
\]

d. \(0.05\)
\[
\begin{array}{c}
2)0.10 \\
0 \\
10 \\
-10 \\
0
\end{array}
\]

e. \(0.08\)
\[
\begin{array}{c}
5)0.40 \\
0 \\
40 \\
-40 \\
0
\end{array}
\]

f. \(0.175\)
\[
\begin{array}{c}
8)1.400 \\
-8 \\
60 \\
-56 \\
40 \\
-40 \\
0
\end{array}
\]

g. \(0.125\)
\[
\begin{array}{c}
4)0.500 \\
-4 \\
10 \\
-8 \\
20 \\
-20 \\
0
\end{array}
\]

h. \(0.075\)
\[
\begin{array}{c}
8)0.600 \\
0 \\
60 \\
-56 \\
40 \\
-40 \\
0
\end{array}
\]

i. \(0.075\)
\[
\begin{array}{c}
4)0.300 \\
0 \\
30 \\
-28 \\
20 \\
-20 \\
0
\end{array}
\]

j. To divide by 10, we shift the decimal point one place to the left.
\(2.5 \div 10 = 0.25\)

k. To divide by 10, we shift the decimal point one place to the left.
\(32.4 \div 10 = 3.24\)

l. To divide by 100, we shift the decimal point two places to the left.
\(2.5 \div 100 = 0.025\)

m. To divide by 100, we shift the decimal point two places to the left.
\(32.4 \div 100 = 0.324\)

n. To divide by 1000, we shift the decimal point three places to the left.
\(2.5 \div 1000 = 0.0025\)

o. To divide by 100, we shift the decimal point two places to the left.
\(32.4 \div 1000 = 0.0324\)

p. To divide by 10, we shift the decimal point one place to the left.
\(12 \div 10 = 1.2\)

q. To divide by 100, we shift the decimal point two places to the left.
\(12 \div 100 = 0.12\)

r. To divide by 1000, we shift the decimal point three places to the left.
\(12 \div 1000 = 0.012\)

s. Sample: Quotients are usually written as mixed numbers when dividends and divisors are mixed numbers.
t. Sample: Quotients representing amounts of money are usually written as decimal numbers.

Written Practice 110

1. \[
\begin{align*}
\frac{5}{6} \times 100\% &= 83\overline{3}\% \\
61500 \div 42 &= 1455 \\
20 - 18 &= 2
\end{align*}
\]

2. \[1843 - 1797 = 46 \text{ years}\]

3. a. \[\frac{1}{4} = \frac{25}{100} = 25\%\]
   b. \[\frac{3}{4} = \frac{75}{100} = 75\%\]

4. \[70\% = \frac{70}{100} = 0.7\]
   \[110 \times 0.7 = 77\text{.0} = 77 \text{ free throws}\]

5. The least common denominator is 6.
   \[\frac{2}{3} \times \frac{2}{2} = \frac{4}{6}\]
   Since \[\frac{4}{6} < \frac{5}{6}\], then \[\frac{4}{3} < \frac{5}{6}\],
   \[\frac{4}{3} \not< \frac{5}{6}\]

6. \[\frac{4}{4} + \frac{4}{4} + \frac{1}{4} = \frac{9}{4} = 2\frac{1}{4}\]

7. \[\frac{3}{100} = \frac{3}{5}\]

8. a. Perimeter: \[0.5 \text{ cm} + 0.5 \text{ cm} + 0.5 \text{ cm} + 0.5 \text{ cm} = 2 \text{ cm}\]
   b. \[A = l \times w\]
      \[0.5 \text{ cm} \times 0.5 \text{ cm} = 0.25 \text{ cm}^2\]

9. \[V = l \times w \times h\]
   \[= 45 \times 22 \times 15\]
   \[= 14,850 \text{ in}^3\]

10. \[\frac{1}{4} \times \frac{3}{4} = \frac{2}{8}\]
    \[\frac{8}{8} + \frac{1}{8} = \frac{3}{8}\]

11. \[\frac{1}{2} = \frac{2}{4}\]
    \[\frac{3}{4} - \frac{2}{4} = \frac{1}{4}\]

12. \[\frac{3}{4} = \frac{6}{8}\]
    \[\frac{7}{8} - \frac{6}{8} = \frac{1}{8}\]

