LESSON 46, LESSON PRACTICE

a. $\frac{\$1.12}{28 \text{ ounces}} = \frac{\$0.04}{1 \text{ ounce}}$

4¢ per ounce

b. $\frac{\$0.55}{11 \text{ ounces}} = \frac{\$0.05}{1 \text{ ounce}}$

5¢ per ounce

c. $\frac{\$1.98}{18 \text{ ounces}} = \frac{\$0.11}{1 \text{ ounce}}$

$\frac{\$2.28}{24 \text{ ounces}} = \frac{\$0.095}{1 \text{ ounce}}$

The 24-ounce jar is the better buy because 9.5¢ per ounce is less than 11¢ per ounce.

d. $\frac{416 \text{ mi}}{8 \text{ hr}} = 52 \frac{\text{mi}}{\text{hr}}$

52 mi/hr or **52 mph**

e. $\frac{322 \text{ mi}}{14 \text{ gal}} = 23 \frac{\text{mi}}{\text{gal}}$

23 mi/gal or **23 mpg**

f. (a) $\frac{44 \text{ euros}}{40 \text{ dollars}} = \frac{11 \text{ euros}}{10 \text{ dollars}}$

11 euros per 10 dollars

(b) $\frac{40 \text{ dollars}}{44 \text{ euros}} = \frac{10 \text{ dollars}}{11 \text{ euros}}$

10 dollars per 11 euros

g.
$$\begin{array}{r} \$36.89 \\ \times \quad .07 \\ \hline \$2.5823 \end{array} \longrightarrow \textbf{\$2.58}$$

h.
$$\begin{array}{r} \$36.89 \\ + \ \$2.58 \\ \hline \textbf{\$39.47} \end{array}$$

i.
$$\begin{array}{r} \$6.95 \\ \$0.95 \\ + \ \$2.45 \\ \hline \$10.35 \end{array}$$

$$\begin{array}{r} \$10.35 \\ \times \quad .06 \\ \hline \$0.6210 \end{array} \longrightarrow \$0.62$$

$$\begin{array}{r} \$10.35 \\ + \ \$0.62 \\ \hline \textbf{\$10.97} \end{array}$$

j.
$$\begin{array}{r} \$15 \\ \times \ 0.15 \\ \hline 75 \\ 1\,5 \\ \hline \$2.25 \end{array}$$

About \$2.25

k.
$$\begin{array}{r} 0.15 \\ \times \ 12 \\ \hline 30 \\ 1\,5 \\ \hline \textbf{\$1.80} \end{array}$$

l. One way is to think of 10% of the bill and then double that number.

LESSON 46, MIXED PRACTICE

1. $\frac{\$2.40}{16 \text{ ounces}} = \frac{\$0.15}{1 \text{ ounce}}$

$\frac{\$1.92}{12 \text{ ounces}} = \frac{\$0.16}{1 \text{ ounce}}$

Brand X = \$0.15/ounce
Brand Y = \$0.16/ounce
Brand X is the better buy.

2. $\frac{702 \text{ kilometers}}{6 \text{ hours}} = 117 \frac{\text{kilometers}}{\text{hour}}$

117 kilometers per hour

3. $\frac{\text{sheep}}{\text{cows}} = \frac{48}{36} = \frac{4}{3}$

4.
$$\begin{array}{r} \$2.86 \\ \$2.83 \\ \$2.98 \\ +\ \$3.09 \\ \hline \$11.76 \end{array} \qquad \begin{array}{r} \$2.94 \\ 4\overline{)\$11.76} \\ 8 \\ \hline 37 \\ 36 \\ \hline 16 \\ 16 \\ \hline 0 \end{array}$$

5.
$$\begin{array}{r} 3.\overset{1}{2}\overset{1}{1}0 \\ -\ 2.03 \\ \hline 1.17 \end{array}$$

One and seventeen hundredths

6. 2 feet = 24 inches

$$24 \text{ inches} \div 1\frac{1}{2} = \frac{24}{1} \text{ inches} \div \frac{3}{2}$$

$$= \frac{\overset{8}{\cancel{24}}}{1} \times \frac{2}{\cancel{3}_{1}}$$

$$= \mathbf{16 \text{ books}}$$

7.

48 roses

$\frac{3}{8}$ were red.	6 roses
	6 roses
	6 roses
$\frac{5}{8}$ were not red.	6 roses
	6 roses
	6 roses
	6 roses
	6 roses

(a) 3(6 roses) = **18 roses**

(b) 5(6 roses) = **30 roses**

(c) $\frac{\text{not red roses}}{\text{total roses}} = \frac{30}{48} = \mathbf{\frac{5}{8}}$

8. (a) 3.0303 < 3.303

(b) 0.6 = 0.600

9. 100 yards = 100(3 feet)

= **300 feet**

10. (a) $0.080 = \frac{8}{100} = \mathbf{\frac{2}{25}}$

(b) $37\frac{1}{2}\% = 37.5\%$

$$= \frac{37.5}{100} = \mathbf{0.375}$$

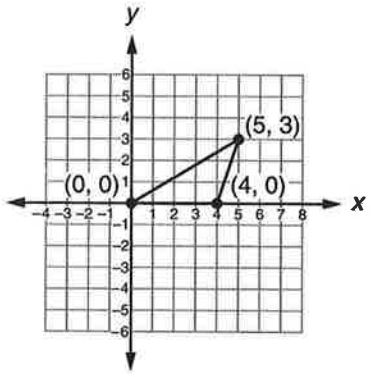
(c)
$$\begin{array}{r} 0.0909\ldots \\ 11\overline{)1.0000\ldots} \\ 99 \\ \hline 10 \\ 0 \\ \hline 100 \\ 99 \\ \hline 1 \end{array}$$

$\mathbf{0.\overline{09}}$

11. (a)
$$\begin{array}{r} \$14.95 \\ \times\ 0.07 \\ \hline \$1.0465 \end{array} \longrightarrow \mathbf{\$1.05}$$

(b)
$$\begin{array}{r} \$14.95 \\ +\ \$1.05 \\ \hline \mathbf{\$16.00} \end{array}$$

12.



