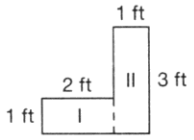
24. a. $2\frac{1}{2}$ inches; $5 \times \frac{1}{2}$ in. $= \frac{5}{2}$ in. $= 2\frac{1}{2}$ in.

b. Since a regular polygon has sides that are all the same length, I found the length of one side and multiplied by 5.

c. 5 lines of symmetry

25. a. 5 sq. ft;



Area I	1 ft × 2 ft = 2 sq. ft
+ Area II	3 ft × 1 ft = 3 sq. ft
	5 sq. ft

b. 12 ft; $P = 3$ ft $+ 3$ ft $+ 1$ ft $+ 2$ ft $+ 2$ ft $+ 1$ ft $= 12$ ft

26. $\frac{1}{8}$ of a sq. mi; $\frac{1}{2}$ mi. $\times \frac{1}{4}$ mi. $= \frac{1}{8}$ sq. mi.

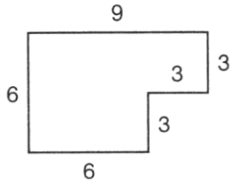
27. Sandie's answer is reasonable because $4\frac{1}{8}$ is close to 4, and 1 subtracted from the product of 4 × 3 is 11.

28. See student work.

29. a. Yes; the rectangular faces have edges that are parallel.

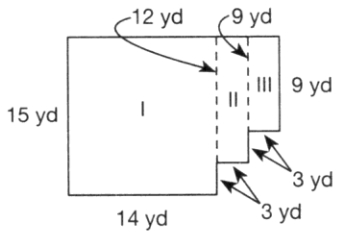
b. Yes; two rectangular faces have edges that are perpendicular.

30. 30 cm; $P = 6 + 6 + 3 + 3 + 3 + 9 = 30$;



Early Finishers

273 yd²;



Area I	15 yd × 14 yd = 210 yd²
Area II	12 yd × 3 yd = 36 yd²
+ Area III	9 yd × 3 yd = 27 yd²
	273 yd²

Lesson Practice 116

a. $\frac{7}{12} < \frac{2}{3}$; more time reading; rewriting fractions with common denominators can help us compare fractions. The denominators are 12 and 3, so the common denominator is 12. To change thirds to twelfths we multiply by $\frac{4}{4}$. $\frac{2}{3} \times \frac{4}{4} = \frac{8}{12}$. We see that $\frac{7}{12}$ is less than $\frac{8}{12}$. We can also express the comparison with a less than sign; $\frac{7}{12} < \frac{8}{12}$

b. $\frac{2}{5} > \frac{1}{3}$; rewriting fractions with common denominators can help us compare fractions. The denominators are 5 and 3, so the common denominator is 15. $\frac{2}{5} \times \frac{3}{3} = \frac{6}{15}$ and $\frac{1}{3} \times \frac{5}{5} = \frac{5}{15}$. We see that $\frac{6}{15}$ is greater than $\frac{5}{15}$. We can also express the comparison with a greater than sign; $\frac{6}{15} > \frac{5}{15}$.

c. Neither; both Larry and Barry carried the tent half the distance.

d. $\frac{5}{8}$;
$$\begin{array}{rl} \frac{1}{2} \times \frac{4}{4} = & \frac{4}{8} \\ + \frac{1}{8} \longrightarrow & \frac{1}{8} \\ \hline & \frac{5}{8} \end{array}$$

e. $\frac{1}{4}$;
$$\begin{array}{rl} \frac{1}{2} \times \frac{2}{2} = & \frac{2}{4} \\ - \frac{1}{4} \longrightarrow & \frac{1}{4} \\ \hline & \frac{1}{4} \end{array}$$

f. $\frac{7}{8}$;
$$\begin{array}{rl} \frac{3}{4} \times \frac{2}{2} = & \frac{6}{8} \\ + \frac{1}{8} \longrightarrow & \frac{1}{8} \\ \hline & \frac{7}{8} \end{array}$$

g. $\frac{5}{9}$;
$$\begin{array}{rl} \frac{2}{3} \times \frac{3}{3} = & \frac{6}{9} \\ - \frac{1}{9} \longrightarrow & \frac{1}{9} \\ \hline & \frac{5}{9} \end{array}$$

h. $\frac{7}{12}$;
$$\begin{array}{rl} \frac{1}{3} \times \frac{4}{4} = & \frac{4}{12} \\ + \frac{1}{4} \times \frac{3}{3} = & \frac{3}{12} \\ \hline & \frac{7}{12} \end{array}$$

i. $\frac{1}{6}$;
$$\begin{array}{rl} \frac{1}{2} \times \frac{3}{3} = & \frac{3}{6} \\ - \frac{1}{3} \times \frac{2}{2} = & \frac{2}{6} \\ \hline & \frac{1}{6} \end{array}$$

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j. $5\frac{3}{4}$; $3\frac{1}{4} \longrightarrow 3\frac{1}{4}$
$+\ 2\frac{1}{2} \times \frac{2}{2} = 2\frac{2}{4}$
$5\frac{3}{4}$

k. $7\frac{5}{8}$; $2\frac{1}{8} \longrightarrow 2\frac{1}{8}$
$+\ 5\frac{1}{2} \times \frac{4}{4} = 5\frac{4}{8}$
$7\frac{5}{8}$

l. $2\frac{1}{3}$; $3\frac{1}{2} \times \frac{3}{3} = 3\frac{3}{6}$
$-\ 1\frac{1}{6} \longrightarrow 1\frac{1}{6}$
$2\frac{2}{6} = 2\frac{1}{3}$

m. $\frac{1}{4}$; $2\frac{3}{4} \longrightarrow 2\frac{3}{4}$
$-\ 2\frac{1}{2} \times \frac{2}{2} = 2\frac{2}{4}$
$\frac{1}{4}$

