c. $C = \pi d$
$C = \pi(4\text{ ft})$
$C = \mathbf{4\pi\text{ ft}}$

d. $C = \pi d$
$C \approx 3.14(6\text{ inches})$
$C \approx \mathbf{18.84\text{ inches}}$

LESSON 66, MIXED PRACTICE

1. $100\% - (42\% + 25\%) = \mathbf{33\%}$

$$\begin{array}{r} \$25{,}000 \\ \times \quad 0.25 \\ \hline \mathbf{\$6250} \end{array}$$

2. $10\left(1\frac{1}{4}\text{ miles}\right) = \frac{25}{2}\text{ miles} = \mathbf{12\frac{1}{2}\text{ miles}}$

3. $(1.9)(2.2) - (1.9 + 2.2) = 4.18 - 4.1$
$= \mathbf{0.08}$

4.

	Ratio	Actual Count
Dimes	5	D
Quarters	8	Q
Total	13	520

$\frac{5}{13} = \frac{D}{520}$
$13D = 2600$
$D = \mathbf{200\text{ dimes}}$

5. $\mathbf{9 \times 10^8\text{ miles}}$

6.

400 acres

$\frac{3}{10}$ were planted with alfalfa.	40 acres
	40 acres
	40 acres
$\frac{7}{10}$ were not planted with alfalfa.	40 acres
	40 acres
	40 acres
	40 acres
	40 acres
	40 acres
	40 acres

(a) $\frac{3}{10} \times 100\% = \frac{300\%}{10} = \mathbf{30\%}$

(b) **280 acres**

7. (a) $\frac{12}{30} = \mathbf{\frac{2}{5}}$

(b) $\frac{2}{5} \times 100\% = \frac{200\%}{5} = \mathbf{40\%}$

(c) **It is more likely that the grade on a randomly selected test is not an A, because less than half the tests have A's.**

8. (a) $C = \pi d$
$C \approx 3.14(21\text{ in.})$
$C \approx \mathbf{65.94\text{ in.}}$

(b) $C = \pi d$
$C \approx \frac{22}{7}(21\text{ in.})$
$C \approx \mathbf{66\text{ in.}}$

9. (a) Area $= (14\text{ cm})(24\text{ cm}) = \mathbf{336\text{ cm}^2}$

(b) Area $= \frac{(14\text{ cm})(24\text{ cm})}{2} = \mathbf{168\text{ cm}^2}$

(c) Perimeter $= 25\text{ cm} + 14\text{ cm} + 25\text{ cm}$
$= \mathbf{64\text{ cm}}$

10. $\mathbf{3.25 \times 10^{10}}$

11. $W_N = \mathbf{0.9 \times 3500}$
$W_N = \mathbf{3150}$

12. $W_N = \mathbf{\frac{5}{6} \times 2\frac{2}{5}}$

$W_N = \frac{\overset{1}{\cancel{5}}}{\underset{1}{\cancel{6}}} \times \frac{\overset{2}{\cancel{12}}}{\underset{1}{\cancel{5}}}$

$W_N = \mathbf{2}$

13. (a) $0.45 = \frac{45}{100} = \mathbf{\frac{9}{20}}$

(b) $0.45 = \frac{45}{100} = \mathbf{45\%}$

(c) $7.5\% = \frac{7.5}{100} = \mathbf{\frac{3}{40}}$

(d) $7.5\% = \frac{7.5}{100} = \mathbf{0.075}$

14. (a) $(5) + (-4) + (6) + (-1)$
$= 1 + (6) + (-1)$
$= 7 + (-1) = \mathbf{6}$

(b) $3 + (-5) + (+4) + (-2)$
$= -2 + (+4) + (-2)$
$= 2 + (-2) = \mathbf{0}$

15. $1.4 \cancel{\text{kilograms}} \cdot \frac{1000 \text{ grams}}{1 \cancel{\text{kilogram}}} = \mathbf{1400 \text{ grams}}$

16. (a) $m\angle a = 180° - (90° + 35°)$
$= 180° - 125° = \mathbf{55°}$

(b) $m\angle b = m\angle a = \mathbf{55°}$

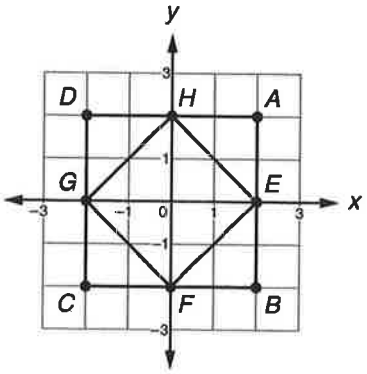
(c) $m\angle c = 180° - 55° = \mathbf{125°}$

(d) $m\angle d = m\angle b = \mathbf{55°}$

(e) $m\angle e = m\angle c = \mathbf{125°}$

17. $(3000)(500)(20) = \mathbf{30{,}000{,}000}$

18.



