22. $1.2w = 26.4$

$\frac{1.2w}{1.2} = \frac{26.4}{1.2}$

$w = \mathbf{22}$

check: $1.2(22) = 26.4$

$26.4 = 26.4$

23. $y + 3.6 = 8.47$

$y + 3.6 - 3.6 = 8.47 - 3.6$

$y = \mathbf{4.87}$

check: $4.87 + 3.6 = 8.47$

$8.47 = 8.47$

24. $9^2 - [3^3 - (9 \cdot 3 - \sqrt{9})]$

$81 - [27 - (27 - 3)]$

$81 - [27 - (24)]$

$81 - [3]$

78

25.

$$\begin{array}{r} 2 \text{ hr } \overset{47}{\cancel{48}} \text{ min } 20 \text{ s} \\ -\ 1 \text{ hr } 23 \text{ min } 48 \text{ s} \end{array} \longrightarrow \overset{47}{\cancel{48}}\text{ min } 20 \text{ s} \longrightarrow (60 \text{ s})$$

$$\begin{array}{r} 2 \text{ hr } \overset{47}{\cancel{48}} \text{ min } \overset{80}{\cancel{20}} \text{ s} \\ -\ 1 \text{ hr } 23 \text{ min } 48 \text{ s} \end{array}$$

1 hr 24 min 32 s

26. $100 \cancel{\text{yd}} \cdot \frac{3 \cancel{\text{ft}}}{1 \cancel{\text{yd}}} \cdot \frac{12 \text{ in.}}{1 \cancel{\text{ft}}}$

$= \mathbf{3600 \text{ in.}}$

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

$= \frac{3}{1} \times \frac{3}{4} = \frac{9}{4}$

$5\frac{1}{3} \cdot \frac{9}{4} = \frac{\overset{4}{\cancel{16}}}{\underset{1}{\cancel{3}}} \cdot \frac{\overset{3}{\cancel{9}}}{\underset{1}{\cancel{4}}} = \mathbf{12}$

28. $3\frac{1}{5} + 2\frac{1}{2} - 1\frac{1}{4}$

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

$= 5\frac{14}{20} - 1\frac{5}{20} = \mathbf{4\frac{9}{20}}$

29. (a) $(-26) + (-15) - (-40)$

$(-26) + (-15) + [-(-40)]$

$(-26) + (-15) + [40]$

$\mathbf{-1}$

(b) $(-5) + (-4) - (-3) - (+2)$

$(-5) + (-4) + [-(-3)] + [-(+2)]$

$(-5) + (-4) + [3] + [-2]$

$\mathbf{-8}$

30. (a) 5^7

(b) 5^3

(c) 5^0

(d) 5^{-3}

Lesson 76, Lesson Practice

a. $\frac{37\frac{1}{2}}{100} = \frac{\frac{75}{2}}{\frac{100}{1}}$

$\frac{\frac{75}{2}}{\frac{100}{1}} \cdot \frac{\frac{1}{100}}{\frac{1}{100}} = \frac{\frac{75}{200}}{1} = \frac{75}{200}$

$= \mathbf{\frac{3}{8}}$

b. $\frac{12}{\frac{5}{6}} = \frac{\frac{12}{1}}{\frac{5}{6}}$

$\frac{\frac{12}{1}}{\frac{5}{6}} \cdot \frac{\frac{6}{5}}{\frac{6}{5}} = \frac{\frac{72}{5}}{1} = \frac{72}{5} = \mathbf{14\frac{2}{5}}$

c. $\frac{\frac{2}{5}}{\frac{2}{3}} \cdot \frac{\frac{3}{2}}{\frac{3}{2}} = \frac{\frac{6}{10}}{1} = \frac{6}{10} = \mathbf{\frac{3}{5}}$

d. $66\frac{2}{3}\% = \frac{66\frac{2}{3}}{100} = \frac{\frac{200}{3}}{\frac{100}{1}}$

$\frac{\frac{200}{3}}{\frac{100}{1}} \cdot \frac{\frac{1}{100}}{\frac{1}{100}} = \frac{\frac{200}{300}}{1} = \frac{200}{300} = \mathbf{\frac{2}{3}}$

e. $8\frac{1}{3}\% = \frac{8\frac{1}{3}}{100} = \frac{\frac{25}{3}}{\frac{100}{1}}$

$\frac{\frac{25}{3}}{\frac{100}{1}} \cdot \frac{\frac{1}{100}}{\frac{1}{100}} = \frac{\frac{25}{300}}{1} = \frac{25}{300} = \mathbf{\frac{1}{12}}$

f. $4\frac{1}{6}\% = \frac{4\frac{1}{6}}{100} = \frac{\frac{25}{6}}{\frac{100}{1}}$

$\frac{\frac{25}{6}}{\frac{100}{1}} \cdot \frac{\frac{1}{100}}{\frac{1}{100}} = \frac{\frac{25}{600}}{1} = \frac{25}{600} = \mathbf{\frac{1}{24}}$

Lesson 76, Mixed Practice

1. $\frac{42 \text{ kilometers}}{1.75 \text{ hours}} = \mathbf{24 \text{ kilometers per hour}}$

2.
$$\begin{array}{r} 7.9 \\ 8.3 \\ 8.1 \\ 8.1 \\ +\ 8.2 \\ \hline 40.6 \end{array} \qquad 5\overline{)40.60}\ \ 8.12$$

3.