n. $6\frac{7}{8}$; $5\frac{5}{8} \longrightarrow 5\frac{5}{8}$
$+\ 1\frac{1}{4} \times \frac{2}{2} = 1\frac{2}{8}$
$6\frac{7}{8}$

o. $4\frac{5}{6}$; $3\frac{1}{2} \times \frac{3}{3} = 3\frac{3}{6}$
$+\ 1\frac{1}{3} \times \frac{2}{2} = 1\frac{2}{6}$
$4\frac{5}{6}$

p. $3\frac{1}{12}$; $4\frac{3}{4} \times \frac{3}{3} = 4\frac{9}{12}$
$-\ 1\frac{2}{3} \times \frac{4}{4} = 1\frac{8}{12}$
$3\frac{1}{12}$

q. $3\frac{3}{10}$; $4\frac{1}{2} \times \frac{5}{5} = 4\frac{5}{10}$
$-\ 1\frac{1}{5} \times \frac{2}{2} = 1\frac{2}{10}$
$3\frac{3}{10}$

Written Practice 116

1. $83\frac{1}{3}$%;

2. **26 years;** 1875 − 1849 = 26 years

3. a. **25%;** $\frac{1}{4} = 25\%$

   b. $\frac{3}{4}$

4. **D**

5. $\frac{4}{6} < \frac{5}{6}$; rewriting fractions with common denominators can help us compare fractions. The denominators are 3 and 6, so the common denominator is 6. We change thirds to sixths by multiplying by $\frac{2}{2}$. $\frac{2}{3} \times \frac{2}{2} = \frac{4}{6}$. We see that $\frac{4}{6}$ is less than $\frac{5}{6}$. We can also express the comparison with a less than sign; $\frac{4}{6} < \frac{5}{6}$

6. $\frac{9}{4}$; $2\frac{1}{4}$; $\frac{4}{4} + \frac{4}{4} + \frac{1}{4} = \frac{9}{4} = 2\frac{1}{4}$

7. $\frac{3}{5}$; $\frac{60}{100} = \frac{3}{5}$

8. a. **2 cm;** $P = 0.5 + 0.5 + 0.5 + 0.5 =$ 2.0 cm

   b. **0.25 sq. cm;** $A = 0.5 \times 0.5 = 0.25$ sq. cm

9. **90 mm;** *CD* is equal to *BD* − *BC* = 60 − 40 = 20

10. $\frac{3}{8}$; $\frac{1}{4} \times \frac{2}{2} = \frac{2}{8}$
$+\ \frac{1}{8} \longrightarrow \frac{1}{8}$
$\frac{3}{8}$

11. $\frac{1}{4}$; $\frac{3}{4} \longrightarrow \frac{3}{4}$
$-\ \frac{1}{2} \times \frac{2}{2} = \frac{2}{4}$
$\frac{1}{4}$

12. $\frac{1}{8}$; $\frac{7}{8} \longrightarrow \frac{7}{8}$
$-\ \frac{3}{4} \times \frac{2}{2} = \frac{6}{8}$
$\frac{1}{8}$

13. $1\frac{1}{8}$; $2\frac{5}{8} \longrightarrow 2\frac{5}{8}$
$-\ 1\frac{1}{2} \times \frac{4}{4} = 1\frac{4}{8}$
$1\frac{1}{8}$

14. $1\frac{3}{8}$; $3\frac{1}{2} \times \frac{4}{4} = 3\frac{4}{8}$
$-\ 2\frac{1}{8} \longrightarrow 2\frac{1}{8}$
$1\frac{3}{8}$

15. $6\frac{1}{2}$; $5\frac{1}{6} \longrightarrow 5\frac{1}{6}$
$+\ 1\frac{1}{3} \times \frac{2}{2} = 1\frac{2}{6}$
$6\frac{3}{6} = 6\frac{1}{2}$

16. $1\frac{4}{5}$; $\frac{9}{5} = 1\frac{4}{5}$

17. **5;** $3 \times \frac{5}{3} = \frac{15}{3} = 5$

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18. **650;** $6.5 \times 100 = 650.0$

19. **368;**

$$\begin{array}{r} {}^{4}4.6 \\ \times\ 80 \\ \hline 368.0 \end{array} \quad \text{1 digit}$$

20. **0.072;**

$$\begin{array}{r} {}^{3}0.18 \\ \times\ 0.4 \\ \hline 0.072 \end{array} \quad \text{3 digits}$$

21. **$1.32;**

$$\begin{array}{r} \$\ 1.32 \\ 10\overline{)\$13.20} \\ -10 \\ \hline 32 \\ -30 \\ \hline 20 \\ -20 \\ \hline 0 \end{array}$$

22. **$1.10;**

$$\begin{array}{r} \$\ 1.10 \\ 12\overline{)\$13.20} \\ -12 \\ \hline 12 \\ -12 \\ \hline 00 \\ -0 \\ \hline 0 \end{array}$$

23. **35;**

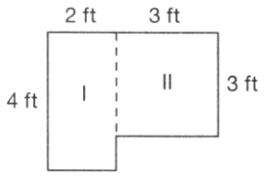
$$\begin{array}{r} 35 \\ 42\overline{)1470} \\ -126 \\ \hline 210 \\ -210 \\ \hline 0 \end{array}$$

24. **∠ADC or ∠CDA**

25. **$\frac{11}{12}$;**

$$\begin{array}{rl} \frac{1}{4} \times \frac{3}{3} = & \frac{3}{12} \\ +\ \frac{2}{3} \times \frac{4}{4} = & \frac{8}{12} \\ \hline & \frac{11}{12} \end{array}$$

26. **17 sq. ft;**



Area I	4 ft × 2 ft =	8 sq. ft
+ Area II	3 ft × 3 ft =	9 sq. ft
		17 sq. ft

27. **No; the division 85 ÷ 12 produces a remainder.**

28. **Use compatible numbers; since 12.3 is close to 12 and 29 is close to 30, a reasonable estimate is 12 × 30, or 360 miles.**