(a) Area $= (4 \text{ units})(4 \text{ units}) = \mathbf{16 \text{ units}^2}$

(b) **4 units**

(c) Area $= 4(1 \text{ unit}^2) + 8\left(\frac{1}{2} \text{ unit}^2\right)$
$= 4 \text{ units}^2 + 4 \text{ units}^2 = \mathbf{8 \text{ units}^2}$

(d) $\mathbf{\sqrt{8} \text{ units}}$

19. $\frac{0.9}{1.5} = \frac{12}{n}$
$0.9n = 1.5(12)$
$n = \frac{18}{0.9}$
$n = \mathbf{20}$

20. $\frac{11}{12} = \frac{22}{24}$
$-\frac{11}{24} = \frac{11}{24}$
$\mathbf{\frac{11}{24}}$

21. $2^1 - 2^0 - 2^{-1} = 2 - 1 - \frac{1}{2}$
$= 1 - \frac{1}{2} = \frac{2}{2} - \frac{1}{2} = \mathbf{\frac{1}{2}}$

22. $\begin{array}{r} 4 \text{ lb } 12 \text{ oz} \\ +\ 1 \text{ lb } 7 \text{ oz} \\ \hline 5 \text{ lb } 19 \text{ oz} \end{array}$
$19 \text{ oz} = 1 \text{ lb } 3 \text{ oz}$
$\begin{array}{r} 1 \text{ lb } 3 \text{ oz} \\ +\ 5 \text{ lb} \\ \hline \mathbf{6 \text{ lb } 3 \text{ oz}} \end{array}$

23. $\frac{3 \cancel{\text{ft}}}{1 \text{ yd}} \cdot \frac{12 \text{ in.}}{1 \cancel{\text{ft}}} = \mathbf{36 \frac{\text{in.}}{\text{yd}}}$

24. $16 \div (0.8 \div 0.04) = 16 \div 20 = \mathbf{0.8}$

25. $0.4[0.5 - (0.6)(0.7)]$
$0.4[0.5 - 0.42]$
$0.4[0.08]$
$\mathbf{0.032}$

26. $\frac{3}{8} \cdot 1\frac{2}{3} \cdot 4 \div 1\frac{2}{3}$
$= \left(\frac{\overset{1}{\cancel{3}}}{8} \cdot \frac{5}{\underset{1}{\cancel{3}}}\right) \cdot \frac{4}{1} \div \frac{5}{3}$
$= \frac{5}{\underset{2}{\cancel{8}}} \cdot \frac{\overset{1}{\cancel{4}}}{1} \div \frac{5}{3} = \frac{5}{2} \div \frac{5}{3}$
$= \frac{\overset{1}{\cancel{5}}}{2} \times \frac{3}{\underset{1}{\cancel{5}}} = \frac{3}{2} = \mathbf{1\frac{1}{2}}$

27. $30 - 5[4 + (3)(2) - 5]$
$30 - 5[4 + 6 - 5]$
$30 - 5[10 - 5]$
$30 - 5[5]$
$30 - 25$
$\mathbf{5}$

28. **One possibility: If a dozen flavored icicles cost $2.88, what is the price of each flavored icicle?**

29. $\frac{9 \text{ ounces}}{2} = \mathbf{4\frac{1}{2} \text{ ounces}}$

30. (a) $\overline{AB}$ or $\overline{BA}$, $\overline{BC}$ or $\overline{CB}$

(b) **Isosceles triangle**

(c) **90°**

LESSON 67, LESSON PRACTICE

a. **Triangular prism**

b. **Cone**

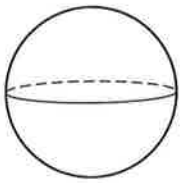
c. **Rectangular prism**

d. **5 faces**

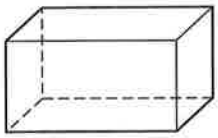
e. **9 edges**

f. **6 vertices**

g.



h.



i.



j. **Triangular prism**

k. $3\text{ cm} \times 3\text{ cm} = 9\text{ cm}^2$

$6 \times 9\text{ cm}^2 = \mathbf{54\text{ cm}^2}$

LESSON 67, MIXED PRACTICE

1. (a) $\dfrac{\text{red marbles}}{\text{blue marbles}} = \dfrac{20}{40} = \mathbf{\dfrac{1}{2}}$

(b) $\dfrac{\text{white marbles}}{\text{red marbles}} = \dfrac{30}{20} = \mathbf{\dfrac{3}{2}}$

(c) $\dfrac{\text{not white marbles}}{\text{total marbles}} = \dfrac{60}{90} = \mathbf{\dfrac{2}{3}}$

2. $\left(\frac{1}{3} + \frac{1}{2}\right) - \left(\frac{1}{3} \times \frac{1}{2}\right)$

$= \left(\frac{2}{6} + \frac{3}{6}\right) - \left(\frac{1}{6}\right)$

$= \frac{5}{6} - \frac{1}{6} = \frac{4}{6} = \mathbf{\frac{2}{3}}$

3. $180\text{ pounds} - 165\frac{1}{2}\text{ pounds} = \mathbf{14\frac{1}{2}\text{ pounds}}$

4. (a)
$$\begin{array}{r} 94\text{ points} \\ 85\text{ points} \\ +\ 85\text{ points} \\ \hline 264\text{ points} \end{array}$$

$$3\overline{)264}\quad \mathbf{88\text{ points}}$$

(b) $5(92\text{ points}) = 460\text{ points}$

$460\text{ points} + 264\text{ points} = 724\text{ points}$

$$8\overline{)724.0}\quad \mathbf{90.5\text{ points}}$$

5.

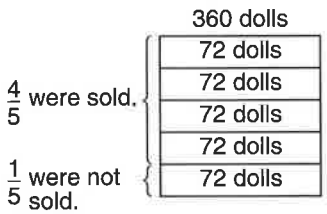
	Ratio	Actual Count
Diamonds	5	D
Rubies	2	R
Total	7	210

$\frac{5}{7} = \frac{D}{210}$

$7D = 1050$

$D = \mathbf{150\text{ diamonds}}$

6.