	Ratio	Actual Count
Good guys	2	G
Bad guys	5	B
Total	7	35

$$\frac{2}{7} = \frac{G}{35}$$
$$7G = 35(2)$$
$$G = \frac{70}{7}$$
$$G = \textbf{10 guys}$$

4. $\textbf{3.5 grams} \cdot \dfrac{\textbf{1000 milligrams}}{\textbf{1 gram}}$
$= \textbf{3500 milligrams}$

5. $16\frac{2}{3}\% = \dfrac{16\frac{2}{3}}{100} = \dfrac{\frac{50}{3}}{\frac{100}{1}}$

$$\frac{\frac{50}{3}}{\frac{100}{1}} \cdot \frac{\frac{1}{100}}{\frac{1}{100}} = \frac{\frac{50}{300}}{1} = \frac{50}{300} = \frac{1}{6}$$

6. **East**

7. $\dfrac{1}{\cancel{6}_{1}} \times \cancel{144}^{24}$ grams $=$ **24 grams**

8. (a) $\sqrt{2(2)^3} = \sqrt{2^4} = 2^2 = \mathbf{4}$

(b) $(2)^{-1} \cdot (2)^{-2} = \frac{1}{2} \cdot \frac{1}{4} = \mathbf{\frac{1}{8}}$

9. (a) $\dfrac{-60}{-12} = \mathbf{5}$

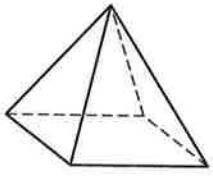
(b) $(-8)(6) = \mathbf{-48}$

(c) $\dfrac{40}{-8} = \mathbf{-5}$

(d) $(-5)(-15) = \mathbf{75}$

10. $C = \pi(30\text{ cm})$
$C = \mathbf{30\pi\ cm}$

11.



(a) **5 faces**

(b) **8 edges**

(c) **5 vertices**

12. $\mathbf{W_N = 0.1 \times \$37.50}$
$W_N = \mathbf{\$3.75}$

13. $W_N = \dfrac{5}{\cancel{8}_{1}} \times \cancel{72}^{9}$

$W_N = \mathbf{45}$

14. $\mathbf{25 = W_F \times 60}$
$\dfrac{25}{60} = \dfrac{W_F \times 60}{60}$
$\dfrac{5}{12} = W_F$

15. $\mathbf{60 = W_D \times 80}$
$\dfrac{60}{80} = \dfrac{W_D \times 80}{80}$
$\mathbf{0.75} = W_D$

16. (a) $m\angle ACB = 180° - 115° = \mathbf{65°}$

(b) $m\angle ABC = m\angle ACB = \mathbf{65°}$

(c) $m\angle CAB = 180° - (65° + 65°)$
$= 180° - 130° = \mathbf{50°}$

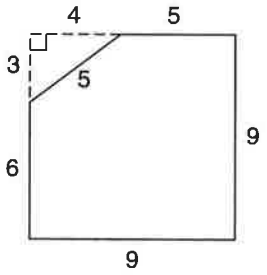
17. (a) $6\overline{)5.00\ldots}\ \ 0.83\ldots$ $\mathbf{0.8\overline{3}}$

(b) $\dfrac{5}{6} \times 100\% = \dfrac{500\%}{6} = \mathbf{83\frac{1}{3}\%}$

(c) $0.1\% = \dfrac{0.1}{100} = \mathbf{\dfrac{1}{1000}}$

(d) $0.1\% = \dfrac{0.1}{100} = \mathbf{0.001}$

18.



(a) Perimeter $= 5$ in. $+ 9$ in. $+ 9$ in.
$+ 6$ in. $+ 5$ in. $= \mathbf{34\ in.}$

(b) Area of rectangle $= (9 \text{ in.})(9 \text{ in.})$
$= 81 \text{ in.}^2$

Area of triangle $= \dfrac{(4 \text{ in.})(3 \text{ in.})}{2}$
$= 6 \text{ in.}^2$

Area of figure $= 81 \text{ in.}^2 - 6 \text{ in.}^2$
$= \mathbf{75 \text{ in.}^2}$

19. **Rectangle**

20. $\begin{array}{r} 212°\text{F} \\ +\ 32\ \text{F} \\ \hline 244°\text{F} \end{array}$ $\quad \dfrac{244°\text{F}}{2} = \mathbf{122°F}$

21. $x - 25 = 96$
$x - 25 + 25 = 96 + 25$
$x = \mathbf{121}$

check: $121 - 25 = 96$
$96 = 96$

22. $\frac{2}{3}m = 12$

$\left(\frac{\cancel{3}}{\cancel{2}}\right)\frac{\cancel{2}}{\cancel{3}}m = \left(\frac{3}{\cancel{2}}\right)\cancel{12}^{6}$

$m = \mathbf{18}$

check: $\frac{2}{\cancel{3}}(\cancel{18}^{6}) = 12$
$2(6) = 12$
$12 = 12$

23. $2.5p = 6.25$
$\dfrac{2.5p}{2.5} = \dfrac{6.25}{2.5}$
$p = \mathbf{2.5}$

check: $(2.5)(2.5) = 6.25$
$6.25 = 6.25$

24. $10 = f + 3\frac{1}{3}$
$10 - 3\frac{1}{3} = f + 3\frac{1}{3} - 3\frac{1}{3}$
$9\frac{3}{3} - 3\frac{1}{3} = f$
$\mathbf{6\frac{2}{3}} = f$

check: $10 = 6\frac{2}{3} + 3\frac{1}{3}$
$10 = 9\frac{3}{3}$
$10 = 10$

25. $\sqrt{13^2 - 5^2} = \sqrt{169 - 25}$
$= \sqrt{144} = \mathbf{12}$

26. $1 \text{ ton} = 2000 \text{ lb}$
$2000 \text{ lb} - 400 \text{ lb} = \mathbf{1600 \text{ lb}}$