$$\text{Area} = \frac{(4 \text{ units})(3 \text{ units})}{2}$$

$$= \mathbf{6 \text{ units}^2}$$

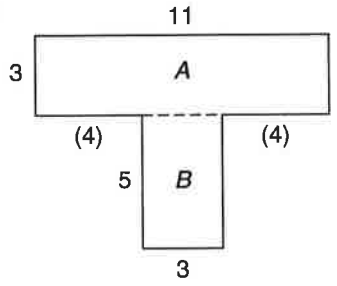
13. $\frac{\text{face cards}}{\text{total cards}} = \frac{12}{52} = \mathbf{\frac{3}{13}}$

14.
$$\begin{array}{r} 2 \\ 3 \\ 5 \\ 7 \\ +\ 11 \\ \hline 28 \end{array} \qquad \begin{array}{r} \mathbf{5.6} \\ 5\overline{)28.0} \\ 25 \\ \hline 30 \\ 30 \\ \hline 0 \end{array}$$

15. $0.3(0.4 + 0.5) = 0.3(0.9) = 0.27$
or
$0.3(0.4 + 0.5) = 0.12 + 0.15 = 0.27$

16. (a) Perimeter $= 3$ in. $+ 5$ in. $+ 4$ in. $+ 3$ in. $+ 11$ in. $+ 3$ in. $+ 4$ in. $+ 5$ in. $=$ **38 in.**

(b)



Area $A = (11 \text{ in.})(3 \text{ in.}) = 33 \text{ in.}^2$
$+$ Area $B = (5 \text{ in.})(3 \text{ in.}) = 15 \text{ in.}^2$
Area of figure $=$ **48 in.^{2}**

17. (a) **180°**

(b) $\frac{360°}{3} =$ **120°**

(c) $\frac{360°}{6} =$ **60°**

18. $\frac{10}{12} = \frac{2.5}{a}$

$10a = 2.5 \cdot 12$

$a = \frac{30}{10}$

$a =$ **3**

19. $\frac{6}{8} = \frac{b}{100}$

$8b = 100 \cdot 6$

$b = \frac{600}{8}$

$b =$ **75**

20.
$$\begin{array}{r} 4.7 \\ -\ 1.2 \\ \hline 3.5 \end{array}$$

$w =$ **3.5**

21. $\frac{10^2}{10} = \frac{100}{10} = 10$

$x =$ **10**

22. $1\frac{11}{18} + 2\frac{11}{24}$

$\downarrow \quad \downarrow$

$2 + 2 = 4$

$$\begin{array}{r} 1\frac{11}{18} = 1\frac{44}{72} \\ +\ 2\frac{11}{24} = 2\frac{33}{72} \\ \hline 3\frac{77}{72} = \mathbf{4\frac{5}{72}} \end{array}$$

23. $5\frac{5}{6} - \left(3 - 1\frac{1}{3}\right)$

$\downarrow \quad \downarrow \quad \downarrow$

$6 - (3 - 1) = 6 - 2 = 4$

$$\begin{array}{r} 3 = 2\frac{3}{3} \\ -\ 1\frac{1}{3} = 1\frac{1}{3} \\ \hline 1\frac{2}{3} \end{array}$$

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

24. $\frac{2}{3} \times 4 \times 1\frac{1}{8} = \frac{\overset{1}{\cancel{2}}}{\underset{1}{\cancel{3}}} \times \frac{\overset{1}{\cancel{4}}}{1} \times \frac{\overset{3}{\cancel{9}}}{\underset{1}{\cancel{8}_2}} = 3$

25. $6\frac{2}{3} \div 4 = \frac{20}{3} \div \frac{4}{1} = \frac{\overset{5}{\cancel{20}}}{3} \times \frac{1}{\underset{1}{\cancel{4}}}$

$= \frac{5}{3} = \mathbf{1\frac{2}{3}}$

26.
$$\begin{array}{r} {}^{4}\cancel{5}.\,{}^{1}\cancel{2}0 \\ -\ 0.\,5\,7 \\ \hline 4.\,6\,3 \end{array} \qquad \begin{array}{r} {}^{1} \\ 3.45 \\ 6 \\ +\ 4.63 \\ \hline \mathbf{14.08} \end{array}$$

27.
$$\begin{array}{r} \mathbf{150.} \\ 0016\overline{)2400} \\ \underline{16} \\ 80 \\ \underline{80} \\ 00 \\ \underline{0} \\ 0 \end{array}$$

28. **Round $6\frac{7}{8}$ to 7 and round $5\frac{1}{16}$ to 5. Then multiply 7 by 5.**

29. (a) $\angle CAB$

(b) $\overline{BA}$

30. (a) $m\angle B = m\angle ADC = \mathbf{60°}$

(b) $m\angle CAB = 180° - (60° + 45°)$
$= 180° - 105° = \mathbf{75°}$

(c) $m\angle CAD = m\angle ACB = \mathbf{45°}$

Lesson 47, Lesson Practice

a. $400 + 50 + 6$
$\mathbf{(4 \times 10^2) + (5 \times 10^1) + (6 \times 10^0)}$

b. $1000 + 700 + 60$
$\mathbf{(1 \times 10^3) + (7 \times 10^2) + (6 \times 10^1)}$

c. $100{,}000 + 80{,}000 + 6000$
$\mathbf{(1 \times 10^5) + (8 \times 10^4) + (6 \times 10^3)}$

d. 24.25×10^3
$= 24.25 \times 1000$
$= \mathbf{24{,}250}$

e. $25 \times 10^6 = 25 \times 1{,}000{,}000$
$= \mathbf{25{,}000{,}000}$

f. $12.5 \div 10^3$
$= 12.5 \div 1000$
$= \mathbf{0.0125}$

g. $4.8 \div 10^4 = 4.8 \div 10{,}000$
$= \mathbf{0.00048}$

h. $10^3 \cdot 10^4 = 10^7$

i. $10^8 \div 10^2 = 10^6$

j. **2,500,000**

k. **15,000,000,000**

l. **1,600,000,000,000**

Lesson 47, Mixed Practice

1. (a) **True**

(b) **True**

2. $\frac{\text{walk}}{\text{ride in bus}} = \frac{10}{12} = \mathbf{\frac{5}{6}}$

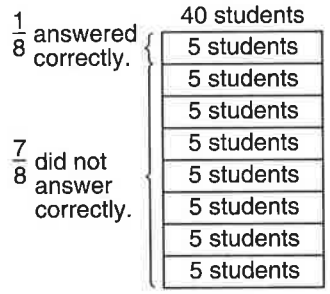
3. $\frac{\text{ride in bus}}{\text{total}} = \frac{12}{33} = \mathbf{\frac{4}{11}}$

4.
$$\begin{array}{r} {\scriptstyle 1} \\ 1.2 \\ 1.4 \\ 1.5 \\ 1.7 \\ +\ 2 \\ \hline 7.8 \end{array} \qquad \begin{array}{r} \mathbf{1.56} \\ 5\overline{)7.80} \\ \underline{5} \\ 28 \\ \underline{25} \\ 30 \\ \underline{30} \\ 0 \end{array}$$

5. (a) **134,800,000 viewers**

(b) $5000 + 200 + 80$
$\mathbf{(5 \times 10^3) + (2 \times 10^2) + (8 \times 10^1)}$

6.