(a) **288 dolls**

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

7. (a) **12 edges**

(b) **6 faces**

(c) **8 vertices**

8. (a) $\text{Area} = \dfrac{(12\text{ m})(9\text{ m})}{2} = \mathbf{54\text{ m}^2}$

(b) $\text{Perimeter} = 5\text{ m} + 5\text{ m} + 6\text{ m}$

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

(c) $90° - 37° = \mathbf{53°}$

(d) **The right triangle is not symmetrical.**

9.
$$\begin{array}{r} 7.65 \\ +\ 7.83 \\ \hline 15.48 \end{array}$$

$$2\overline{)15.48}\quad \mathbf{7.74}$$

10. $\mathbf{2.5 \times 10^{-3}}$

11. $W_N = 0.24 \times 75$
$W_N = \mathbf{18}$

12. $W_N = 1.2 \times 12$
$W_N = \mathbf{14.4}$

13. (a) $(-2) + (-3) + (-4) = \mathbf{-9}$

(b) $(+2) + (-3) + (+4) = \mathbf{3}$

14. (a) $4\% = \frac{4}{100} = \mathbf{\frac{1}{25}}$

(b) $4\% = \frac{4}{100} = \mathbf{0.04}$

(c) $8\overline{)7.000}\quad \mathbf{0.875}$

(d) $\frac{7}{8} \times 100\% = \frac{700\%}{8}$

$= \mathbf{87.5\%}$ or $\mathbf{87\frac{1}{2}\%}$

15. $\frac{\overset{70}{\cancel{700}}\ \cancel{\text{mm}}}{} \cdot \frac{1\text{ cm}}{\underset{1}{\cancel{10}}\ \cancel{\text{mm}}} = \mathbf{70\text{ cm}}$

16. $(-\$560) + (+\$850) + (-\$280) = +\$10$
A gain of \$10

17. **Multiply the "in" number by 7 to find the "out" number.** $1 \times 7 = 7$

18. (a) **7856.43**

(b) **7900**

19. $C = \pi d$
$C \approx 3.14(24 \text{ inches})$
$C \approx 75.36 \text{ inches} \approx \mathbf{75 \text{ inches}}$

20. (a) $\angle A$ **and** $\angle B$

(b) $\angle B$ **and** $\angle D$

21. (a) **2(5 ft + 3 ft)**
2(8 ft)
16 ft
or
2(5 ft) + 2(3 ft)
10 ft + 6 ft
16 ft

(b) **Distributive property**

22. $\frac{2.5}{w} = \frac{15}{12}$
$15w = 2.5(12)$
$w = \frac{30}{15}$
$w = \mathbf{2}$

23. $9 + 8\{7 \cdot 6 - 5[4 + (3 - 2 \cdot 1)]\}$
$9 + 8\{7 \cdot 6 - 5[4 + (1)]\}$
$9 + 8\{7 \cdot 6 - 5[5]\}$
$9 + 8\{7 \cdot 6 - 25\}$
$9 + 8\{42 - 25\}$
$9 + 8\{17\}$
$9 + 136$
145

24.
$$\begin{array}{r} \overset{0}{\cancel{1}}\text{ yd } (3\text{ ft}) \\ -\quad 1\text{ ft } 3\text{ in.} \\ \hline \end{array} \longrightarrow$$

$$\begin{array}{r} \overset{0}{\cancel{1}}\text{ yd } \overset{2}{\cancel{3}}\text{ ft } (12\text{ in.}) \\ -\quad 1\text{ ft } 3\text{ in.} \\ \hline \end{array} \longrightarrow$$

$$\begin{array}{r} \overset{0}{\cancel{1}}\text{ yd } \overset{2}{\cancel{3}}\text{ ft } 12\text{ in.} \\ -\quad 1\text{ ft } 3\text{ in.} \\ \hline \mathbf{1\text{ ft } 9\text{ in.}} \end{array}$$

25. $6.4 - (0.6 - 0.04)$
$= 6.4 - 0.56 = \mathbf{5.84}$

26. $\frac{3 + 0.6}{3(0.6)} = \frac{3.6}{1.8} = \mathbf{2}$

27.
$$\begin{array}{r} 1\frac{2}{3} = 1\frac{8}{12} \\ +\ 3\frac{1}{4} = 3\frac{3}{12} \\ \hline 4\frac{11}{12} \end{array}$$

$$\begin{array}{r} 4\frac{11}{12} = 4\frac{11}{12} \\ -\ 1\frac{5}{6} = 1\frac{10}{12} \\ \hline \mathbf{3\frac{1}{12}} \end{array}$$

28. $\frac{3}{5} \div 3\frac{1}{5} \cdot 5\frac{1}{3} \cdot |-1|$

$$= \left(\frac{3}{5} \div \frac{16}{5}\right) \cdot \frac{16}{3} \cdot 1$$

$$= \left(\frac{3}{\cancel{5}_{1}} \times \frac{\overset{1}{\cancel{5}}}{16}\right) \cdot \frac{16}{3} \cdot 1$$

$$= \frac{\overset{1}{\cancel{3}}}{\underset{1}{\cancel{16}}} \cdot \frac{\overset{1}{\cancel{16}}}{\underset{1}{\cancel{3}}} \cdot 1 = \mathbf{1}$$