29. **Since $\frac{2}{3} > \frac{1}{2}$ and $\frac{3}{4} > \frac{1}{2}$, the sum of $\frac{2}{3}$ and $\frac{3}{4}$ will be greater than $\frac{1}{2} + \frac{1}{2}$, or 1; since $\frac{3}{8} < \frac{1}{2}$ and $\frac{2}{5} < \frac{1}{2}$, the sum of $\frac{3}{8}$ and $\frac{2}{5}$ will be less than $\frac{1}{2} + \frac{1}{2}$, or 1.**

30. a. **1 hr 35 min;** 14:05 − 12:30 = 1:35

    b. **7:40 p.m.**

    c. **Yes, if the train arrives in Fort Collins as scheduled (at 11:40 p.m.), Tim can be back on campus before midnight. He should get to campus at about 11:45 p.m.**

Early Finishers

a. **$4\frac{7}{8} - 1\frac{3}{4} = 3\frac{1}{8}$ miles;** $4\frac{7}{8} - 1\frac{6}{8} = 3\frac{1}{8}$

b. **$10\frac{1}{8}$ miles;** $1\frac{3}{4} + 3\frac{1}{2} + 4\frac{7}{8} = 1\frac{6}{8} + 3\frac{4}{8} + 4\frac{7}{8} = 8\frac{17}{8} = 8 + 2\frac{1}{8} = 10\frac{1}{8}$ miles

Lesson Practice 117

a. **0.13;**

$$\begin{array}{r} 0.13 \\ 4\overline{)0.52} \\ -4 \\ \hline 12 \\ -12 \\ \hline 0 \end{array}$$

b. **0.6;**

$$\begin{array}{r} 0.6 \\ 6\overline{)3.6} \\ -36 \\ \hline 0 \end{array}$$

c. **0.17;**

$$\begin{array}{r} 0.17 \\ 5\overline{)0.85} \\ -5 \\ \hline 35 \\ -35 \\ \hline 0 \end{array}$$

d. **1.5;**

$$\begin{array}{r} 1.5 \\ 5\overline{)7.5} \\ -5 \\ \hline 25 \\ -25 \\ \hline 0 \end{array}$$

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e. 0.13;

$$\begin{array}{r} 0.13 \\ 5\overline{)0.65} \\ -5 \\ \hline 15 \\ -15 \\ \hline 0 \end{array}$$

f. 0.7;

$$\begin{array}{r} 0.7 \\ 3\overline{)2.1} \\ -21 \\ \hline 0 \end{array}$$

g. 0.04;

$$\begin{array}{r} 0.04 \\ 4\overline{)0.16} \\ -16 \\ \hline 0 \end{array}$$

h. 0.05;

$$\begin{array}{r} 0.05 \\ 7\overline{)0.35} \\ -35 \\ \hline 0 \end{array}$$

i. 0.0005;

$$\begin{array}{r} 0.0005 \\ 5\overline{)0.0025} \\ -25 \\ \hline 0 \end{array}$$

j. 0.02;

$$\begin{array}{r} 0.02 \\ 4\overline{)0.08} \\ -8 \\ \hline 0 \end{array}$$

k. 0.04;

$$\begin{array}{r} 0.04 \\ 6\overline{)0.24} \\ -24 \\ \hline 0 \end{array}$$

l. 0.0048;

$$\begin{array}{r} 0.0048 \\ 3\overline{)0.0144} \\ -12 \\ \hline 24 \\ -24 \\ \hline 0 \end{array}$$

m. about 1.89 liters;

$$\begin{array}{r} 1.89 \\ 2\overline{)3.78} \\ -2 \\ \hline 17 \\ -16 \\ \hline 18 \\ -18 \\ \hline 0 \end{array}$$

Written Practice 117

1. $\frac{1}{6} + \frac{1}{3} = \frac{1}{2}$

2. **10 points;** $(36 \div 2) - 8 = 18 - 8 = 10$

3. **June 21 or June 22**

4. a. **1, 2, 3**

   b. $\frac{2}{3}$

   c. $33\frac{1}{3}$**%;** $\frac{1}{3} \times 100\% = \frac{100\%}{3} = 33\frac{1}{3}\%$

5. $\frac{1}{10}$**; 0.1; 10%**

6. **4 feet; *P* = 8*s*;** $P = 8 \times 6$ in. $= 48$ in. $=$ 4 feet

7. $\frac{4}{3}$**;** $1\frac{1}{3}$**;** $\frac{3}{3} + \frac{1}{3} = \frac{4}{3} = 1\frac{1}{3}$

8. **9807;** 9 and 7 are the only odd numbers, so 9 must be the first digit because it is greater than 7. This means that 7 is the last digit. 8 is greater than 0 so it must be the second digit.

9. a. $\overline{DC}$ **(or** $\overline{CD}$**)**

   b. **14 cm;** $P = 4$ cm $+ 3$ cm $+ 4$ cm $+$ 3 cm $= 14$ cm

   c. **12 sq. cm;** $A = 4$ cm $\times 3$ cm $= 12$ sq. cm

10. **5 cu. ft;** 12 inches is equal to 1 ft. $V = 1$ ft $\times$ 1 ft $\times$ 5 ft $= 5$ cu. ft

11. **98 mm;** $\overline{LM} = 56$ mm $\div 2 = 28$ mm
    $\overline{MN} = 28$ mm $\div 2 = 14$ mm
    $\overline{KN} = \overline{KL} + \overline{LM} + \overline{MN} = 56$ mm $+$ 28 mm $+ 14$ mm $= 98$ mm

12. **69.295;**

$$\begin{array}{r} {}^{1} \\ 16.000 \\ 3.170 \\ 49.000 \\ +\ 1.125 \\ \hline 69.295 \end{array}$$