(a) **5 students**

(b) 7(5 students) = **35 students**

7. (a)
$$\begin{array}{r} 10\frac{2}{3} \\ 12\overline{)128} \\ \underline{12} \\ 08 \\ \underline{0} \\ 8 \end{array}$$
10 glasses

(b) **11 glasses**

8. (a) **Answers may vary.**

(b) **Answers may vary.**

9. (a) $0.375 = \frac{375}{1000} = \frac{\mathbf{3}}{\mathbf{8}}$

(b) $62\frac{1}{2}\% = 62.5\% = \frac{62.5}{100} = \mathbf{0.625}$

10.
$$\begin{array}{r} \$56.40 \\ \times \quad 0.08 \\ \hline \$4.5120 \end{array} \longrightarrow \mathbf{\$4.51}$$

11. (a) $53{,}714.545\textcircled{4}\ldots$
$\longrightarrow$ **53,714.545**

(b) $53{,}\textcircled{7}14.5454\ldots$
$\longrightarrow$ **54,000**

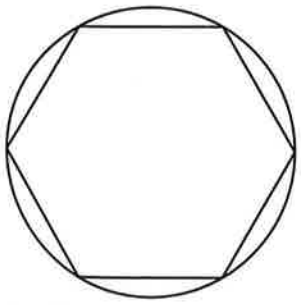
12. (a) $10^5 \cdot 10^2 = 10^7$

(b) $10^8 \div 10^4 = 10^4$

13. **3.03**

14. $BC = 6$ cm, $AF = 6$ cm
$AB = 6$ cm, $FE = 9$ cm
$ED = 12$ cm
Perimeter = 6 cm + 6 cm + 6 cm + 3 cm + 12 cm + 9 cm
= **42 cm**

15.



(a) Diameter = 2(1 inch) = **2 inches**

(b) Perimeter = 6(1 inch) = **6 inches**

16.
$$\frac{6}{10} = \frac{w}{100}$$
$$10w = 6 \cdot 100$$
$$w = \frac{600}{10}$$
$$w = \mathbf{60}$$

17.
$$\frac{3.6}{x} = \frac{16}{24}$$
$$16x = (3.6)(24)$$
$$x = \frac{86.4}{16}$$
$$x = \mathbf{5.4}$$

18.
$$\begin{array}{r} 1.5 \\ \times\ 1.5 \\ \hline 75 \\ \underline{15} \\ 2.25 \end{array}$$
$a = \mathbf{2.25}$

19.
$$\begin{array}{r} \overset{8}{\not 9}.{}^{1}8 \\ -\ 8.9 \\ \hline 0.9 \end{array}$$
$x = \mathbf{0.9}$

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

$4 + 5 + 1 = \mathbf{10}$

$4\frac{1}{5} = 4\frac{6}{30}$

$5\frac{1}{3} = 5\frac{10}{30}$

$+\ \frac{1}{2} = \frac{15}{30}$

$9\frac{31}{30} = \mathbf{10\frac{1}{30}}$

21. $6\frac{1}{8} - \left(5 - 1\frac{2}{3}\right)$

$6 - (5 - 2) = 6 - 3 = \mathbf{3}$

$5 \longrightarrow 4\frac{3}{3}$

$-\ 1\frac{2}{3} \qquad -\ 1\frac{2}{3}$

$3\frac{1}{3}$

$6\frac{1}{8} = 6\frac{3}{24} \longrightarrow 5\frac{27}{24}$

$-\ 3\frac{1}{3} = 3\frac{8}{24} \qquad -\ 3\frac{8}{24}$

$\mathbf{2\frac{19}{24}}$

22. $\sqrt{16 \cdot 25} = \sqrt{400} = \mathbf{20}$

23. 3.6×10^3
$= 3.6 \times 1000$
$= \mathbf{3600}$

24. $8\frac{1}{3} \times 3\frac{3}{5} \times \frac{1}{3}$

$= \frac{\overset{5}{\cancel{25}}}{\underset{1}{\cancel{3}}} \times \frac{\overset{2}{\cancel{18}}}{\underset{1}{\cancel{5}}} \times \frac{1}{\underset{1}{\cancel{3}}}$

$= \mathbf{10}$

25. $3\frac{1}{8} \div 6\frac{1}{4} = \frac{25}{8} \div \frac{25}{4}$

$= \frac{\overset{1}{\cancel{25}}}{\underset{2}{\cancel{8}}} \times \frac{\overset{1}{\cancel{4}}}{\underset{1}{\cancel{25}}} = \mathbf{\frac{1}{2}}$

26.
$$\begin{array}{r} {\scriptstyle 2\,1} \\ 26.7 \\ 3.45 \\ 0.036 \\ 12 \\ +\ \ 8.7 \\ \hline \mathbf{50.886} \end{array}$$

27. (a) Perimeter $= 15$ in. $+ 13$ in. $+ 14$ in.
$= \mathbf{42}$ **in.**

(b) Area $= \frac{(14 \text{ in.})(12 \text{ in.})}{2}$
$= \mathbf{84}$ **in.^{2}**

28. $125 \div 10^2 = 125 \div 100 = 1.25$
$0.125 \times 10^2 = 0.125 \times 100 = 12.5$
$\mathbf{1.25 < 12.5}$

29. $\frac{2}{3} = \frac{8}{12}$
$\frac{1}{2} = \frac{6}{12}$ $\quad \mathbf{\frac{1}{2}, \frac{7}{12}, \frac{2}{3}, \frac{5}{6}}$
$\frac{5}{6} = \frac{10}{12}$

30. (a) $\angle a = 180° - 130° = \mathbf{50°}$

(b) $\angle b = 180° - (65° + 50°)$
$= 180° - 115° = \mathbf{65°}$

(c) **Together, $\angle b$ and $\angle c$ form a straight angle that measures 180°. To find the measure of $\angle c$, we subtract the measure of $\angle b$ from 180°.**