29. $3 \div 1\frac{2}{3} = \frac{3}{1} \div \frac{5}{3}$

$$= \frac{3}{1} \times \frac{3}{5} = \frac{9}{5} = 1\frac{4}{5}$$

$$3\frac{3}{4} \div 1\frac{4}{5} = \frac{15}{4} \div \frac{9}{5}$$

$$= \frac{\overset{5}{\cancel{15}}}{4} \times \frac{5}{\underset{3}{\cancel{9}}} = \frac{25}{12} = \mathbf{2\frac{1}{12}}$$

30. $5^2 - \sqrt{4^2} + 2^{-2}$

$$= 25 - 4 + \frac{1}{4} = \mathbf{21\frac{1}{4}}$$

Lesson 68, Lesson Practice

a. $(-3) - (+2)$
$(-3) + [-(+2)]$
$(-3) + [-2] = \mathbf{-5}$

b. $(-3) - (-2)$
$(-3) + [-(-2)]$
$(-3) + [2] = \mathbf{-1}$

c. $(+3) - (2)$
$(+3) + [-(+2)]$
$(+3) + [-2] = \mathbf{1}$

d. $(-3) - (+2) - (-4)$
$(-3) + [-(+2)] + [-(-4)]$
$(-3) + [-2] + [4] = \mathbf{-1}$

e. $(-8) + (-3) - (+2)$
$(-8) + (-3) + [-(+2)]$
$(-8) + (-3) + [-2] = \mathbf{-13}$

f. $(-8) - (+3) + (-2)$
$(-8) + [-(+3)] + (-2)$
$(-8) + [-3] + (-2) = \mathbf{-13}$

Lesson 68, Mixed Practice

1.
$$\begin{array}{r} 1037\text{ g} \\ -\ 350\text{ g} \\ \hline \mathbf{687\text{ g}} \end{array}$$

2.

	Ratio	Actual Count
Pentagons	3	12
Hexagons	5	H

$$\frac{3}{5} = \frac{12}{H}$$
$$3H = 60$$
$$H = \mathbf{20\text{ hexagons}}$$

3. $\left(\frac{1}{4} + \frac{1}{2}\right) \div \left(\frac{1}{4} \times \frac{1}{2}\right)$

$$= \left(\frac{2}{8} + \frac{4}{8}\right) \div \left(\frac{1}{8}\right)$$

$$= \frac{6}{8} \div \frac{1}{8} = \frac{6}{\underset{1}{\cancel{8}}} \times \frac{\overset{1}{\cancel{8}}}{1} = \mathbf{6}$$

4. (a) $4\overline{)\$1.24}$ **$0.31 per pen**

(b) $100(\$0.31) = \mathbf{\$31.00}$

5. (a) $\frac{60\text{ miles}}{5\text{ hours}} = 12\frac{\text{miles}}{\text{hr}}$, **12 miles per hour**

(b) $\frac{5\text{ hours}}{60\text{ miles}} = \frac{300\text{ minutes}}{60\text{ miles}}$

$$= \frac{5\text{ minutes}}{1\text{ mile}},$$ **5 minutes per mile**

6. $1000\ \cancel{\text{meters}} \cdot \frac{1\text{ second}}{331\ \cancel{\text{meters}}} = \frac{1000}{331}$ seconds

About 3 seconds

7. (a) **88**

(b) **84**

(c)
$$\begin{array}{r} 72 \\ 80 \\ 84 \\ 88 \\ 100 \\ 88 \\ +\ 76 \\ \hline 588 \end{array}$$

$$7\overline{)588}\quad \mathbf{84}$$

8.
$$\begin{array}{r} 8.4 \\ +\ 9.8 \\ \hline 18.2 \end{array} \qquad 2\overline{)18.2} = \mathbf{9.1}$$

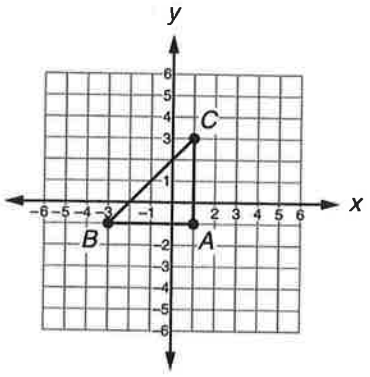
9. (a) **12 cubes**

(b) **Rectangular prism**

10. (a) $C = \pi d$
$C \approx 3.14(40 \text{ cm})$
$C \approx \mathbf{125.6 \text{ cm}}$

(b) $C = \pi d$
$C = \pi(40 \text{ cm})$
$C = \mathbf{40\pi \text{ cm}}$

11.



(a) **Right triangle**

(b) **Isosceles triangle**

(c) A

(d) $m\angle B = \dfrac{90°}{2} = \mathbf{45°}$

(e) Area $= \dfrac{(4 \text{ units})(4 \text{ units})}{2} = \mathbf{8 \text{ sq. units}}$

12. $20{,}000 \times 30{,}000 = 600{,}000{,}000$
$= \mathbf{6 \times 10^8}$

13. $W_N = \mathbf{0.75 \times 400}$
$W_N = \mathbf{300}$

14. $W_N = \mathbf{1.5 \times 1.5}$ or $W_N = 1\frac{1}{2} \times 1\frac{1}{2}$
$W_N = \mathbf{2.25}$
$W_N = \frac{3}{2} \times \frac{3}{2}$
$W_N = \frac{9}{4}$
$W_N = \mathbf{2\frac{1}{4}}$