13. **2.178;**

$$\begin{array}{r} {}^{3}{}^{1}{}^{1}{}^{1} \\ 3.420 \\ -\ 1.242 \\ \hline 2.178 \end{array}$$

14. **430;** $4.3 \times 100 = 430.0$

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15. 23.68;

$$\begin{array}{r} {}^{1}_{2} \\ 6.4 \\ \times\ 3.7 \\ \hline 1448 \\ +\ 1920 \\ \hline 23.68 \end{array} \quad \text{2 digits}$$

16. 0.0144;

$$\begin{array}{r} {}^{1}\ {}^{2} \\ 0.36 \\ \times\ 0.04 \\ \hline 0.0144 \end{array} \quad \text{4 digits}$$

17. 1.8;

$$\begin{array}{r} 1.8 \\ 2\overline{)3.6} \\ -2 \\ \hline 16 \\ -16 \\ \hline 0 \end{array}$$

18. 7;

$$\begin{array}{r} .0007 \\ 7\overline{)0.0049} \\ -49 \\ \hline 0 \end{array}$$

19. 121.5;

$$\begin{array}{r} {}^{3}\ {}^{4} \\ 1.35 \\ \times\ \ 90 \\ \hline 121.50 \end{array} \quad \text{2 digits}$$

20. $3\frac{7}{8}$;

$$\begin{array}{r} 2\frac{1}{8} \longrightarrow 2\frac{1}{8} \\ +\ 1\frac{3}{4} \times \frac{2}{2} = 1\frac{6}{8} \\ \hline 3\frac{7}{8} \end{array}$$

21. $\frac{1}{2}$;

$$\begin{array}{r} \frac{1}{3} \times \frac{2}{2} = \frac{2}{6} \\ +\ \frac{1}{6} \longrightarrow \frac{1}{6} \\ \hline \frac{3}{6} = \frac{1}{2} \end{array}$$

22. $\frac{1}{5}$;

$$\begin{array}{r} \frac{7}{10} \longrightarrow \frac{7}{10} \\ -\ \frac{1}{2} \times \frac{5}{5} = \frac{5}{10} \\ \hline \frac{2}{10} = \frac{1}{5} \end{array}$$

23. $3\frac{7}{10}$;

$$\begin{array}{r} 3\frac{9}{10} \longrightarrow 3\frac{9}{10} \\ -\ \frac{1}{5} \times \frac{2}{2} = \frac{2}{10} \\ \hline 3\frac{7}{10} \end{array}$$

24. 6; $\frac{12}{2} = 6$

25. 3; $\frac{3}{4} \times \frac{4}{1} = \frac{12}{4} = 3$

26. $\frac{1}{8}$; $18 \div \frac{18}{144} \div 18 = \frac{1}{8}$

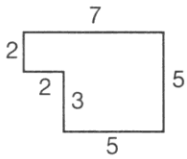
27. $3\frac{2}{10} + 2\frac{5}{10} = 5\frac{7}{10}$

28. a. 18 sq. in.; $A = 6$ in. $\times$ 3 in. $=$ 18 sq. in.

b. $\frac{1}{8}$ sq. ft; $A = \frac{1}{4}$ ft $\times \frac{1}{2}$ ft $= \frac{1}{8}$ sq. ft

29. a. 29 sq. in.; $A = (2 \times 2) + (5 \times 5) =$ $4 + 25 = 29$ sq. in.

b. Perimeter is 24 inches;



30. 170 g; $28\frac{1}{3} + 56\frac{2}{3} + 85 = 169\frac{3}{3} = 170$ g

Early Finishers

a. 1400.92 ft;

$$\begin{array}{r} 1400.92 \\ 3\overline{)4202.76} \\ -3 \\ \hline 12 \\ -12 \\ \hline 00 \\ -0 \\ \hline 02 \\ -0 \\ \hline 27 \\ -27 \\ \hline 06 \\ -6 \\ \hline 0 \end{array}$$

b. 2101.38 ft;

$$\begin{array}{r} 2101.38 \\ 2\overline{)4202.76} \\ -4 \\ \hline 02 \\ -2 \\ \hline 00 \\ -0 \\ \hline 02 \\ -2 \\ \hline 07 \\ -6 \\ \hline 16 \\ -16 \\ \hline 0 \end{array}$$

Lesson Practice 118

a. 0.15;

$$\begin{array}{r} 0.15 \\ 4\overline{)0.60} \\ -4 \\ \hline 20 \\ -20 \\ \hline 0 \end{array}$$

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b. 0.024;

$$\begin{array}{r} 0.024 \\ 5\overline{)0.120} \\ -10 \\ \hline 20 \\ -20 \\ \hline 0 \end{array}$$

c. 0.025;

$$\begin{array}{r} 0.025 \\ 4\overline{)0.100} \\ -8 \\ \hline 20 \\ -20 \\ \hline 0 \end{array}$$

d. 0.05;

$$\begin{array}{r} 0.05 \\ 2\overline{)0.10} \\ -10 \\ \hline 0 \end{array}$$

e. 0.08;

$$\begin{array}{r} 0.08 \\ 5\overline{)0.40} \\ -40 \\ \hline 0 \end{array}$$

f. 0.175;

$$\begin{array}{r} 0.175 \\ 8\overline{)1.400} \\ -8 \\ \hline 60 \\ -56 \\ \hline 40 \\ -40 \\ \hline 0 \end{array}$$

g. 0.125;

$$\begin{array}{r} 0.125 \\ 4\overline{)0.500} \\ -4 \\ \hline 10 \\ -8 \\ \hline 20 \\ -20 \\ \hline 0 \end{array}$$

h. 0.075;

$$\begin{array}{r} 0.075 \\ 8\overline{)0.600} \\ -56 \\ \hline 40 \\ -40 \\ \hline 0 \end{array}$$

i. 0.075;

$$\begin{array}{r} 0.075 \\ 4\overline{)0.300} \\ -28 \\ \hline 20 \\ -20 \\ \hline 0 \end{array}$$

j. 0.25

k. 3.24

l. 0.025

m. 0.324

n. 0.0025

o. 0.0324

p. 1.2

q. 0.12

r. 0.012

Written Practice 118

1. **C**

2. **30;** round $6\frac{1}{10}$ to 6 and $4\frac{7}{8}$ to 5, then multiply $6 \times 5 = 30$

3. **8 pencils;** one dollar is equal to 100 pennies. $100 \div 12 = 8$ R 4 or 8 pencils.