27. $3\frac{3}{4} \times 4\frac{1}{6} \times (0.4)^2$
$= \frac{15}{4} \times \frac{25}{6} \times \left(\frac{4}{10}\right)^2$
$= \frac{\cancel{15}^{5}}{\cancel{4}_{1}} \times \frac{\cancel{25}^{1}}{\cancel{6}_{2}} \times \frac{\cancel{16}^{1}}{\cancel{100}_{1}}$
$= \frac{5}{2} = \mathbf{2\frac{1}{2}}$

28. $3\frac{1}{8} + 6.7 + 8\frac{1}{4}$
$= 3.125 + 6.7 + 8.25 = \mathbf{18.075}$

29. (a) $(-3) + (-5) - (-3) - |+5|$
$(-3) + (-5) + [-(-3)] + [-|+5|]$
$(-3) + (-5) + [3] + [-5]$
$\mathbf{-10}$

(b) $(-73) + (-24) - (-50)$
$(-73) + (-24) + [-(-50)]$
$(-73) + (-24) + [50]$
$\mathbf{-47}$

30. **The quotient is a little more than 1 because the dividend is slightly greater than the divisor.**

$\dfrac{\frac{5}{6}}{\frac{2}{3}} \cdot \dfrac{\frac{3}{2}}{\frac{3}{2}} = \dfrac{\frac{15}{12}}{1} = \dfrac{15}{12} = \dfrac{5}{4} = \mathbf{1\frac{1}{4}}$

LESSON 77, LESSON PRACTICE

a. $24 = W_P \times 40$

$\dfrac{\cancel{24}^{3}}{\cancel{40}_{5}} = \dfrac{W_P \times \cancel{40}^{1}}{\cancel{40}_{1}}$

$\frac{3}{5} = W_P$

$W_P = \frac{3}{5} \times 100\% = \mathbf{60\%}$

b. $W_P \times 6 = 2$

$$\frac{W_P \times \cancel{6}^{1}}{\cancel{6}_{1}} = \frac{\cancel{2}^{1}}{\cancel{6}_{3}}$$

$$W_P = \frac{1}{3}$$

$$W_P = \frac{1}{3} \times 100\% = \mathbf{33\frac{1}{3}\%}$$

c. $\frac{15}{100} \times W_N = 45$

$$\frac{\cancel{15}^{1}}{\cancel{100}_{1}} \cdot \frac{\cancel{100}^{1}}{\cancel{15}_{1}} \times W_N = \cancel{45}^{3} \cdot \frac{100}{\cancel{15}_{1}}$$

$W_N = \mathbf{300}$

d. $W_P \times 4 = 6$

$$\frac{W_P \times 4}{4} = \frac{\cancel{6}^{3}}{\cancel{4}_{2}}$$

$$W_P = \frac{3}{2} \times 100\% = \mathbf{150\%}$$

e. $24 = 120\% \times W_N$

$24 = \frac{120}{100} \times W_N$

$$\frac{\cancel{100}^{20}}{\cancel{120}_{\cancel{6}_{1}}} \times \cancel{24}^{1} = \frac{\cancel{100}^{1}}{\cancel{120}_{1}} \times \frac{\cancel{120}^{1}}{\cancel{100}_{1}} \times W_N$$

$\mathbf{20} = W_N$

f. $60 = \frac{\cancel{150}^{3}}{\cancel{100}_{2}} \times W_N$

$60 = \frac{\mathbf{3}}{\mathbf{2}} \times W_N$

$$\frac{2}{\cancel{3}_{1}} \times \cancel{60}^{20} = \left(\frac{\cancel{2}^{1}}{\cancel{3}_{1}}\right)\left(\frac{\cancel{3}^{1}}{\cancel{2}_{1}}\right) \times W_N$$

$\mathbf{40} = W_N$

g. $W_P \times \$5.00 = \$0.35$

$$\frac{W_P \times \$5.\cancel{00}^{1}}{\$5.\cancel{00}_{1}} = \frac{\$0.35}{\$5.00}$$

$W_P = 0.07$

$W_P = 0.07 \times 100\% = \mathbf{7\%}$

LESSON 77, MIXED PRACTICE

1.

	Ratio	Actual Count
Nickels	2	70
Pennies	5	P
Total	7	T

$\frac{2}{7} = \frac{70}{T}$

$2T = 7(70)$

$T = \frac{490}{2}$

$T =$ **245 coins**

2. $0.8(50 \text{ questions}) =$ **40 questions**

3.

$$\begin{array}{r} 80\% \\ 75\% \\ 80\% \\ 95\% \\ 80\% \\ +\ 100\% \\ \hline 510\% \end{array} \qquad 6\overline{)510\%} \quad \mathbf{85\%}$$

4. (a) **80%**

(b) $100\% - 75\% =$ **25%**

5. (a) **Sphere**

(b) **Cylinder**

(c) **Rectangular prism**

6.

	Case 1	Case 2
Inches	100	250
Centimeters	254	C

$\frac{100}{254} = \frac{250}{C}$

$100C = (254)(250)$

$C = \frac{63500}{100}$

$C =$ **635 centimeters**

7.