15. (a) $(-4) - (-6)$
$(-4) + [-(-6)]$
$(-4) + [6] = \mathbf{2}$

(b) $(-4) - (+6)$
$(-4) + [-(+6)]$
$(-4) + [-6] = \mathbf{-10}$

(c) $(-6) - (-4)$
$(-6) + [-(-4)]$
$(-6) + [4] = \mathbf{-2}$

(d) $(+6) - (-4)$
$(+6) + [-(-4)]$
$(+6) + [4] = \mathbf{10}$

16. $(4 \text{ in.})(4 \text{ in.}) = 16 \text{ in.}^2$
$6(16 \text{ in.}^2) = \mathbf{96 \text{ in.}^2}$

17. (a) $25\overline{)3.00} = \mathbf{0.12}$

(b) $\dfrac{3}{25} \times 100\% = \dfrac{300\%}{25} = \mathbf{12\%}$

(c) $120\% = \dfrac{120}{100} = \dfrac{6}{5} = \mathbf{1\frac{1}{5}}$

(d) $120\% = \dfrac{120}{100} = \mathbf{1.2}$

18. $(4)^2 + 2(4)(5) + (5)^2 = 16 + 40 + 25$
$= \mathbf{81}$

19. (a) **Rectangular prism**

(b) **Cone**

(c) **Cylinder**

20. (a) $m\angle DCA = \dfrac{90°}{2} = \mathbf{45°}$

(b) $m\angle DAC = 120° - 45° = \mathbf{75°}$

(c) $m\angle CAB = m\angle DCA = \mathbf{45°}$

(d) $m\angle ABC = m\angle CDA = \mathbf{60°}$

(e) $m\angle BCA = 120° - 45° = \mathbf{75°}$

(f) $m\angle BCD = 180° - 60° = \mathbf{120°}$

21. **One possibility: How many \$0.25 pens can you buy with \$3.00?**

22. $\frac{4}{c} = \frac{3}{7\frac{1}{2}}$

$3c = 4\left(7\frac{1}{2}\right)$

$3c = 4\left(\frac{15}{2}\right)$

$3c = \frac{30}{3}$

$c = \mathbf{10}$

23. $\frac{(1.5)^2}{15} = \mathbf{0.15}$

24.
$$\begin{array}{r} {}^{0}\not{1}\text{ gal } (4\text{ qt}) \\ -\quad 1\text{ qt } 1\text{ pt } 1\text{ oz} \\ \hline {}^{0}\not{1}\text{ gal } {}^{3}\not{4}\text{ qt } (2\text{ pt}) \\ -\quad 1\text{ qt } 1\text{ pt } 1\text{ oz} \\ \hline {}^{0}\not{1}\text{ gal } {}^{3}\not{4}\text{ qt } {}^{1}\not{2}\text{ pt } (16\text{ oz}) \\ -\quad 1\text{ qt } 1\text{ pt } 1\text{ oz} \\ \hline {}^{0}\not{1}\text{ gal } {}^{3}\not{4}\text{ qt } {}^{1}\not{2}\text{ pt } 16\text{ oz} \\ -\quad 1\text{ qt } 1\text{ pt } 1\text{ oz} \\ \hline \mathbf{2\text{ qt}} \quad \mathbf{15\text{ oz}} \end{array}$$

25. $16 \div (0.04 \div 0.8) = 16 \div 0.05 = \mathbf{320}$

26. $10 - [0.1 - (0.01)(0.1)]$

$10 - [0.1 - 0.001]$

$10 - 0.099$

$\mathbf{9.901}$

27. $\frac{5}{8} + \frac{2}{3} \cdot \frac{3}{4} - \frac{3}{4}$

$= \frac{5}{8} + \frac{1}{2} - \frac{3}{4} = \frac{5}{8} + \frac{4}{8} - \frac{6}{8}$

$= \frac{9}{8} - \frac{6}{8} = \mathbf{\frac{3}{8}}$

28. $4\frac{1}{2} \cdot 3\frac{3}{4} \div 1\frac{2}{3}$

$= \left(\frac{9}{2} \cdot \frac{15}{4}\right) \div \frac{5}{3} = \frac{135}{8} \div \frac{5}{3}$

$= \frac{\overset{27}{\cancel{135}}}{8} \times \frac{3}{\underset{1}{\cancel{5}}} = \frac{81}{8} = \mathbf{10\frac{1}{8}}$

29. $\sqrt{5^2 - 2^4} = \sqrt{25 - 16} = \sqrt{9} = \mathbf{3}$

30. $3 + 6[10 - (3 \cdot 4 - 5)]$

$3 + 6[10 - (7)]$

$3 + 6[3]$

$3 + 18$

$\mathbf{21}$

Lesson 69, Lesson Practice

a. $0.16 \times 10^6 = 1.6 \times 10^{-1} \times 10^6$
$= \mathbf{1.6 \times 10^5}$

b. $24 \times 10^{-7} = 2.4 \times 10^1 \times 10^{-7}$
$= \mathbf{2.4 \times 10^{-6}}$

c. $30 \times 10^5 = 3 \times 10^1 \times 10^5$
$= \mathbf{3 \times 10^6}$

d. $0.75 \times 10^{-8} = 7.5 \times 10^{-1} \times 10^{-8}$
$= \mathbf{7.5 \times 10^{-9}}$

e. $14.4 \times 10^8 = 1.44 \times 10^1 \times 10^8$
$= \mathbf{1.44 \times 10^9}$

f. $12.4 \times 10^{-5} = 1.24 \times 10^1 \times 10^{-5}$
$= \mathbf{1.24 \times 10^{-4}}$

Lesson 69, Mixed Practice

1. (a) **6.5**

(b) **6.5**

(c)
$$\begin{array}{r} 7.0 \\ 6.5 \\ 6.5 \\ 7.4 \\ 7.0 \\ 6.5 \\ +\ 6.0 \\ \hline 46.9 \end{array} \qquad 7\overline{)46.9} \quad \mathbf{6.7}$$

(d) $7.4 - 6.0 = \mathbf{1.4}$

2.