4. **C**

5. **70%;** $\frac{7}{10} = \frac{70}{100} = 70\%$

6. a. $\mathbf{\frac{1}{25}}$**;** $4\% = \frac{4}{100} = \frac{1}{25}$

   b. $\mathbf{\frac{1}{20}}$**;** $5\% = \frac{5}{100} = \frac{1}{20}$

7. $\mathbf{\frac{11}{4}}$**;** $\mathbf{2\frac{3}{4}}$**;** $\frac{4}{4} + \frac{4}{4} + \frac{3}{4} = \frac{11}{4} = 2\frac{3}{4}$

8. $\mathbf{\frac{11}{16}}$ **C;** $\frac{11}{8} \times \frac{1}{2} = \frac{11}{16}$

9. **octagon; yes**

10. $\mathbf{\frac{5}{6}, \frac{5}{5}, \frac{5}{3}}$

11. $\mathbf{1\frac{5}{12}}$ **hr;**

$$\begin{array}{r} 2\frac{3}{4} \times \frac{3}{3} = 2\frac{9}{12} \\ -1\frac{1}{3} \times \frac{4}{4} = 1\frac{4}{12} \\ \hline 1\frac{5}{12} \end{array}$$

12. a. **0.3 m;** $1.2 \text{ m} \div 4 = 0.3$

    b. **0.09 sq. m;** $0.3 \text{ m} \times 0.3 \text{ m} = 0.09$ sq. in.

13. **78.05;**

$$\begin{array}{r} {\scriptstyle 1\,1} \\ 49.35 \\ 25.00 \\ +\ 3.70 \\ \hline 78.05 \end{array}$$

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14. **<;** $\sqrt{81} + \sqrt{100} \bigcirc 9^2 + 10^2$

$$\begin{array}{ccccccc} \downarrow & & \downarrow & & \downarrow & & \downarrow \\ 9 & + & 10 & \bigcirc & 81 & + & 100 \\ & & 19 & < & 181 & & \end{array}$$

15. Seven hundred sixty-six thousandths;

$$\begin{array}{r} {}^{1\ 9\ 9\ 1} \\ 2.000 \\ -\ 1.234 \\ \hline 0.766 \end{array}$$

16. 0.0025;

$$\begin{array}{r} 0.0025 \\ 5\overline{)0.0125} \\ -10 \\ \hline 25 \\ -25 \\ \hline 0 \end{array}$$

17. 420; $4.2 \times 100 = 420.0$

18. 0.085;

$$\begin{array}{r} {}^{3} \\ 0.17 \\ \times\ 0.5 \\ \hline 0.085 \end{array} \Big\} \text{ 3 digits}$$

19. 0.15;

$$\begin{array}{r} 0.15 \\ 4\overline{)0.60} \\ -4 \\ \hline 20 \\ -20 \\ \hline 0 \end{array}$$

20. 0.06;

$$\begin{array}{r} 0.06 \\ 10\overline{)0.60} \\ -60 \\ \hline 0 \end{array}$$

21. 0.45;

$$\begin{array}{r} 0.45 \\ 4\overline{)1.80} \\ -16 \\ \hline 20 \\ -20 \\ \hline 0 \end{array}$$

22. $\mathbf{3\frac{4}{9}}$**;**

$$\begin{array}{rcl} 3\frac{1}{9} & \longrightarrow & 3\frac{1}{9} \\ +\ \frac{1}{3} \times \frac{3}{3} & = & \frac{3}{9} \\ \hline & & 3\frac{4}{9} \end{array}$$

23. $\mathbf{1\frac{1}{6}}$**;**

$$\begin{array}{rcl} \frac{1}{3} \times \frac{2}{2} & = & \frac{2}{6} \\ +\ \frac{5}{6} & \longrightarrow & \frac{5}{6} \\ \hline & & \frac{7}{6} = 1\frac{1}{6} \end{array}$$

24. $\mathbf{\frac{5}{8}}$**;**

$$\begin{array}{rcl} \frac{7}{8} & \longrightarrow & \frac{7}{8} \\ -\ \frac{1}{4} \times \frac{2}{2} & = & \frac{2}{8} \\ \hline & & \frac{5}{8} \end{array}$$

25. $\mathbf{3\frac{1}{5}}$**;**

$$\begin{array}{rcl} 4\frac{1}{2} \times \frac{5}{5} & = & 4\frac{5}{10} \\ -\ 1\frac{3}{10} & \longrightarrow & 1\frac{3}{10} \\ \hline & & 3\frac{2}{10} = 3\frac{1}{5} \end{array}$$

26. 4; $\frac{12}{3} = 4$

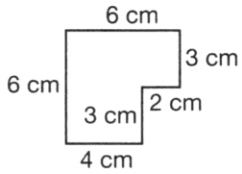
27. 9; $6 \times \frac{3}{2} = \frac{18}{2} = 9$

28. a. 0.035

b. 8.75

29. a. 30 sq. cm; $A = (6 \text{ cm} \times 4 \text{ cm}) + (3 \text{ cm} \times 2 \text{ cm}) = 24 \text{ sq. cm} + 6 \text{ sq. cm} = 30 \text{ sq. cm}$

b. Perimeter is 24 cm;



30. Use rounding; since \$2.19 is close to \$2 and \$1.69 is close to \$2, Carter spent about (3 × \$2) + (2 × \$2), or about \$10.