LESSON 48, LESSON PRACTICE

a.
$$\begin{array}{r} 0.66\ldots \\ 3\overline{)2.00\ldots} \\ 18 \\ \hline 20 \\ 18 \\ \hline 2 \end{array}$$
$\mathbf{0.\overline{6}}$

b. $\frac{2}{3} \times 100\% = \frac{200\%}{3} = \mathbf{66\frac{2}{3}\%}$

c. $1.1 = \mathbf{1\frac{1}{10}}$

d. $1.1 \times 100\% = \mathbf{110\%}$

e. $4\% = \frac{4}{100} = \mathbf{\frac{1}{25}}$

f. $4\% = \frac{4}{100} = \mathbf{0.04}$

LESSON 48, MIXED PRACTICE

1. $\frac{80 \text{ kilometers}}{2.5 \text{ hours}} = \mathbf{32\ \frac{\text{kilometers}}{\text{hour}}}$

2. $\frac{1008}{1323} = \frac{2 \cdot 2 \cdot 2 \cdot 2 \cdot \overset{1}{\cancel{3}} \cdot \overset{1}{\cancel{3}} \cdot \overset{1}{\cancel{7}}}{\underset{1}{\cancel{3}} \cdot \underset{1}{\cancel{3}} \cdot 3 \cdot \underset{1}{\cancel{7}} \cdot 7}$

$= \mathbf{\frac{16}{21}}$

3.
$$\begin{array}{r} 1867 \\ -\ 1803 \\ \hline \mathbf{64\ years} \end{array}$$

4. (a) $\frac{\text{blue marbles}}{\text{total marbles}} = \frac{7}{12}$

(b) $\frac{\text{red marbles}}{\text{blue marbles}} = \frac{5}{7}$

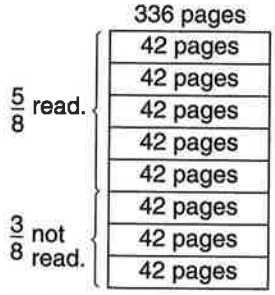
5. $\frac{\$0.90}{6 \text{ ounces}} = \frac{\$0.15}{1 \text{ ounce}}$

$\frac{\$1.26}{9 \text{ ounces}} = \frac{\$0.14}{1 \text{ ounce}}$

6-ounce can is $0.15 per ounce; 9-ounce can is $0.14 per ounce; 9-ounce can is the better buy.

6.
$$\begin{array}{r} 2550 \\ +\ 2900 \\ \hline 5450 \end{array} \qquad \begin{array}{r} \mathbf{2725} \\ 2\overline{)5450} \\ \underline{4} \\ 14 \\ \underline{14} \\ 5 \\ \underline{4} \\ 10 \\ \underline{10} \\ 0 \end{array}$$

7.



(a) 5(42 pages) = **210 pages**

(b) 3(42 pages) = **126 pages**

8. (a) $2\overline{)1.0}$ **0.5**

(b) $\frac{1}{2} \times 100\% = \frac{100\%}{2} = \mathbf{50\%}$

(c) $0.1 = \mathbf{\frac{1}{10}}$

(d) $0.1 \times 100\% = \mathbf{10\%}$

(e) $25\% = \frac{25}{100} = \mathbf{\frac{1}{4}}$

(f) $25\% = \frac{25}{100} = \mathbf{0.25}$

9. (a) $100\% - (10\% + 12\% + 20\% + 25\% + 20\%) = 100\% - 87\% = \mathbf{13\%}$

(b) $20\% = \frac{20}{100} = \mathbf{\frac{1}{5}}$

(c) 2($3200) = **$6400**

10. $0.545\overline{4} \ldots \longrightarrow$ **0.545**

11. (a) **See student answers.**

(b) **5 centimeters**

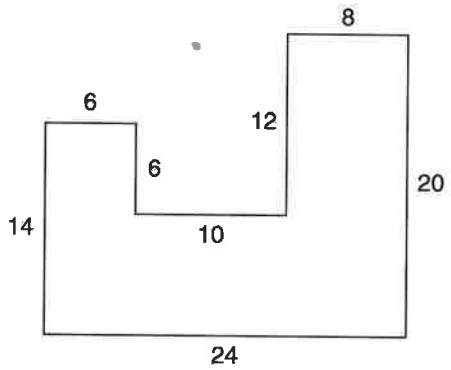
12. (a) **The exponent is 3 and the base is 5.**

(b) $10^4 \cdot 10^4 = 10^8$

13. 1 foot = 12 inches

$\frac{12 \text{ inches}}{6} =$ **2 inches**

14.



Perimeter = 24 cm + 14 cm + 6 cm + 6 cm + 10 cm + 12 cm + 8 cm + 20 cm = **100 cm**

15. $\frac{78 \text{ miles}}{1.2 \text{ gallons}} = 65 \frac{\text{miles}}{\text{gallon}}$

65 mpg

16. $\frac{6}{100} = \frac{15}{w}$

$6w = 100 \cdot 15$

$w = \frac{1500}{6}$

$w =$ **250**

17. $\frac{20}{x} = \frac{15}{12}$

$15x = 20 \cdot 12$

$x = \frac{240}{15}$

$x =$ **16**

18.
$$\begin{array}{r} 0.24 \\ 6\overline{)1.44} \\ \underline{12} \\ 24 \\ \underline{24} \\ 0 \end{array}$$
$m = \mathbf{0.24}$

19.
$$\begin{array}{rl} & \frac{1}{2} = \frac{3}{6} \\ - & \frac{1}{3} = \frac{2}{6} \\ \hline & f = \mathbf{\frac{1}{6}} \end{array}$$

20. $2^5 + 1^4 + 3^3$
$= 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 + 1 + 3 \cdot 3 \cdot 3$
$= 32 + 1 + 27 = \mathbf{60}$

21. $\sqrt{10^2 \cdot 6^2} = \sqrt{100 \cdot 36} = \sqrt{3600}$
$= \mathbf{60}$

22.
$$\begin{array}{rl} & 1\frac{1}{4} = 1\frac{3}{12} \\ + & 1\frac{1}{6} = 1\frac{2}{12} \\ \hline & 2\frac{5}{12} \end{array}$$

$$\begin{array}{rl} & 3\frac{5}{6} = 3\frac{10}{12} \\ - & 2\frac{5}{12} = 2\frac{5}{12} \\ \hline & \mathbf{1\frac{5}{12}} \end{array}$$