	Ratio	Actual Count
Won	5	15
Lost	3	L
Total	8	T

$\frac{5}{8} = \frac{15}{T}$

$5T = 120$

$T = \mathbf{24\text{ games}}$

3. $\cancel{10}^{5}\ \cancel{\text{laps}} \cdot \frac{\cancel{6}^{3}\ \text{minutes}}{\cancel{4}_{2}\ \cancel{\text{laps}}_{1}} = \mathbf{15\ minutes}$

4. (a) $15 \times 10^5 = 1.5 \times 10^1 \times 10^5$
$= \mathbf{1.5 \times 10^6}$

(b) $0.15 \times 10^5 = 1.5 \times 10^{-1} \times 10^5$
$= \mathbf{1.5 \times 10^4}$

5. (a) $\frac{\text{do not believe in giants}}{\text{total Lilliputians}} = \mathbf{\frac{3}{5}}$

(b) $\frac{2}{5} = \frac{L}{60}$
$5L = 120$
$L = \mathbf{24\ Lilliputians}$

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

6. $C = \pi d$
$C \approx 3.14(40\text{ cm})$
$C \approx 125.6\text{ cm} \approx \mathbf{126\ cm}$

7. (a) **Sphere**

(b) **Cylinder**

(c) **Cone**

8. (a) Perimeter $= \frac{10}{16}\text{ in.} + \frac{10}{16}\text{ in.} + \frac{10}{16}\text{ in.}$
$= \frac{30}{16}\text{ in.} = \frac{15}{8}\text{ in.} = \mathbf{1\frac{7}{8}\ in.}$

(b) **60°**

(c)



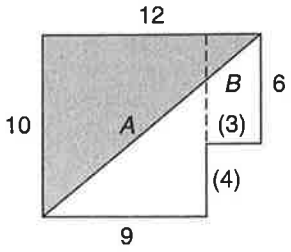
9. (a) $(-4) + (-5) - (-6)$
$(-4) + (-5) + [-(-6)]$
$(-4) + (-5) + [6]$
$\mathbf{-3}$

(b) $(-2) + (-3) - (-4) - (+5)$
$(-2) + (-3) + [-(-4)] + [-(+5)]$
$(-2) + (-3) + [4] + [-5]$
$\mathbf{-6}$

10. (a) $C = \pi d$
$C \approx 3.14(7\text{ cm})$
$C \approx \mathbf{21.98\ cm}$

(b) $C = \pi d$
$C \approx \frac{22}{7}(7\text{ cm})$
$C \approx \mathbf{22\ cm}$

11.



(a) Area A $= (9\text{ mm})(10\text{ mm}) = 90\text{ mm}^2$
$+$ Area B $= (3\text{ mm})(6\text{ mm}) = 18\text{ mm}^2$
Area of figure $= \mathbf{108\ mm^2}$

(b) Area $= \frac{(12\text{ mm})(10\text{ mm})}{2} = \mathbf{60\ mm^2}$

(c) $\frac{60}{108} = \mathbf{\frac{5}{9}}$

12. $W_N = \mathbf{\frac{1}{2} \times 200}$
$W_N = \mathbf{100}$

13. $W_N = \mathbf{2.5 \times 4.2}$
$W_N = \mathbf{10.5}$

14. (a) $20\overline{)3.00}$ $\quad \mathbf{0.15}$

(b) $\frac{3}{20} \times 100\% = \frac{300\%}{20} = \mathbf{15\%}$

(c) $150\% = \frac{150}{100} = \mathbf{1\frac{1}{2}}$

(d) $150\% = \frac{150}{100} = \mathbf{1.5}$

15. (a) $\angle TPQ$ or $\angle QPT$

(b) $\angle SPR$ or $\angle RPS$

(c) $m\angle QPT = 360° - (125° + 90°)$
$= 360° - 215° = \mathbf{145°}$

16. $(4)^2 - \sqrt{(4)} + (4)(0.5) - (4)^0$
$= 16 - 2 + 2 - 1 = \mathbf{15}$

17. **Multiply the "in" number by 2, then subtract 1 to find the "out" number.**
$4 \times 2 - 1 = 8 - 1 = \mathbf{7}$

18.
$$\begin{array}{r} 13.0909\ldots \\ 11\overline{)144.0000\ldots} \\ \underline{11} \\ 34 \\ \underline{33} \\ 10 \\ \underline{0} \\ 100 \\ \underline{99} \\ 10 \\ \underline{0} \\ 100 \end{array}$$

(a) $\mathbf{13.\overline{09}}$

(b) **13**

19. $1.8(20°C) + 32 = \mathbf{68°F}$

20. $(19)(2) = 38$
$7 + 31 = 38$
7 and 31

21.
$$\begin{array}{rl} & \frac{15}{16} = \frac{15}{16} \\ - & \frac{5}{8} = \frac{10}{16} \\ \hline & \mathbf{\frac{5}{16}} \end{array}$$

22. $\frac{a}{8} = \frac{3\frac{1}{2}}{2}$

$2a = 3\frac{1}{2}(8)$

$2a = \frac{7}{2}(8)$

$2a = 28$

$a = \mathbf{14}$

23. $(4 \div 2) \cdot 3 = 2 \cdot 3 = \mathbf{6}$

$3\frac{3}{4} \div 1\frac{2}{3} = \frac{15}{4} \div \frac{5}{3}$

$= \frac{\overset{3}{\cancel{15}}}{4} \times \frac{3}{\cancel{5}_{1}} = \frac{9}{4}$