Lesson Practice 119

a. 4; $\frac{1.2}{0.3} \times \frac{10}{10} = \frac{12}{3} \longrightarrow$

$$\begin{array}{r} 4 \\ 3\overline{)12} \\ -12 \\ \hline 0 \end{array}$$

b. 1.4; $\frac{0.42}{0.3} \times \frac{10}{10} = \frac{4.2}{3} \longrightarrow$

$$\begin{array}{r} 1.4 \\ 3\overline{)4.2} \\ -3 \\ \hline 12 \\ -12 \\ \hline 0 \end{array}$$

c. 0.2; $\frac{0.24}{1.2} \times \frac{10}{10} = \frac{2.4}{12} \longrightarrow$

$$\begin{array}{r} 0.2 \\ 12\overline{)2.4} \\ -2\ 4 \\ \hline 0 \end{array}$$

d. 0.6; $\frac{0.24}{0.4} \times \frac{10}{10} = \frac{2.4}{4} \longrightarrow$

$$\begin{array}{r} 0.6 \\ 4\overline{)2.4} \\ -2\ 4 \\ \hline 0 \end{array}$$

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e. **14;** $\frac{5.6}{0.4} \times \frac{10}{10} = \frac{56}{4} \longrightarrow$

$$\begin{array}{r} 14 \\ 4\overline{)56} \\ -4 \\ \hline 16 \\ -16 \\ \hline 0 \end{array}$$

f. **3;** $\frac{3.6}{1.2} \times \frac{10}{10} = \frac{36}{12} \longrightarrow$

$$\begin{array}{r} 3 \\ 12\overline{)36} \\ -36 \\ \hline 0 \end{array}$$

g. **4;** $\frac{2.4}{0.6} \times \frac{10}{16} = \frac{24}{6} \longrightarrow$

$$\begin{array}{r} 4 \\ 6\overline{)24} \\ -24 \\ \hline 0 \end{array}$$

h. **0.25;** $\frac{0.125}{0.5} \times \frac{10}{10} = \frac{1.25}{5} \longrightarrow$

$$\begin{array}{r} 0.25 \\ 5\overline{)1.25} \\ -1\ 0 \\ \hline 25 \\ -25 \\ \hline 0 \end{array}$$

i. **1.9;** $\frac{2.28}{1.2} \times \frac{10}{10} = \frac{22.8}{12} \longrightarrow$

$$\begin{array}{r} 1.9 \\ 12\overline{)22.8} \\ -12 \\ \hline 108 \\ -108 \\ \hline 0 \end{array}$$

Written Practice 119

1. **See student work.**

2. **7 years;** $(9 + 8 + 7 + 6 + 5) \div 5 = 35 \div 5 =$ 7 years

3. **96 lions;** tigers $= 2 \times 24 = 48$; Lions $= 2 \times 48 = 96$ lions

4. **$15,999;** Step 1: Find how much money they have together.

$$\begin{array}{r} {}^{1\,1\,1}\$18.35 \\ +\ \$22.65 \\ \hline \$41.00 \end{array}$$

Step 2: Find how much money is needed.

$$\begin{array}{r} {}^{5\ 9^{1}3_{1}}\$16{,}040 \\ -\$\quad 41 \\ \hline \$15{,}999 \end{array}$$

5. a. **C and D**

   b. **B**

6. **$\frac{10}{3}$; $2\frac{1}{2}$;** $3\frac{1}{3}$ is equal to $\frac{10}{3}$. $\frac{10}{3} \times \frac{3}{4} = \frac{30}{12} = 2\frac{6}{12} = 2\frac{1}{2}$

7. a. **∠ADC (or ∠CDA)**

   b. **Trapezoid**

8. **$4\frac{5}{6}$;**

$$\begin{array}{r} 3\frac{1}{2} \times \frac{3}{3} = 3\frac{3}{6} \\ +\ 1\frac{1}{3} \times \frac{2}{2} = 1\frac{2}{6} \\ \hline 4\frac{5}{6} \end{array}$$

9. **$3\frac{2}{3}$;**

$$\begin{array}{r} 2\frac{1}{6} \longrightarrow 2\frac{1}{6} \\ +\ 1\frac{1}{2} \times \frac{3}{3} = 1\frac{3}{6} \\ \hline 3\frac{4}{6} = 3\frac{2}{3} \end{array}$$

10. **$4\frac{1}{3}$;**

$$\begin{array}{r} 5\frac{5}{6} \longrightarrow 5\frac{5}{6} \\ -\ 1\frac{1}{2} \times \frac{3}{3} = 1\frac{3}{6} \\ \hline 4\frac{2}{6} = 4\frac{1}{3} \end{array}$$

11. **$3\frac{5}{12}$;**

$$\begin{array}{r} 4\frac{2}{3} \times \frac{4}{4} = 4\frac{8}{12} \\ -\ 1\frac{1}{4} \times \frac{3}{3} = 1\frac{3}{12} \\ \hline 3\frac{5}{12} \end{array}$$

12. **0.0024;**

$$\begin{array}{r} 0.0024 \\ 6\overline{)0.0144} \\ -12 \\ \hline 24 \\ -24 \\ \hline 0 \end{array}$$

13. **0.24;**

$$\begin{array}{r} 0.24 \\ 5\overline{)1.20} \\ -10 \\ \hline 20 \\ -20 \\ \hline 0 \end{array}$$

14. **150;**

$$\begin{array}{r} 150 \\ 12\overline{)1800} \\ -12 \\ \hline 60 \\ -60 \\ \hline 00 \\ -0 \\ \hline 0 \end{array}$$

15. **0.8;** $\frac{0.24}{0.3} \times \frac{10}{10} = \frac{2.4}{3} \longrightarrow$

$$\begin{array}{r} 0.8 \\ 3\overline{)2.4} \\ -24 \\ \hline 0 \end{array}$$

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16. 20

17. 0.15; $\frac{0.18}{1.2} \times \frac{10}{10} = \frac{1.8}{12} \longrightarrow$

$$\begin{array}{r} 0.15 \\ 12\overline{)1.80} \\ -12 \\ 60 \\ -60 \\ 0 \end{array}$$