30 people

$\frac{3}{5}$ agreed.	6 people
	6 people
	6 people
$\frac{2}{5}$ disagreed.	6 people
	6 people

(a) $\frac{\mathbf{2}}{\mathbf{5}}$

(b) $12 \div 2 = 6$, $6(5 \text{ people}) =$ **30 people**

(c) $3(6 \text{ people}) = \mathbf{18 \text{ people}}$

(d) $\frac{\text{agreed}}{\text{disagreed}} = \frac{18}{12} = \mathbf{\frac{3}{2}}$

8. $40 = \frac{4}{25} \times W_N$

$$\frac{25}{4} \times \frac{\overset{10}{40}}{1} = \frac{\overset{1}{25}}{\underset{1}{4}} \times \frac{\overset{1}{4}}{\underset{1}{25}} \times W_N$$

$$\mathbf{250} = W_N$$

9. $\mathbf{0.24 \times 10{,}000 = W_N}$

$$\mathbf{2400} = W_N$$

10. $\mathbf{0.12 \times W_N = 240}$

$$\frac{\overset{1}{0.12} \times W_N}{\underset{1}{0.12}} = \frac{\overset{2000}{240}}{\underset{1}{0.12}}$$

$$W_N = \mathbf{2000}$$

11. $\mathbf{20 = W_P \times 25}$

$$\frac{\overset{4}{20}}{\underset{5}{25}} = \frac{W_P \times \overset{1}{25}}{\underset{1}{25}}$$

$$\frac{4}{5} = W_P$$

$$W_P = \frac{4}{5} \times 100\% = \mathbf{80\%}$$

12. (a) $(25)(-5) = \mathbf{-125}$

(b) $(-15)(-5) = \mathbf{75}$

(c) $\frac{-250}{-5} = \mathbf{50}$

(d) $\frac{-225}{15} = \mathbf{-15}$

13. (a) $0.2 = \frac{2}{10} = \mathbf{\frac{1}{5}}$

(b) $0.2 = \frac{2}{10} = \frac{20}{100} = \mathbf{20\%}$

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

(d) $2\% = \frac{2}{100} = \mathbf{0.02}$

14.
$$\begin{array}{r} \$21.00 \\ \times\ \ 0.075 \\ \hline \$1.575 \end{array} \longrightarrow \$1.58$$

$$\begin{array}{r} \$21.00 \\ +\ \$\ 1.58 \\ \hline \mathbf{\$22.58} \end{array}$$

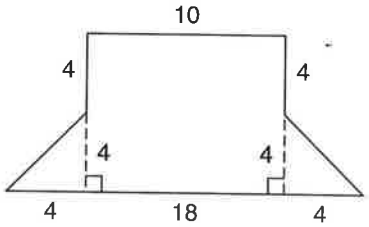
15. (a) $\frac{14\frac{2}{7}}{100} = \frac{\frac{100}{7}}{\frac{100}{1}}$

$$\frac{\frac{100}{7}}{\frac{100}{1}} \cdot \frac{\frac{1}{100}}{\frac{1}{100}} = \frac{\frac{100}{700}}{1} = \frac{100}{700} = \mathbf{\frac{1}{7}}$$

(b) $\frac{60}{\frac{2}{3}} = \frac{\frac{60}{1}}{\frac{2}{3}}$

$$\frac{\frac{60}{1}}{\frac{2}{3}} \cdot \frac{\frac{3}{2}}{\frac{3}{2}} = \frac{\frac{180}{2}}{1} = \frac{180}{2} = \mathbf{90}$$

16.



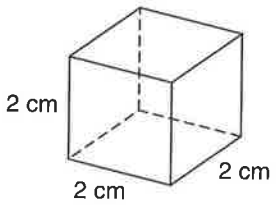
Area of rectangle $= (10 \text{ ft})(8 \text{ ft}) = 80 \text{ ft}^2$

Area of triangle $= \frac{(4 \text{ ft})(4 \text{ ft})}{2} = 8 \text{ ft}^2$

$+$ Area of triangle $= \frac{(4 \text{ ft})(4 \text{ ft})}{2} = 8 \text{ ft}^2$

Area of figure $= \mathbf{96 \text{ ft}^2}$

17.



(a) $(2 \text{ cm})(2 \text{ cm}) = 4 \text{ cm}^2$

$$\frac{4 \text{ cm}^2}{1 \text{ layer}} \cdot 1 \text{ cm}(2 \text{ layers}) = \mathbf{8 \text{ cm}^3}$$

(b) **One way to find the surface area of a cube is to find the area of one face of the cube and then multiply that area by 6.**

18. $\mathbf{1.2 \times 10^{10}}$

19. (a) $C = \pi(20 \text{ mm})$

$C = \mathbf{20\pi \text{ mm}}$

(b) $C \approx 3.14(20 \text{ mm})$

$C \approx \mathbf{62.8 \text{ mm}}$

20. $3x = 26.7$

$$\frac{\overset{1}{3}x}{\underset{1}{3}} = \frac{\overset{8.9}{26.7}}{\underset{1}{3}}$$

$$x = \mathbf{8.9}$$

check: $3(8.9) = 26.7$

$26.7 = 26.7$

21. $y - 3\frac{1}{3} = 7$

$y - 3\frac{1}{3} + 3\frac{1}{3} = 7 + 3\frac{1}{3}$

$y = \mathbf{10\frac{1}{3}}$

check: $10\frac{1}{3} - 3\frac{1}{3} = 7$

$7 = 7$

22. $\frac{2}{3}x = 48$

$\left(\frac{\cancel{3}^{1}}{\cancel{2}_{1}}\right)\left(\frac{\cancel{2}^{1}}{\cancel{3}_{1}}\right)x = \left(\frac{3}{\cancel{2}_{1}}\right)\cancel{48}^{24}$

$x = \mathbf{72}$

check: $\frac{2}{\cancel{3}_{1}}(\cancel{72}^{24}) = 48$

$2(24) = 48$

$48 = 48$

23. **Multiply the "in" number by 4; then add 1 to find the "out" number.**

$3(4) + 1 = \mathbf{13}$

$1 - 1 = 0, \ \frac{0}{4} = \mathbf{0}$

24. $5^2 - \{2^3 + 3[4^2 - (4)(\sqrt{9})]\}$

$25 - \{8 + 3[16 - (4)(3)]\}$

$25 - \{8 + 3[16 - 12]\}$

$25 - \{8 + 3[4]\}$

$25 - \{8 + 12\}$

$25 - 20$

$\mathbf{5}$

25.
$$\begin{array}{r} 4 \text{ gal} \quad 3 \text{ qt} \quad 1 \text{ pt} \\ +\ 1 \text{ gal} \quad 2 \text{ qt} \quad 1 \text{ pt} \\ \hline 5 \text{ gal} \quad 5 \text{ qt} \quad 2 \text{ pt} \end{array}$$