$3 \cdot \frac{9}{4} = \frac{27}{4} = \mathbf{6\frac{3}{4}}$

24. $4 + (5 \div 1) = 4 + 5 = \mathbf{9}$
or
$5 + (5 \div 1) = 5 + 5 = \mathbf{10}$

$5\frac{1}{6} \div 1\frac{1}{3} = \frac{31}{6} \div \frac{4}{3}$

$= \frac{31}{\cancel{6}_{2}} \times \frac{\overset{1}{\cancel{3}}}{4} = \frac{31}{8} = 3\frac{7}{8}$

$$\begin{array}{rl} & 4\frac{1}{2} = 4\frac{4}{8} \\ + & 3\frac{7}{8} = 3\frac{7}{8} \\ \hline & 7\frac{11}{8} = \mathbf{8\frac{3}{8}} \end{array}$$

25.
$$\begin{array}{rl} & 5 \text{ ft } 7 \text{ in.} \\ + & 6 \text{ ft } 8 \text{ in.} \\ \hline & 11 \text{ ft } 15 \text{ in.} \end{array}$$

15 in. = 1 ft 3 in.

$$\begin{array}{rl} & 1 \text{ ft } 3 \text{ in.} \\ + & 11 \text{ ft} \\ \hline & \mathbf{12 \text{ ft } 3 \text{ in.}} \end{array}$$

26. $\frac{350 \cancel{\text{mi}}}{1 \cancel{\text{h}}} \cdot \frac{60 \cancel{\text{h}}}{1\text{min}} \cdot \frac{1 \text{ km}}{1000 \cancel{\text{mi}}}$

$= \frac{21{,}000 \text{ km}}{1000 \text{ min}} = \mathbf{21\ \frac{km}{min}}$

27. $6 - (0.5 \div 4) = 6 - 0.125$
$= \mathbf{5.875}$

28.
$$75\overline{)\$7500}$$
$$\mathbf{\$100.00}$$

29. $\frac{432}{675} = \frac{2 \cdot 2 \cdot 2 \cdot 2 \cdot \overset{1}{\cancel{3}} \cdot \overset{1}{\cancel{3}} \cdot \overset{1}{\cancel{3}}}{\underset{1}{\cancel{3}} \cdot \underset{1}{\cancel{3}} \cdot \underset{1}{\cancel{3}} \cdot 5 \cdot 5}$

$= \mathbf{\frac{16}{25}}$

30. (a) $2\frac{1}{4} = 2.25$, $2.25 + 0.15 = \mathbf{2.4}$

(b)
$$\begin{array}{rl} & 6.5 = 6\frac{1}{2} \\ & 6\frac{1}{2} = 6\frac{3}{6} \\ + & \frac{5}{6} = \frac{5}{6} \\ \hline & 6\frac{8}{6} = 7\frac{2}{6} = \mathbf{7\frac{1}{3}} \end{array}$$

LESSON 70, LESSON PRACTICE

a. (6 sugar cubes)(3 sugar cubes)
= 18 sugar cubes

$$\frac{18 \text{ sugar cubes}}{\cancel{\text{layer}}} \times 4 \cancel{\text{layers}} = \textbf{72 sugar cubes}$$

b. (10 1-cm cubes)(10 1-cm cubes)
= 100 1-cm cubes,

$$\frac{100 \text{ 1-cm cubes}}{1 \cancel{\text{layer}}} \times 10 \cancel{\text{layers}}$$
$$= \textbf{1000 1-cm cubes}$$

c. (10 cubes)(4 cubes) = 40 cubes

$$\frac{40 \text{ cubes}}{1 \cancel{\text{layer}}} \times 6 \cancel{\text{layers}} = 240 \text{ cubes}$$

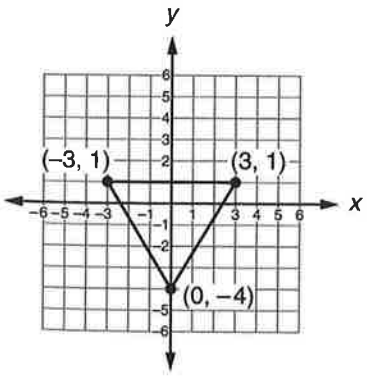
240 ft^3

d. **Answers may vary. See student work.**

LESSON 70, MIXED PRACTICE

1. $\frac{2(38 \text{ kilometers})}{4 \text{ hours}}$ = **19 kilometers per hour**

2.



(a) **(−3, 1)**

(b) Area = $\frac{(6 \text{ units})(5 \text{ units})}{2}$ = **15 sq. units**

3. **A little too large. The actual value of π is greater than 3. Dividing the circumference, 600 cm, by π results in a measurement less than 200 cm.**

4. (a) $\frac{\$1.29}{3 \text{ pounds}} = \frac{\$0.43}{1 \text{ pound}}$
$0.43 per pound

(b) 10($0.43) = **$4.30**

5. (0.7 + 0.6) − (0.9 × 0.8)
= 1.3 − 0.72 = **0.58**

6. (a) $\frac{3}{4}$(188 hits) = **141 hits**

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

7. **$2\frac{1}{4}$-inch mark**

8. (5 1-cm cubes)(5 1-cm cubes)
= 25 1-cm cubes,

$$\frac{25 \text{ 1-cm cubes}}{1 \cancel{\text{layer}}} \times 3 \cancel{\text{layers}}$$
$$= \textbf{75 1-cm cubes}$$