18. a. 0.05

b. 0.005

19. 1.24; $(3 - 1.6) - 0.16$

$$\begin{array}{r} 3.0 \\ -\ 1.6 \\ \hline 1.4 \end{array} \quad -0.16 \longrightarrow \quad \begin{array}{r} 1.40 \\ -\ 0.16 \\ \hline 1.24 \end{array}$$

20. 0.036;

$$\begin{array}{r} 0.12 \\ \times\ 0.30 \\ \hline 0.0360 \end{array}$$ 4 digits

21. 1.2;

$$\begin{array}{r} 0.12 \\ \times\ \ 10 \\ \hline 1.20 \end{array}$$ 2 digits

22. 3600;

$$\begin{array}{r} 75 \\ \times\ 48 \\ \hline 600 \\ +\ 3000 \\ \hline 3600 \end{array}$$

23. $1\frac{1}{2}$**;** $\frac{12}{8} = 1\frac{4}{8} = 1\frac{1}{2}$

24. $10\frac{2}{3}$**;** $4 \times \frac{8}{3} = \frac{32}{3} = 10\frac{2}{3}$

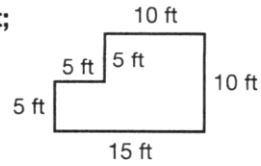
25. a. $1\frac{2}{3}$ **ft;** $P = \frac{1}{2} + \frac{1}{3} + \frac{1}{2} + \frac{1}{3} = \frac{2}{2} + \frac{2}{3} = 1\frac{2}{3}$ ft

b. $\frac{1}{6}$ **sq. ft**

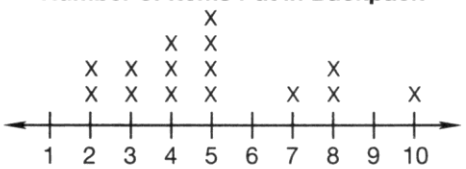
26. 960 cubic feet; $V = 10$ ft $\times$ 12 ft $\times$ 8 ft = 960 cubic feet

27. a. 125 sq. ft; $A = (5 \times 5) + (10 \times 10) = 25 + 100 = 125$ sq. ft

b. Perimeter is 50 feet;



28. a.



b. 5 items

c. 5 items

d. 8 items; $10 - 2 = 8$

29. 48 – 13 – 11 – 1, or 23 seats

30. a. Use rounding; a reasonable estimate is 300 + 300 + 500 + 300 + 400, or 1800 students.

b. 1800 ÷ 5 = 360; about 360 students

Lesson Practice 120

a. $2\frac{5}{8}$**;** $1\frac{1}{2} \times 1\frac{3}{4}$

$\frac{3}{2} \times \frac{7}{4} = \frac{21}{8} = 2\frac{5}{8}$

b. $5\frac{5}{6}$**;** $3\frac{1}{2} \times 1\frac{2}{3}$

$\frac{7}{2} \times \frac{5}{3} = \frac{35}{6} = 5\frac{5}{6}$

c. $7\frac{1}{2}$**;** $3 \times 2\frac{1}{2}$

$\frac{3}{1} \times \frac{5}{2} = \frac{15}{2} = 7\frac{1}{2}$

d. $14\frac{2}{3}$**;** $4 \times 3\frac{2}{3}$

$\frac{4}{1} \times \frac{11}{3} = \frac{44}{3} = 14\frac{2}{3}$

e. $\frac{7}{9}$**;** $\frac{1}{3} \times 2\frac{1}{3}$

$\frac{1}{3} \times \frac{7}{3} = \frac{7}{9}$

f. $\frac{17}{36}$**;** $\frac{1}{6} \times 2\frac{5}{6}$

$\frac{1}{6} \times \frac{17}{6} = \frac{17}{36}$

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Written Practice 120

1. **See student work.**

2. **a. triangular prism**

   b. 5

   c. 6

   d. triangular faces

3. **$2 + 2 = 2 \times 2$**

4. **D**

5. **Use rounding since $7\frac{3}{4}$ pounds is close to 8 pounds, a reasonable estimate of the kitten's weight is 11 – 8, or about 3 pounds.**

6. **25 hours;** $100 \div 4 = 25$ hours

7. **a. 18 in.;** P = 3 in. + 6 in. + 3 in. + 6 in. = 18 in.

   b. 18 sq. in.; A = 3 in. × 6 in. = 18 sq. in.

   c. $\overline{AD}$ and $\overline{BC}$, $\overline{DC}$ and $\overline{AB}$

   d. four combinations are possible: $\overline{AD}$ and $\overline{AB}$, $\overline{BA}$ and $\overline{BC}$, $\overline{CB}$ and $\overline{CD}$, $\overline{DC}$ and $\overline{DA}$

8. **a. $\frac{1}{2}$;** The prime numbers in the cube are 1, 3, and 5. $\frac{3}{6} = \frac{1}{2}$

   b. 50%; $\frac{1}{2} = \frac{50}{100} = 50\%$

9. **5 more sides;** a decagon has 10 sides. A pentagon has 5 sides. 10 – 5 = 5 more sides.