23.
$$\begin{array}{rcl} 4 & \longrightarrow & 3\frac{3}{3} \\ -\ \frac{2}{3} & & -\ \frac{2}{3} \\ \hline & & 3\frac{1}{3} \end{array}$$

$$\begin{array}{rl} & 8\frac{3}{4} = 8\frac{9}{12} \\ + & 3\frac{1}{3} = 3\frac{4}{12} \\ \hline & 11\frac{13}{12} = \mathbf{12\frac{1}{12}} \end{array}$$

24. $\frac{15}{16} \cdot \frac{24}{25} \cdot 1\frac{1}{9}$
$= \frac{\cancel{15}^{1}}{\cancel{16}_{2}} \cdot \frac{\cancel{24}^{1}}{\cancel{25}_{5}} \cdot \frac{\cancel{10}^{1}}{\cancel{9}_{3}} = \mathbf{1}$

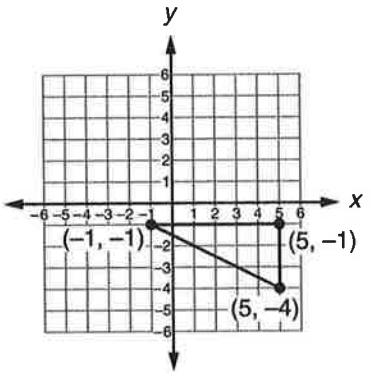
25. $2\frac{2}{3} \div 4 = \frac{8}{3} \div \frac{4}{1}$
$= \frac{\cancel{8}^{2}}{3} \times \frac{1}{\cancel{4}_{1}} = \frac{2}{3}$

$1\frac{1}{3} \div \frac{2}{3} = \frac{4}{3} \div \frac{2}{3} = \frac{\cancel{4}^{2}}{\cancel{3}_{1}} \times \frac{\cancel{3}^{1}}{\cancel{2}_{1}}$
$= \mathbf{2}$

26. $\frac{a}{b} = \frac{\$13.93}{0.07}$

$$\begin{array}{r} \mathbf{\$199.} \\ 007\overline{)\$1393.} \\ \underline{7} \\ 69 \\ \underline{63} \\ 63 \\ \underline{63} \\ 0 \end{array}$$
$199.00

27.



Area $= \frac{(6 \text{ units})(3 \text{ units})}{2} = \mathbf{9 \text{ sq. units}}$

28. $\frac{\text{students with more than one sibling}}{\text{total students}}$
$= \frac{8}{20} = \mathbf{\frac{2}{5}}$

29.
$$\begin{array}{r} \$50.00 \\ \times \quad .075 \\ \hline 25000 \\ 35000 \\ \hline \$3.75000 \end{array} \longrightarrow \$3.75$$

$$\begin{array}{r} \$50.00 \\ + \quad \$3.75 \\ \hline \mathbf{\$53.75} \end{array}$$

30. $m\angle a = 180° - (50° + 90°)$
$= 180° - 140° = \mathbf{40°}$
$m\angle b = \mathbf{50°}$
$m\angle c = 180° - 50° = \mathbf{130°}$

Lesson 49, Lesson Practice

a.
$$12\overline{)70} \quad \begin{array}{r} 5 \\ 60 \\ \hline 10 \end{array}$$
5 feet 10 in.

b. 6 feet $= 6(12 \text{ inches})$
$= 72$ inches
72 inches + 3 inches
$= \mathbf{75 \text{ inches}}$

c. 20 in. = 1 ft 8 in.

$$\begin{array}{r} 1 \text{ ft } 8 \text{ in.} \\ + \quad 5 \text{ ft} \\ \hline \mathbf{6 \text{ ft } 8 \text{ in.}} \end{array}$$

d.
$$\begin{array}{r} 2 \text{ yd } 1 \text{ ft } 8 \text{ in.} \\ + \quad 1 \text{ yd } 2 \text{ ft } 9 \text{ in.} \\ \hline 3 \text{ yd } 3 \text{ ft } 17 \text{ in.} \end{array}$$

17 in. = 1 ft 5 in.

$$\begin{array}{r} 1 \text{ ft } 5 \text{ in.} \\ + \quad 3 \text{ ft} \\ \hline 4 \text{ ft } 5 \text{ in.} \end{array} \longrightarrow 3 \text{ yd } 4 \text{ ft } 5 \text{ in.}$$

4 ft = 1 yd 1 ft

$$\begin{array}{r} 1 \text{ yd } 1 \text{ ft} \\ + \quad 3 \text{ yd} \\ \hline 4 \text{ yd } 1 \text{ ft} \end{array} \longrightarrow \mathbf{4 \text{ yd } 1 \text{ ft } 5 \text{ in.}}$$

e.
$$\begin{array}{r} 5 \text{ hr } 42 \text{ min } 53 \text{ s} \\ + \quad 6 \text{ hr } 17 \text{ min } 27 \text{ s} \\ \hline 11 \text{ hr } 59 \text{ min } 80 \text{ s} \end{array}$$

80 s = 1 min 20 s

$$\begin{array}{r} 1 \text{ min } 20 \text{ s} \\ + \quad 59 \text{ min} \\ \hline 60 \text{ min } 20 \text{ s} \end{array} \longrightarrow 11 \text{ hr } 60 \text{ min } 20 \text{ s}$$

60 min = 1 hr
11 hr + 1 hr = 12 hr
12 hr 20 s

Lesson 49, Mixed Practice

1.
$$\begin{array}{r} 0.2 \\ + \quad 0.05 \\ \hline 0.25 \end{array} \qquad \begin{array}{r} 0.05 \\ \times \quad 0.2 \\ \hline 0.010 \end{array} \longrightarrow 0.01$$

$$001\overline{)025} \quad \begin{array}{r} 25 \\ 2 \\ \hline 05 \\ 5 \\ \hline 0 \end{array}$$

2.
$$20\overline{)184.0} \quad \begin{array}{r} \mathbf{9.2 \text{ yards}} \\ 180 \\ \hline 40 \\ 40 \\ \hline 0 \end{array}$$