2 pt = 1 qt, 5qt + 1 qt = 6 qt

6 qt = 1 gal 2 qt

$$\begin{array}{r} 1 \text{ gal} \quad 2 \text{ qt} \\ +\ 5 \text{ gal} \\ \hline \mathbf{6 \text{ gal} \quad 2 \text{ qt}} \end{array}$$

26. $1 \cancel{\text{ft}}^2 \cdot \frac{12 \text{ in.}}{1 \cancel{\text{ft}}} \cdot \frac{12 \text{ in.}}{1 \cancel{\text{ft}}}$

$= \mathbf{144 \text{ in.}^2}$

27. $1\frac{1}{3} \div 3 = \frac{4}{3} \div \frac{3}{1} = \frac{4}{3} \times \frac{1}{3} = \frac{4}{9}$

$5\frac{1}{3} \div \frac{4}{9} = \frac{16}{3} \div \frac{4}{9} = \frac{\cancel{16}^{4}}{\cancel{3}_{1}} \times \frac{\cancel{9}^{3}}{\cancel{4}_{1}} = \mathbf{12}$

28. $3\frac{1}{5} - 2\frac{1}{2} + 1\frac{1}{4} = \left(\frac{16}{5} - \frac{5}{2}\right) + \frac{5}{4}$

$= \left(\frac{64}{20} - \frac{50}{20}\right) + \frac{25}{20} = \frac{14}{20} + \frac{25}{20}$

$= \frac{39}{20} = \mathbf{1\frac{19}{20}}$

29. $2.5 = 2\frac{1}{2}$

$3\frac{1}{3} \div 2\frac{1}{2} = \frac{10}{3} \div \frac{5}{2}$

$= \frac{\cancel{10}^{2}}{3} \times \frac{2}{\cancel{5}_{1}} = \frac{4}{3} = \mathbf{1\frac{1}{3}}$

30. (a) $(-3) + (-4) - (+5)$

$(-3) + (-4) + [-(+5)]$

$(-3) + (-4) + [-5]$

$\mathbf{-12}$

(b) $(-6) - (-16) - (+30)$

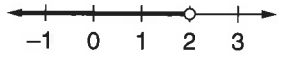
$(-6) + [-(-16)] + [-(+30)]$

$(-6) + [16] + [-30]$

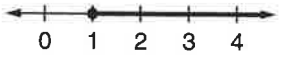
$\mathbf{-20}$

Lesson 78, Lesson Practice

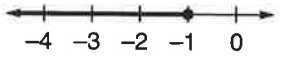
a.



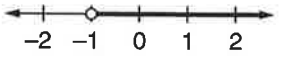
b.



c.



d.



Lesson 78, Mixed Practice

1.

	Case 1	Case 2
Cartons	4	C
Hungry children	30	75

$\frac{4}{30} = \frac{C}{75}$

$30C = 4(75)$

$C = \frac{300}{30}$

$C = \mathbf{10 \text{ cartons}}$

2. $4(88) = 352, 6(90) = 540$

$$\begin{array}{r} 540 \\ -\ 352 \\ \hline 188 \end{array} \qquad 2\overline{)188}\ \ \mathbf{94}$$

3. $$\left(\frac{2}{3} + \frac{3}{4}\right) \div \left(\frac{2}{3} \times \frac{3}{4}\right)$$

$$= \left(\frac{8}{12} + \frac{9}{12}\right) \div \left(\frac{1}{2}\right)$$

$$= \frac{17}{12} \div \frac{1}{2}$$

$$= \frac{17}{\cancel{12}_{6}} \times \frac{\overset{1}{\cancel{2}}}{1} = \frac{17}{6} = \mathbf{2\frac{5}{6}}$$

4.

	Ratio	Actual Count
Monocotyledons	3	M
Dicotyledons	4	84

$$\frac{3}{4} = \frac{M}{84}$$

$$4M = 3(84)$$

$$M = \frac{252}{4}$$

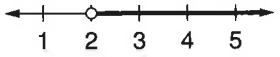
$$M = \mathbf{63\ monocotyledons}$$

5. $C \approx 3.14(21 \text{ millimeters})$

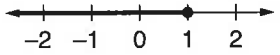
$C \approx 65.94$ millimeters

$C \approx$ **66 millimeters**

6. (a)



(b)



7. $$\mathbf{1.5\ \cancel{kg} \cdot \frac{1000\ g}{1\ \cancel{kg}} = 1500\ g}$$

8. $$\frac{5}{\cancel{6}_{1}} \times \overset{5}{\cancel{30}} = 25$$

(a) $25 - 5 = 20$

20 more people

(b) $$\frac{\text{preferred Brand } Y}{\text{preferred Brand } X} = \frac{5}{25} = \frac{1}{5}$$