10. **5;** $(2 + 4 + 6 + 8) \div 4 = 20 \div 4 = 5$

11. **9 cm;** RS = RT – ST = 7 cm – 5 cm = 2 cm. QR = RS = 2 cm. QT = QR + RS + ST = 2 cm + 2 cm + 5 cm = 9 cm

12. **97.978;**

$$\begin{array}{r} {}^{2}38.248 \\ 7.500 \\ 37.230 \\ +\ 15.000 \\ \hline 97.978 \end{array}$$

13. **\$5.26;** \$6 – (\$1.49 – 75¢)

$$\begin{array}{r} \$\cancel{1}^{0}.{}^{1}49 \\ -\ \$0.75 \\ \hline \$0.74 \end{array}$$

$$\$6 - \$0.74$$

$$\begin{array}{r} \$\cancel{6}^{5}.{}^{9}\cancel{0}0 \\ -\ \$0.74 \\ \hline \$5.26 \end{array}$$

14. **240;** $2.4 \times 100 = 240.0$

15. **0.0288;**

$$\begin{array}{r} 0.24 \\ \times\ 0.12 \\ \hline 048 \\ +\ 0240 \\ \hline 0.0288 \end{array} \quad \text{4 digits}$$

16. **1250**

17. **0.0125;**

$$\begin{array}{r} 0.0125 \\ 8\overline{)0.1000} \\ -8 \\ \hline 20 \\ -16 \\ \hline 40 \\ -40 \\ \hline 0 \end{array}$$

18. **8.7;** $\frac{4.35}{0.5} \times \frac{10}{10} = \frac{43.5}{5} \longrightarrow$

$$\begin{array}{r} 8.7 \\ 5\overline{)43.5} \\ -40 \\ \hline 35 \\ -35 \\ \hline 0 \end{array}$$

19. **120;**

$$\begin{array}{r} 120 \\ 12\overline{)1440} \\ -12 \\ \hline 24 \\ -24 \\ \hline 00 \\ -0 \\ \hline 0 \end{array}$$

20. **$11\frac{1}{12}$;**

$$\begin{array}{rl} 3\frac{1}{3} \times \frac{4}{4} = & 3\frac{4}{12} \\ +\ 7\frac{3}{4} \times \frac{3}{3} = & 7\frac{9}{12} \\ \hline & 10\frac{13}{12} = 11\frac{1}{12} \end{array}$$

21. **$\frac{13}{14}$;**

$$\begin{array}{rl} \frac{3}{7} \times \frac{2}{2} = & \frac{6}{14} \\ +\ \frac{1}{2} \times \frac{7}{7} = & \frac{7}{14} \\ \hline & \frac{13}{14} \end{array}$$

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22. **$5\frac{11}{15}$;** $6\frac{14}{15} \longrightarrow 6\frac{14}{15}$

$$\begin{array}{r} -\,1\frac{1}{5} \times \frac{3}{3} = 1\frac{3}{15} \\ \hline 5\frac{11}{15} \end{array}$$

23. **$\frac{7}{15}$;** $\frac{4}{5} \times \frac{3}{3} = \frac{12}{15}$

$$\begin{array}{r} -\,\frac{1}{3} \times \frac{5}{5} = \frac{5}{15} \\ \hline \frac{7}{15} \end{array}$$

24. **$1\frac{2}{3}$;** $\frac{1}{2} \times 3\frac{1}{3}$

$$\frac{1}{2} \times \frac{10}{3} = \frac{10}{6} = 1\frac{4}{6} = 1\frac{2}{3}$$

25. **10;** $4 \times 2\frac{1}{2}$

$$\frac{4}{1} \times \frac{5}{2} = \frac{20}{2} = 10$$

26. a. **13.5 sq. m;**

$$\begin{array}{r} \overset{1}{4}.5\text{ m} \\ \times\ \ 3\text{ m} \\ \hline 13.5\text{ sq. m} \end{array} \Big\}\ \text{1 digit}$$

b. **15 m;** $P = 3 + 4.5 + 3 + 4.5 = 15$ m

27. **1.5 cubic feet;** $V = 2\text{ ft} \times 1.5\text{ ft} \times 0.5\text{ ft}$

$$\begin{array}{r} 2\text{ ft} \\ \times\ 1.5\text{ ft} \\ \hline 10 \\ +\ 20 \\ \hline 3.0\text{ sq. ft} \end{array} \Big\}\ \text{1 digit}$$

$$\times\ 0.5\text{ ft}$$

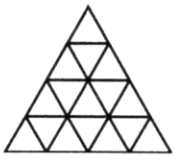
$$\begin{array}{r} 3.0 \\ \times\ 0.5 \\ \hline 1.50 \end{array} \Big\}\ \text{2 digits}$$

1.5 cubic feet

28. a. **18 inches;** the length of each side is $6 \div 3 = 2$ inches. $P = 9 \times 2$ inches = 18 inches

b. **$11\frac{1}{9}$%;** $\frac{1}{9} = \frac{1}{9} \times 100\% = \frac{100\%}{9} = 11\frac{1}{9}\%$

c.



16 small triangles

29. **\$42;** $(\$12.50 \times 4) - (\$2 \times 4) = \$50 - \$8 = \$42$

30. **Yes; 189 is about 200; $20 \div 5 = 4$, so $200 \div 5 = 40$**

Early Finishers

a. **$7\frac{7}{8}$ miles; sample: I rounded $\frac{7}{8}$ to 1 and multiplied 1×9 for an estimate of 9 miles. Then I multiplied $\frac{7}{8} \times 9$ to find the actual answer, $7\frac{7}{8}$ miles.**

b. **Sample: $\frac{7}{8}$ is close to 9 miles, so the product is reasonable**

c. **$13\frac{1}{8}$ miles;** $\frac{7}{8} \times 15 = \frac{105}{8} = 13\frac{1}{8}$ miles

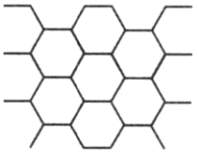
Investigation 12

Focus On

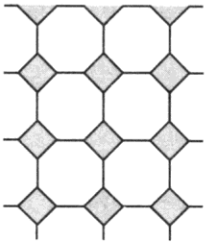
1. **6 triangles**

2. **4 squares**

3. **A;**



4. **A** and **C;**



Activity 1

5. **See student work.**

6. **See student work.**

Activity 2

See student work.

Investigate Further

a. **See student work.**

b. **See student work.**

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