13. a. \[\frac{1}{3} - \frac{2}{6} = \frac{3}{6} = \frac{1}{2}\]
    b. \[\frac{1}{7} - \frac{4}{8} = \frac{3}{8}\]
    c. \[\frac{1}{12} - \frac{3}{12} = \frac{8}{12} = \frac{2}{3}\]

14. \[0.9 \text{ m}\]
   \[2 \div 1.8 - 1.8 = 0\]

15. a. \[0.016\]
    \[6 \div 0.80\]
    \[-5 - 30 - 30 - 0\]
    b. \[0.05\]
    \[6 \div 0.30\]
    \[-5 - 0 - 30 - 0\]
    c. \[0.12\]
    \[5 \div 0.60\]
    \[-5 - 10 - 10 - 0\]

16. \[\frac{3}{5} \times \frac{3}{1} = \frac{9}{5} = 1\frac{4}{5}\]

17. \[3 \div \frac{3}{5}\]
   \[\frac{3}{1} \times \frac{5}{3} = \frac{15}{3} = 5\]

18. \[6.5 \times 100 = 650\]

19. \[\frac{4}{4.6} \times 80\]
   \[368.0 = 368\]

20. \[0.3 \times 0.4 = 0.072\]
21. a. \(1.2 \div 10 = 0.12\)
   b. \(1.2 \div 100 = 0.012\)

22. a. \[\begin{array}{c}
0.06 \\
4 \_
\end{array}\]

\[\begin{array}{c}
0.24 \\
-0 \\
24 \\
-24 \\
0
\end{array}\]

b. \[\begin{array}{c}
0.048 \\
5 \_
\end{array}\]

\[\begin{array}{c}
0.24 \\
-0 \\
24 \\
-20 \\
40 \\
-40 \\
0
\end{array}\]

23. a. \[
\begin{array}{c}
0.2 \\
7 \_
\end{array}\]

\[
\begin{array}{c}
1.4 \\
-1.4 \\
0
\end{array}\]

b. \[
\begin{array}{c}
0.175 \\
8 \_
\end{array}\]

\[
\begin{array}{c}
1.400 \\
-8 \\
-60 \\
-56 \\
-40 \\
-40 \\
0
\end{array}\]

24. \(\angle ADC\) (or \(\angle CDA\))

\[
\frac{1}{3} \times \frac{3}{4} = \frac{3 \times \frac{3}{4}}{4} = \frac{8}{12}
\]

25. \[
\frac{1}{4} \times \frac{3}{3} + \frac{8}{12} = \frac{11}{12}
\]

26. \[
\begin{array}{c}
4 \text{ ft} \\
\hline
3 \text{ ft} \\
\hline
2 \text{ ft}
\end{array}
\]

Area of rectangle: \(2 \text{ ft} \times 4 \text{ ft} = 8 \text{ ft}^2\)
Area of square: \(3 \text{ ft} \times 3 \text{ ft} = 9 \text{ ft}^2\)
Total area: \(8 \text{ ft}^2 + 9 \text{ ft}^2 = 17 \text{ ft}^2\)

27. No; sample: The division \(85 \div 12\) produces a remainder.

28. 360 miles; sample: Use compatible numbers; since 11.7 is close to 12 and 29 is close to 30, a reasonable estimate is \(12 \times 30\) or 360.

29. \(\frac{2}{3} + \frac{3}{4}\) is greater; sample: Since \(\frac{2}{3}\) and \(\frac{3}{4}\) are both greater than \(\frac{1}{2}\), then the sum will be greater than \(\frac{1}{2} + \frac{1}{2}\) or 1. Since \(\frac{3}{8}\) and \(\frac{2}{5}\) are both less than \(\frac{1}{2}\), the sum will be less than \(\frac{1}{2} + \frac{1}{2}\) or 1.

30. a. \(61.7 \div 100 = 0.617\)
   b. \(61.7 \div 10 = 6.17\)
   c. \(61.7 \div 1000 = 0.0617\)

Early Finishers
To reach the top in three days, we divide 4202.76 feet by 3.

1400.92 feet per day

To climb down in two days, we divide 4202.76 by 2.

2101.38 feet per day

Investigation 11

1. The x-coordinate is -2 and the y-coordinate is -4. (-2, -4)
2. (-2, 0), (-1, 1), (0, 2), (1, 3), (2, 4)
3. Sample: (-4, -2)