9. $$42 = \frac{7}{10} \times W_N$$

$$\left(\frac{10}{7}\right)\cancel{42}^{6} = \left(\frac{\overset{1}{\cancel{10}}}{7}\right)\frac{\overset{1}{7}}{\underset{1}{\cancel{10}}} \times W_N$$

$$60 = W_N$$

10. $$1.5 \times W_N = 600$$

$$\frac{\overset{1}{\cancel{1.5}} \times W_N}{\underset{1}{\cancel{1.5}}} = \frac{600}{1.5}$$

$$W_N = 400$$

11. $$0.4 \times 50 = W_N$$

$$20 = W_N$$

12. $$40 = W_P \times 50$$

$$\frac{\overset{4}{\cancel{40}}}{\underset{5}{\cancel{50}}} = \frac{W_P \times \overset{1}{\cancel{50}}}{\underset{1}{\cancel{50}}}$$

$$\frac{4}{5} = W_P$$

$$W_P = \frac{4}{5} \times 100\% = \frac{400\%}{5} = \mathbf{80\%}$$

13. (a) **0.0015**

(b) $\mathbf{2.5 \times 10^7}$

14. (a) $\frac{-45}{9} = \mathbf{-5}$

(b) $\frac{-450}{15} = \mathbf{-30}$

(c) $15(-20) = \mathbf{-300}$

(d) $(-15)(-12) = \mathbf{180}$

15. (a) $50\% = \frac{50}{100} = \mathbf{\frac{1}{2}}$

(b) $50\% = \frac{50}{100} = \mathbf{0.5}$

(c) $12\overline{)1.000\ldots}$ $\quad \mathbf{0.08\overline{3}}$

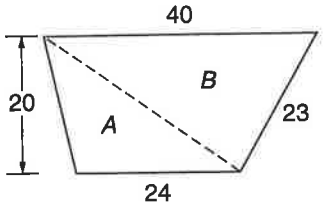
(d) $\frac{1}{12} \times 100\% = \frac{100\%}{12} = \mathbf{8\frac{1}{3}\%}$

16. $$\frac{83\frac{1}{3}}{100} = \frac{\frac{250}{3}}{\frac{100}{1}}$$

$$\frac{\frac{250}{3}}{\frac{100}{1}} \cdot \frac{\frac{1}{100}}{\frac{1}{100}} = \frac{\frac{250}{300}}{1}$$

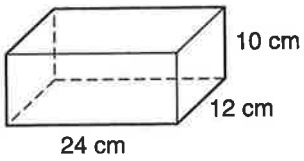
$$= \frac{250}{300} = \mathbf{\frac{5}{6}}$$

17.



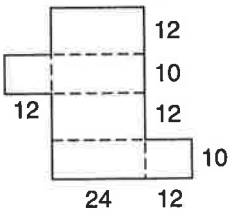
$$\text{Area of triangle } A = \frac{(24 \text{ mm})(20 \text{ mm})}{2}$$
$$= 240 \text{ mm}^2$$
$$\text{Area of triangle } B = \frac{(40 \text{ mm})(20 \text{ mm})}{2}$$
$$= 400 \text{ mm}^2$$
$$\text{Area of figure} = 240 \text{ mm}^2 + 400 \text{ mm}^2$$
$$= \mathbf{640 \text{ mm}^2}$$

18.



$$(24 \text{ cm})(12 \text{ cm}) = 288 \text{ cm}^2,$$
$$\frac{288 \text{ cm}^2}{1 \cancel{\text{layer}}} \cdot (1 \text{ cm})(10 \cancel{\text{layers}})$$
$$\mathbf{2880 \text{ cm}^3}$$

19. One possibility:



20. Multiply the "in" number by 5, then subtract 1 to find the "out" number.

$4(5) - 1 = \mathbf{19}$

$4 + 1 = 5,\ 5 \div 5 = \mathbf{1}$

21.

$$\begin{array}{r} \$18.50 \\ \times \quad 0.30 \\ \hline \$5.5500 \end{array} = \mathbf{\$5.55}$$

22.

$$m + 8.7 = 10.25$$
$$m + 8.7 - 8.7 = 10.25 - 8.7$$
$$m = \mathbf{1.55}$$

check: $1.55 + 8.7 = 10.25$

$10.25 = 10.25$

23.

$$\frac{4}{3}w = 36$$
$$\left(\frac{\cancel{3}^{1}}{\cancel{4}_{1}}\right)\left(\frac{\cancel{4}^{1}}{\cancel{3}_{1}}\right)w = \left(\frac{3}{\cancel{4}_{1}}\right)\cancel{36}^{9}$$
$$w = \mathbf{27}$$

check: $\left(\frac{4}{\cancel{3}_{1}}\right)\cancel{27}^{9} = 36$

$(4)9 = 36$

$36 = 36$

24.

$$0.7y = 48.3$$
$$\frac{0.7y}{0.7} = \frac{48.3}{0.7}$$
$$y = \mathbf{69}$$

check: $0.7(69) = 48.3$

$48.3 = 48.3$

25.

$$\{4^2 + 10[2^3 - (3)(\sqrt{4})]\} - \sqrt{36}$$
$$\{16 + 10[8 - (3)(2)]\} - 6$$
$$\{16 + 10[8 - 6]\} - 6$$
$$\{16 + 10[2]\} - 6$$
$$\{16 + 20\} - 6$$
$$\{36\} - 6$$
$$\mathbf{30}$$

26.

$$|5 - 3| - |3 - 5|$$
$$= |2| - |-2| = 2 - 2 = \mathbf{0}$$

27.

$$1 \cancel{\text{m}^2} \cdot \frac{100 \text{ cm}}{1 \cancel{\text{m}}} \cdot \frac{100 \text{ cm}}{1 \cancel{\text{m}}} = \mathbf{10{,}000 \text{ cm}^2}$$

28.

$$7\frac{1}{2} \cdot 3 \cdot \left(\frac{2}{3}\right)^2 =$$
$$\frac{\cancel{15}^{5}}{\cancel{2}_{1}} \cdot \frac{\cancel{3}^{1}}{1} \cdot \frac{\cancel{4}^{2}}{\cancel{9}_{\cancel{3}_{1}}} = \mathbf{10}$$

29.