9. (a) $C = \pi d$
$C = \pi(2 \text{ in.})$
$C = \textbf{2}\pi \textbf{ in.}$

(b) $C = \pi d$
$C \approx 3.14(1 \text{ in.})$
$C \approx \textbf{3.14 in.}$

10. (a) $12 \times 10^{-6} = 1.2 \times 10^{1} \times 10^{-6}$
$= \textbf{1.2} \times \textbf{10}^{\textbf{-5}}$

(b) $0.12 \times 10^{-6} = 1.2 \times 10^{-1} \times 10^{-6}$
$= \textbf{1.2} \times \textbf{10}^{\textbf{-7}}$

11.
$$\begin{array}{r} 0.74 \\ 0.83 \\ +\ 0.98 \\ \hline 2.55 \end{array} \qquad 3\overline{)2.55} \quad \textbf{0.85}$$

12. $1.25 \cancel{\text{ kilograms}} \cdot \frac{\textbf{1000 grams}}{\textbf{1 }\cancel{\textbf{kilogram}}}$
= **1250 grams**

13. (a) 2^9

(b) 2^3

(c) 2^{-3}

(d) 2^0

14. $W_N = \frac{1}{6} \times 100$

$W_N = \frac{100}{6}$

$W_N = 16\frac{2}{3}$

15. (a) $14\% = \frac{14}{100} = \mathbf{\frac{7}{50}}$

(b) $14\% = \frac{14}{100} = \mathbf{0.14}$

(c) $6\overline{)5.00\ldots}$ $\quad \mathbf{0.8\overline{3}}$

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

16. (a) $(-6) - (-4) + (+2)$
$(-6) + [-(-4)] + (+2)$
$(-6) + [4] + (+2) = \mathbf{0}$

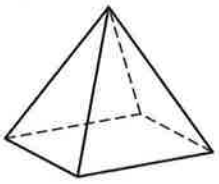
(b) $(-5) + (-2) - (-7) - (+9)$
$(-5) + (-2) + [-(-7)] + [-(+9)]$
$(-5) + (-2) + [7] + [-9]$
$\mathbf{-9}$

17. $(0.4)(0.3) - (0.4 - 0.3)$
$= 0.12 - 0.1 = \mathbf{0.02}$

18. **29,375**

19. $6 \times 8 = \mathbf{48}$

20. **Pyramid;**



21. $2\text{ ft} \times 2\text{ ft} = 4\text{ ft}^2$,
$6(4\text{ ft}^2) = \mathbf{24\text{ ft}^2}$

22.
$$\begin{array}{r} 4.3 \\ +\ 0.8 \\ \hline \mathbf{5.1} \end{array}$$

23. $\frac{2}{d} = \frac{1.2}{1.5}$
$1.2d = 2(1.5)$
$d = \frac{3}{1.2}$
$d = \mathbf{2.5}$

24. $\begin{array}{r} {}^{9}\cancel{10}\text{ lb } (16\text{ oz}) \\ -\ 6\text{ lb } 7\text{ oz} \\ \hline \end{array} \longrightarrow$

$$\begin{array}{r} {}^{9}\cancel{10}\text{ lb } 16\text{ oz} \\ -\ 6\text{ lb } 7\text{ oz} \\ \hline \mathbf{3\text{ lb } 9\text{ oz}} \end{array}$$

25. $\frac{\$5.25}{1\ \cancel{\text{hr}}} \cdot \frac{8\ \cancel{\text{hr}}}{1\ \cancel{\text{day}}} \cdot \frac{5\ \cancel{\text{days}}}{1\text{week}}$
$= \mathbf{\frac{\$210.00}{week}}$

26. $1\frac{2}{3} \cdot 3 = \frac{5}{\cancel{3}_{1}} \cdot \frac{\overset{1}{\cancel{3}}}{1} = 5$

$3\frac{3}{4} \div 5 = \frac{15}{4} \div \frac{5}{1}$
$= \frac{\overset{3}{\cancel{15}}}{4} \times \frac{1}{\cancel{5}_{1}} = \mathbf{\frac{3}{4}}$

27. $4\frac{1}{2} + 5\frac{1}{6} - 1\frac{1}{3}$
$= 4\frac{3}{6} + 5\frac{1}{6} - 1\frac{2}{6} = 8\frac{2}{6} = \mathbf{8\frac{1}{3}}$

28. $(0.06 \div 5) \div 0.004$
$= (0.012) \div 0.004$
$= \mathbf{3}$

29. $9\frac{1}{2} = 9.5$, $9.5 \times 9.2 = \mathbf{87.4}$

30. (a)
$$\begin{array}{r} \$15.00 \\ \times\ \ 0.06 \\ \hline \$0.9000 \end{array} = \$0.90 \qquad \begin{array}{r} \$15.00 \\ +\ \ \$0.90 \\ \hline \mathbf{\$15.90} \end{array}$$

(b)
$$\begin{array}{r} \$15.00 \\ \times\ \ 0.15 \\ \hline \mathbf{\$2.25} \end{array}$$

LESSON 71, LESSON PRACTICE

a.

	25 students
$\frac{3}{5}$ were boys (15).	5 students
	5 students
	5 students
$\frac{2}{5}$ were girls.	5 students
	5 students

$15 \div 3 = 5$
$5 \times 5\text{ students} = \mathbf{25\text{ students}}$