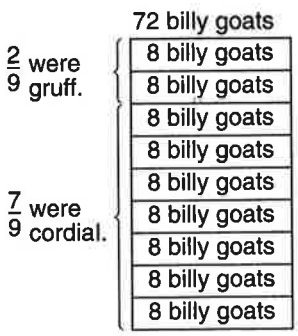
3.
$$24\overline{)\$6.00} \quad \begin{array}{r} \$0.25 \\ 48 \\ \hline 120 \\ 120 \\ \hline 0 \end{array}$$
25¢ per arrow

4. 3(8 sides) + 2(6 sides) + 5 sides
+ 2(4 sides)
= 24 sides + 12 sides + 5 sides + 8 sides
$= \mathbf{49 \text{ sides}}$

5.
$$\begin{array}{r} 6.21 \\ 4.38 \\ 7.5 \\ 6.3 \\ 5.91 \\ + \quad 8.04 \\ \hline 38.34 \end{array}$$

$$6\overset{2\ 1}{)}38.34 \quad \begin{array}{r} \mathbf{6.39} \\ 36 \\ \hline 23 \\ 18 \\ \hline 54 \\ 54 \\ \hline 0 \end{array}$$

6.



(a) $7(8 \text{ billy goats}) = \mathbf{56 \text{ billy goats}}$

(b) $\dfrac{\text{gruff billy goats}}{\text{cordial billy goats}} = \mathbf{\dfrac{2}{7}}$

7. $\mathbf{0.5,\ 0.\overline{54},\ 0.\overline{5}}$

8. (a) **Answers may vary.**

(b) $\mathbf{2\frac{5}{8}}$ **inches**

9. (a) $0.9 \times 100\% = \mathbf{90\%}$

(b) $1\frac{3}{5} \times 100\%$

$= \frac{8}{5} \times 100\% = \frac{800\%}{5}$

$= \mathbf{160\%}$

(c) $\frac{5}{6} \times 100\% = \frac{500\%}{6}$

$\frac{250\%}{3} = \mathbf{83\frac{1}{3}\%}$

10. (a) $75\% = \frac{75}{100} = \mathbf{\frac{3}{4}}$

(b) $75\% = \frac{75}{100} = \mathbf{0.75}$

(c) $5\% = \frac{5}{100} = \mathbf{\frac{1}{20}}$

(d) $5\% = \frac{5}{100} = \mathbf{0.05}$

11.
$$\begin{array}{r} 62 \\ \times\ 60 \\ \hline \end{array}$$
3720 times

12. even primes: 2

$\dfrac{\text{even primes}}{\text{total}} = \mathbf{\dfrac{1}{6}}$

13. (a) Area $= (1 \text{ in.})(1 \text{ in.}) = \mathbf{1 \text{ in.}^2}$

(b) Area $= \left(\frac{1}{2} \text{ in.}\right)\left(\frac{1}{2} \text{ in.}\right) = \mathbf{\frac{1}{4} \text{ in.}^2}$

(c) Area $= 1 \text{ in.}^2 - \frac{1}{4} \text{ in.}^2$

$= \frac{4}{4} \text{ in.}^2 - \frac{1}{4} \text{ in.}^2 = \mathbf{\frac{3}{4} \text{ in.}^2}$

14. Perimeter $= \frac{1}{2} \text{ in.} + 1 \text{ in.} + 1 \text{ in.}$

$+ \frac{1}{2} \text{ in.} + \frac{1}{2} \text{ in.} + \frac{1}{2} \text{ in.}$

$= 2 \text{ in.} + \frac{4}{2} \text{ in.} = 2 \text{ in.} + 2 \text{ in.}$

$= \mathbf{4 \text{ in.}}$

15. (a) **8 cm**

(b) **6 cm**

(c) **4.8 cm**

16. $\dfrac{y}{100} = \dfrac{18}{45}$

$45y = 100 \cdot 18$

$y = \dfrac{1800}{45}$

$y = \mathbf{40}$

17. $\dfrac{35}{40} = \dfrac{1.4}{m}$

$35m = (1.4)(40)$

$m = \dfrac{56}{35}$

$m = 1\frac{21}{35} = 1\frac{3}{5} = \mathbf{1.6}$

18. $\dfrac{\frac{1}{2} = \frac{3}{6}}{-\ \frac{1}{6} = \frac{1}{6}}$

$\dfrac{2}{6} = \dfrac{1}{3}$

$n = \mathbf{\frac{1}{3}}$

19.
$$\begin{array}{r} 0.29 \\ 9\overline{)2.61} \\ \underline{18} \\ 81 \\ \underline{81} \\ 0 \end{array}$$

$d = \mathbf{0.29}$

20. $\sqrt{100} + 4^3 = 10 + 4 \cdot 4 \cdot 4$
$= 10 + 64 = \mathbf{74}$

21. $3.14 \times 10^4 = 3.14 \times 10{,}000 = \mathbf{31{,}400}$

22. $4\frac{1}{6} = 4\frac{1}{6} \longrightarrow 3\frac{7}{6}$
$-\ 2\frac{1}{2} = 2\frac{3}{6} \qquad -\ 2\frac{3}{6}$
$1\frac{4}{6} = 1\frac{2}{3}$

$3\frac{3}{4} = 3\frac{9}{12}$
$+\ 1\frac{2}{3} = 1\frac{8}{12}$
$4\frac{17}{12} = \mathbf{5\frac{5}{12}}$

23. $3\frac{3}{4} \div 1\frac{1}{2} = \frac{15}{4} \div \frac{3}{2} = \frac{\overset{5}{\cancel{15}}}{\underset{2}{\cancel{4}}} \times \frac{\overset{1}{\cancel{2}}}{\underset{1}{\cancel{3}}} = \frac{5}{2}$

$6\frac{2}{3} \cdot \frac{5}{2} = \frac{\overset{10}{\cancel{20}}}{3} \cdot \frac{5}{\underset{1}{\cancel{2}}} = \frac{50}{3} = \mathbf{16\frac{2}{3}}$

24. 3 days 8 hr 15 min
+ 2 days 15 hr 45 min
5 days 23 hr 60 min
60 min = 1 hr; 23 hr + 1 hr = 24 hr
24 hr = 1 day
5 days + 1 day = **6 days**

25. 1 yd 2 ft 6 in.
+ 2 yd 1 ft 9 in.
3 yd 3 ft 15 in.
15 in. = 1 ft 3 in.

1 ft 3 in.
+ 3 ft
4 ft 3 in. ⟶ 3 yd 4 ft 3 in.