$$3\frac{1}{5} - \left(2\frac{1}{2} - 1\frac{1}{4}\right)$$
$$= 3\frac{4}{20} - \left(2\frac{10}{20} - 1\frac{5}{20}\right)$$
$$= 3\frac{4}{20} - 1\frac{5}{20} = 2\frac{24}{20} - 1\frac{5}{20}$$
$$= \mathbf{1\frac{19}{20}}$$

30. (a)

$$(-10) - (-8) - (+6)$$
$$(-10) + [-(-8)] + [-(+6)]$$
$$(-10) + [8] + [-6]$$
$$\mathbf{-8}$$

(b) $(+10) + (-20) - (-30)$

$(+10) + (-20) + [-(-30)]$

$(+10) + (-20) + [30]$

20

Lesson 79, Lesson Practice

a. $x \circledS y$

b. $m \circledS n$

c. **Insufficient information**

d. **Insufficient information: (Both x and y could be zero, or y could be greater.)**

Lesson 79, Mixed Practice

1. $4(33.5 \text{ students}) = 134 \text{ students}$

$$5\overline{)134.0}$$

26.8 students

2. $\dfrac{315 \text{ kilometers}}{35 \text{ liters}} = 9 \dfrac{\textbf{kilometers}}{\textbf{liter}}$

3.

	Ratio	Actual Count
Winners	7	W
Losers	5	L
Total	12	1260

$$\frac{7}{12} = \frac{W}{1260}$$
$$12W = 7(1260)$$
$$W = \frac{8820}{12}$$
$$W = 735 \text{ winners}$$
$$\frac{5}{12} = \frac{L}{1260}$$
$$12L = 5(1260)$$
$$L = \frac{6300}{12}$$
$$L = 525 \text{ losers}$$
$$\begin{array}{r} 735 \\ -\ 525 \\ \hline \textbf{210} \end{array}$$

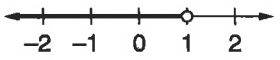
210 more winners

4. (a) $\mathbf{3.75 \times 10^{-5}}$

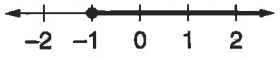
(b) $\mathbf{3.75 \times 10^{7}}$

5. **Insufficient information; ($x < y$ if both are positive; $x > y$ if both are negative)**

6. (a)



(b)

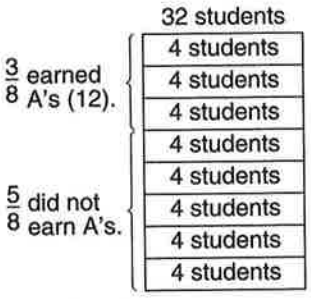


7.

	Case 1	Case 2
Inches	4	12
Hours	3	h

$$\frac{4}{3} = \frac{12}{h}$$
$$4h = 3(12)$$
$$h = \frac{36}{4}$$
$$h = \textbf{9 hours}$$

8.



(a) $\dfrac{12 \text{ students}}{3} = 4 \text{ students}$

$5(4 \text{ students}) = \textbf{20 students}$

(b) $\dfrac{5}{8} \times 100\% = \dfrac{500\%}{8} = \mathbf{62\frac{1}{2}\%}$

9. $\mathbf{35 = 0.7 \times W_N}$

$$\frac{35}{0.7} = \frac{0.7 \times W_N}{0.7}$$
$$\textbf{50} = W_N$$

10. $\mathbf{W_P \times 20 = 17}$

$$\frac{W_P \times 20}{20} = \frac{17}{20}$$
$$W_P = \frac{17}{20}$$
$$W_P = \frac{17}{20} \times 100\% = \frac{1700\%}{20} = \textbf{85\%}$$

11. $\mathbf{W_P \times 20 = 25}$

$$\frac{W_P \times 20}{20} = \frac{\overset{5}{\cancel{25}}}{\underset{4}{\cancel{20}}}$$
$$W_P = \frac{5}{4}$$
$$W_P = \frac{5}{4} \times 100\% = \frac{500\%}{4} = \textbf{125\%}$$

12. $360 = \frac{3}{4} \times W_N$

$\left(\frac{4}{3}\right)^{120}360 = \left(\frac{\cancel{4}}{\cancel{3}}\right)^{1}\frac{\cancel{3}}{\cancel{4}} \times W_N$

$(4)120 = W_N$

$480 = W_N$

13. (a) $\frac{144}{-8} = \mathbf{-18}$

(b) $\frac{-144}{+6} = \mathbf{-24}$

(c) $-12(12) = \mathbf{-144}$

(d) $-16(-9) = \mathbf{144}$

14. (a) $25\overline{)1.00}$ $\quad \mathbf{0.04}$

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

(c) $8\% = \frac{8}{100} = \mathbf{\frac{2}{25}}$

(d) $8\% = \frac{8}{100} = \mathbf{0.08}$

15. $\$4500 \times 0.05$

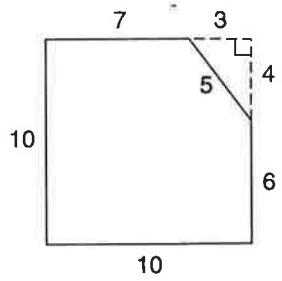
$\$225.00 = \mathbf{\$225}$

16. $\frac{62\frac{1}{2}}{100} = \frac{\frac{125}{2}}{\frac{100}{1}}$

$\frac{\frac{125}{2}}{\frac{100}{1}} \cdot \frac{\frac{1}{100}}{\frac{1}{100}} = \frac{\frac{125}{200}}{1}$

$= \frac{125}{200} = \mathbf{\frac{5}{8}}$

17.