4 ft = 1 yd 1 ft
1 yd 1 ft
+ 3 yd
4 yd 1 ft ⟶ **4 yd 1 ft 3 in.**

26.
$$\begin{array}{r} \$300. \\ 006\overline{)\$1800} \\ \underline{18} \\ 00 \\ \underline{0} \\ 00 \\ \underline{0} \\ 0 \end{array}$$
$300.00

27. **Round 35.675 to 36. Round $2\frac{7}{8}$ to 3. Then divide 36 by 3.**

28. $18.50
+ $3.50
$22.00
$22.00
× 0.06
$1.3200 ⟶ $1.32
$22.00
$1.32
$23.32

29. $LWH = (0.5)(0.2)(0.1)$
0.5 × 0.2 = 0.10 ⟶ 0.1
0.1 × 0.1 = **0.01**

30. $m\angle a = \mathbf{32°}$
$m\angle b = 180° - (90° + 32°)$
$= 180° - 122° = \mathbf{58°}$
$m\angle c = 180° - 58° = \mathbf{122°}$

LESSON 50, LESSON PRACTICE

a. $\frac{\textbf{1 yd}}{\textbf{36 in.}}$ and $\frac{\textbf{36 in.}}{\textbf{1 yd}}$

b. $\frac{\textbf{100 cm}}{\textbf{1 m}}$ and $\frac{\textbf{1 m}}{\textbf{100 cm}}$

c. $\frac{\textbf{16 oz}}{\textbf{1 lb}}$ and $\frac{\textbf{1 lb}}{\textbf{16 oz}}$

d. $10\ \cancel{\text{yards}} \cdot \frac{36\text{ inches}}{1\ \cancel{\text{yard}}}$
$=$ **360 inches**

e. $24\ \cancel{\text{ft}} \cdot \frac{1\text{ yd}}{3\ \cancel{\text{ft}}}$
$=$ **8 yd**

f. $24\ \cancel{\text{shillings}} \cdot \frac{12\text{ pence}}{1\ \cancel{\text{shilling}}}$
$=$ **288 pence**

LESSON 50, MIXED PRACTICE

1.
$$\begin{array}{r} 3.5 \\ \times\ 0.4 \\ \hline 1.40 \end{array} \longrightarrow 1.4 \qquad \begin{array}{r} 3.5 \\ +\ 0.4 \\ \hline 3.9 \end{array}$$

$$\begin{array}{r} 3.9 \\ -\ 1.4 \\ \hline \mathbf{2.5} \end{array}$$

2. (a) $\dfrac{\text{parts with 1}}{\text{total parts}} = \dfrac{4}{10} = \mathbf{\dfrac{2}{5}}$

(b) $\dfrac{3}{5} \times 100\% = \dfrac{300\%}{5} = \mathbf{60\%}$

(c) $\dfrac{\text{numbers greater than 2}}{\text{total}} = \mathbf{\dfrac{3}{10}}$

3. $\dfrac{\$1.17}{13 \text{ ounces}} = \dfrac{\$0.09}{1 \text{ ounce}}$

$\dfrac{\$1.44}{18 \text{ ounces}} = \dfrac{\$0.08}{1 \text{ ounce}}$

13-ounce box = 9¢ per ounce
18-ounce box = 8¢ per ounce
18-ounce box is the better buy.

4. $\dfrac{20 \text{ miles}}{2.5 \text{ hours}} = \mathbf{8 \dfrac{miles}{hour}}$

5. $\$2 + \$0.50(5)$
$= \$2 + \$2.50 = \mathbf{\$4.50}$

6. $\begin{array}{r} \mathbf{7 \text{ hours}} \\ 60\overline{)420} \end{array}$

7.

	30 football players
$\frac{2}{5}$ were endomorphic.	6 players
	6 players
$\frac{3}{5}$ were not endomorphic.	6 players
	6 players
	6 players

(a) 2(6 football players)
$= \mathbf{12 \text{ football players}}$

(b) $\dfrac{3}{5} \times 100\% = \dfrac{300\%}{5} = \mathbf{60\%}$

8. B. 40%

9. $\begin{array}{r} 0.8333\ldots \\ 6\overline{)5.0000\ldots} \end{array}$ **3.8333**

$$\begin{array}{r} 48 \\ \hline 20 \\ 18 \\ \hline 20 \\ 18 \\ \hline 20 \\ 18 \\ \hline 2 \end{array}$$

10. 7,500,000
$= 7{,}000{,}000 + 500{,}000$
$= \mathbf{(7 \times 10^6) + (5 \times 10^5)}$

11. (a) $0.6 \times 100\% = \mathbf{60\%}$

(b) $\dfrac{1}{6} \times 100\% = \dfrac{100\%}{6}$
$= \mathbf{16\dfrac{2}{3}\%}$

(c) $1\dfrac{1}{2} \times 100\% = \dfrac{3}{2} \times 100\%$
$= \dfrac{300\%}{2} = \mathbf{150\%}$

12. (a) $30\% = \dfrac{30}{100} = \mathbf{\dfrac{3}{10}}$

(b) $\begin{array}{r} 0.3 \\ 10\overline{)3.0} \\ \hline 30 \\ \hline 0 \end{array}$ **0.3**

(c) $250\% = \dfrac{250}{100} = \dfrac{25}{10} = \dfrac{5}{2} = \mathbf{2\dfrac{1}{2}}$

(d) $250\% = 2\dfrac{1}{2} = \mathbf{2.5}$

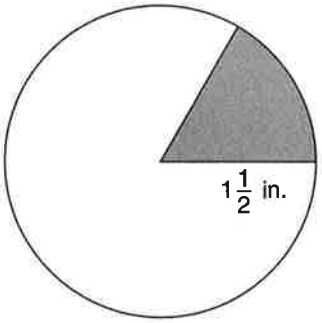
13. 97

14. (a) Area $= (8 \text{ cm})(12 \text{ cm})$
$= \mathbf{96 \text{ cm}^2}$

(b) Area $= \dfrac{(6 \text{ cm})(8 \text{ cm})}{2} = \mathbf{24 \text{ cm}^2}$

(c) Area $= 96 \text{ cm}^2 + 24 \text{ cm}^2$
$= \mathbf{120 \text{ cm}^2}$

15.



16. $\frac{10}{x} = \frac{7}{42}$

$7x = 10 \cdot 42$

$x = \frac{420}{7}$

$x = \mathbf{60}$

17. $\frac{1.5}{1} = \frac{w}{4}$

$1w = (1.5)4$

$w = \frac{6}{1}$

$w = \mathbf{6}$

18.
$$\begin{array}{r} 5.\overset{5}{\cancel{6}}\overset{1}{0} \\ -\ 3.5\,6 \\ \hline 2.0\,4 \end{array}$$

$y = \mathbf{2.04}$

19. $\frac{3}{20} = \frac{9}{60}$

$-\ \frac{1}{15} = \frac{4}{60}$

$\frac{5}{60} = \frac{1}{12}$

$w = \mathbf{\frac{1}{12}}$

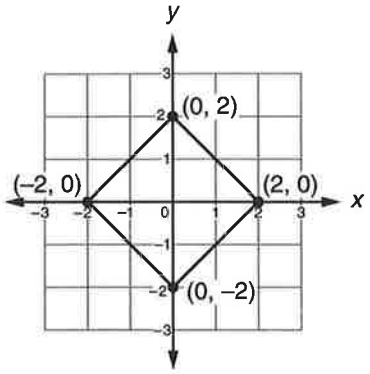
20. (a) **Distributive property**

(b) **Commutative property of addition**

(c) **Identity property of multiplication**

21. **B.** $\mathbf{10^4}$

22.



(a) **(0, 2)**

(b) Area $= 4(1 \text{ sq. units}) + 8\left(\frac{1}{2} \text{ sq. units}\right)$

$= 4 \text{ sq. units} + 4 \text{ sq. units}$

$= \mathbf{8 \text{ sq. units}}$

23. $\mathbf{2\frac{1}{2}}$ **cookies**

$4\overline{)10}$

$\frac{8}{2}$

24. (a) **14**

(b) **15**

(c) **See student work.**

25. $\frac{\mathbf{10 \text{ mm}}}{\mathbf{1 \text{ cm}}}, \frac{\mathbf{1 \text{ cm}}}{\mathbf{10 \text{ mm}}}$

$\overset{16}{\cancel{160 \text{ mm}}} \cdot \frac{1 \text{ cm}}{\underset{1}{\cancel{10 \text{ mm}}}} = \mathbf{16 \text{ cm}}$

26.
$$\begin{array}{rrr} 4 \text{ yd} & 2 \text{ ft} & 7 \text{ in.} \\ +\ 3 \text{ yd} & & 5 \text{ in.} \\ \hline 7 \text{ yd} & 2 \text{ ft} & 12 \text{ in.} \end{array}$$

12 in. = 1 ft, 1 ft + 2 ft = 3 ft

3 ft = 1 yd, 7 yd + 1 yd = **8 yd**

27. $1\frac{3}{4} \div 2\frac{1}{3} = \frac{7}{4} \div \frac{7}{3}$

$= \frac{\overset{1}{\cancel{7}}}{4} \times \frac{3}{\underset{1}{\cancel{7}}} = \frac{3}{4}$

$5\frac{1}{6} = 5\frac{2}{12} \longrightarrow 4\frac{14}{12}$

$-\ \frac{3}{4} = \frac{9}{12} \qquad -\ \frac{9}{12}$

$\mathbf{4\frac{5}{12}}$

28. $3\frac{1}{8} \cdot 2\frac{2}{5} = \frac{\overset{5}{\cancel{25}}}{\underset{2}{\cancel{8}}} \cdot \frac{\overset{3}{\cancel{12}}}{\underset{1}{\cancel{5}}} = \frac{15}{2}$

$$3\frac{5}{7} = 3\frac{10}{14}$$
$$+ \quad \frac{15}{2} = \frac{105}{14}$$
$$3\frac{115}{14} = \mathbf{11\frac{3}{14}}$$

29. (a) $m\angle BAC = m\angle CDB = \mathbf{60°}$

(b) $m\angle BCA = 180° - (70° + 60°)$
$= 180° - 130° = \mathbf{50°}$

(c) $m\angle CBD = m\angle BCA = \mathbf{50°}$

30. **4(5 − 3)** or **4(5 − 3)**
4(2) **20 − 12**
8 **8**

Lesson 51, Lesson Practice

a. 1,5000000 ⟶ **1.5 × 10^7**

b. 4,00000000000 ⟶ **4 × 10^{11}**

c. 5,090000 ⟶ **5.09 × 10^6**

d. 2,50000000000 ⟶ **2.5 × 10^{11}**

e. 3400000, ⟶ **3,400,000**

f. 500000000, ⟶ **500,000,000**

g. 100000, ⟶ **100,000**

h. 150000, ⟶ 150,000
1500000, ⟶ 1,500,000
$1.5 \times 10^5 < 1.5 \times 10^6$

i. 1000000, ⟶ 1,000,000
1,000,000 = 1,000,000
one million = 1×10^6

Lesson 51, Mixed Practice

1. **3 tests**

2.
$$\begin{array}{r} 70 \\ 80 \\ 75 \\ 85 \\ +\ 90 \\ \hline 400 \end{array} \qquad 5\overline{)400}\ \ \mathbf{80}$$

3. $\frac{9 \text{ in.}}{6} = \frac{3}{2}$ in.

$5\left(\frac{3}{2} \text{ in.}\right) = \frac{15}{2}$ in. $= \mathbf{7\frac{1}{2}}$ **in.**

4. $\frac{\$1.98}{6 \text{ cans}} = \frac{\$0.33}{1 \text{ can}}$

$$\begin{array}{r} \$0.40 \\ -\ \$0.33 \\ \hline \$0.07 \end{array}$$

7¢ per can

5. (a) $\frac{\text{unconvinced people}}{\text{total people}} = \frac{2}{7}$

(b) $\frac{\text{convinced people}}{\text{unconvinced people}} = \frac{5}{2}$

6. (a) 1,2000000 ⟶ **1.2 × 10^7**

(b) 1,7600 ⟶ **1.76 × 10^4**

7. (a) 12000, ⟶ **12,000**

(b) 5000000, ⟶ **5,000,000**

8. (a)
$$\begin{array}{r} \mathbf{0.125} \\ 8\overline{)1.000} \\ \underline{8} \\ 20 \\ \underline{16} \\ 40 \\ \underline{40} \\ 0 \end{array}$$

(b) $87\frac{1}{2}\% = \frac{87.5}{100} = \mathbf{0.875}$

9. (a) **30,000**

(b) **5000**