(a) Perimeter $= 10$ in. $+ 7$ in. $+ 5$ in. $+ 6$ in. $+ 10$ in. $= \mathbf{38}$ **in.**

(b) Area of square $= (10 \text{ in.})(10 \text{ in.})$

$= 100 \text{ in.}^2$

Area of triangle $= \frac{(3 \text{ in.})(4 \text{ in.})}{2}$

$= 6 \text{ in.}^2$

Area of figure $= 100 \text{ in.}^2 - 6 \text{ in.}^2$

$= \mathbf{94 \text{ in.}^2}$

18. (a) $(6 \text{ cubes})(3 \text{ cubes}) = 18 \text{ cubes}$

$\frac{18 \text{ cubes}}{1 \cancel{\text{layer}}} \cdot 4 \cancel{\text{layers}} = 72 \text{ cubes}$

$\mathbf{72 \text{ cm}^3}$

(b) $(6 \text{ cm})(3 \text{ cm}) = 18 \text{ cm}^2$

$(4 \text{ cm})(3 \text{ cm}) = 12 \text{ cm}^2$

$(6 \text{ cm})(4 \text{ cm}) = 24 \text{ cm}^2$

$2(18 \text{ cm}^2) + 2(12 \text{ cm}^2) + 2(24 \text{ cm}^2)$

$= 36 \text{ cm}^2 + 24 \text{ cm}^2 + 48 \text{ cm}^2$

$= \mathbf{108 \text{ cm}^2}$

19. (a) $C \approx 3.14(1 \text{ m})$

$C \approx \mathbf{3.14 \text{ m}}$

(b) $C = \pi(1 \text{ m})$

$C = \mathbf{\pi \text{ m}}$

20. (a) **Right; scalene**

(b) **Obtuse; isosceles**

(c) **Acute; equilateral**

21. $1.2x = 2.88$

$\frac{1.2x}{1.2} = \frac{2.88}{1.2}$

$x = \mathbf{2.4}$

check: $1.2(2.4) = 2.88$

$2.88 = 2.88$

22. $3\frac{1}{3} = x + \frac{5}{6}$

$3\frac{1}{3} - \frac{5}{6} = x + \frac{5}{6} - \frac{5}{6}$

$3\frac{2}{6} - \frac{5}{6} = x$

$2\frac{8}{6} - \frac{5}{6} = x$

$2\frac{3}{6} = x$

$\mathbf{2\frac{1}{2}} = x$

check: $3\frac{1}{3} = 2\frac{1}{2} + \frac{5}{6}$

$3\frac{1}{3} = 2\frac{3}{6} + \frac{5}{6}$

$3\frac{1}{3} = 2\frac{8}{6}$

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

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

23. $\frac{3}{2}w = \frac{9}{10}$

$\left(\frac{\cancel{2}^{1}}{\cancel{3}_{1}}\right)\frac{\cancel{3}^{1}}{\cancel{2}_{1}}w = \left(\frac{\cancel{2}^{1}}{\cancel{3}_{1}}\right)\frac{\cancel{9}^{3}}{\cancel{10}_{5}}$

$w = \mathbf{\frac{3}{5}}$

check: $\left(\frac{3}{2}\right)\frac{3}{5} = \frac{9}{10}$

$\frac{9}{10} = \frac{9}{10}$

24. $\dfrac{\sqrt{100} + 5[3^3 - 2(3^2 + 3)]}{5}$

$\dfrac{10 + 5[27 - 2(9 + 3)]}{5}$

$\dfrac{10 + 5[27 - 2(12)]}{5}$

$\dfrac{10 + 5[27 - 24]}{5}$

$\dfrac{10 + 5[3]}{5}$

$\dfrac{10 + 15}{5}$

$\dfrac{25}{5}$

$\mathbf{5}$

25.

$$\begin{array}{r} \overset{2}{\cancel{3}}\text{ hr } \overset{74}{\cancel{15}}\text{ min } \overset{84}{\cancel{24}}\text{ s} \\ -\ 2\text{ hr } 45\text{ min } 30\text{ s} \\ \hline \mathbf{29\text{ min } 54\text{ s}} \end{array}$$

26. $1\ \cancel{\text{yd}}^2 \cdot \frac{3\text{ ft}}{1\ \cancel{\text{yd}}} \cdot \frac{3\text{ ft}}{1\ \cancel{\text{yd}}} = \mathbf{9\ ft^2}$

27. $7\frac{1}{2} \cdot \left(3 \div \frac{5}{9}\right) = \frac{15}{2} \cdot \left(\frac{3}{1} \div \frac{5}{9}\right)$

$= \frac{15}{2} \cdot \left(\frac{3}{1} \times \frac{9}{5}\right) = \frac{\overset{3}{\cancel{15}}}{2} \cdot \frac{27}{\cancel{5}_{1}}$

$= \frac{81}{2} = \mathbf{40\frac{1}{2}}$

28. $4\frac{5}{6} + 3\frac{1}{3} + 7\frac{1}{4}$

$= 4\frac{10}{12} + 3\frac{4}{12} + 7\frac{3}{12}$

$= 14\frac{17}{12} = \mathbf{15\frac{5}{12}}$

29. $3\frac{3}{4} = 3.75,\ 3.75 \div 1.5 = \mathbf{2.5}$

30. (a) $(-10) - (+20) - (-30)$

$(-10) + [-(+20)] + [-(-30)]$

$(-10) + [-20] + [30]$

$\mathbf{0}$

(b) $(-10) - |(-20) - (+30)|$

$(-10) + [-|(-20) + [-(+30)]|]$

$(-10) + [-|(-20) + [-30]|]$

$(-10) + [-|-50|]$

$(-10) + [-(+50)]$

$(-10) + [-50]$

$\mathbf{-60}$

LESSON 80, LESSON PRACTICE

a. **See lesson.**

b. $W'(3, -4), X'(1, -4), Y'(1, -1), Z'(3, -1)$

