2. (a) $\angle z$

(b) $\angle w$

(c) $\angle y$

(d) $3m + m = 180°$

$4m = 180°$

$m = 45°$

$3m = 3(45°) = \mathbf{135°}$

3. $20 = 5 + (10 \times W_D)$

$20 - 5 = 5 + (10 \times W_D) - 5$

$15 = 10 \times W_D$

$\frac{15}{10} = \frac{10 \times W_D}{10}$

$\mathbf{1.5} = W_D$

4. $1 \text{ km}^2 \cdot \frac{1000 \text{ m}}{1 \text{ km}} \cdot \frac{1000 \text{ m}}{1 \text{ km}}$

$= \mathbf{1{,}000{,}000 \text{ m}^2}$

5. $4(5) = 20$

$10(5) = 50$

$\frac{\text{quarters}}{\text{dimes}} = \frac{20}{50} = \mathbf{\frac{2}{5}}$

6.

	Case 1	Case 2
Meters	3000	5000
Minutes	9	m

$\frac{3000}{9} = \frac{5000}{m}$

$3000m = 45{,}000$

$m = \mathbf{15 \text{ minutes}}$

7.

	Percent	Actual Count
Original	100	O
+ Change	20	C
New	120	60

$\frac{100}{120} = \frac{O}{60}$

$120O = 6000$

$O = \mathbf{50}$

8.

	Percent	Actual Count
Original	100	\$36
− Change	25	C
New	75	N

$\frac{100}{75} = \frac{\$36}{N}$

$100N = \$2700$

$N = \mathbf{\$27}$

9. $\mathbf{60 = 1.5 \times W_N}$

$\frac{60}{1.5} = \frac{1.5 \times W_N}{1.5}$

$\mathbf{40} = W_N$

10.

	702 cards
$\frac{2}{3}$ kept	234 cards
	234 cards
$\frac{1}{3}$ given away (234)	234 cards

(a) $3(234 \text{ cards}) = \mathbf{702 \text{ cards}}$

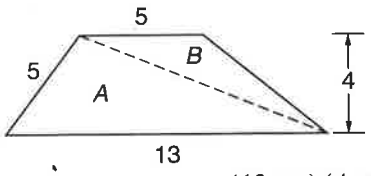
(b) $2(234 \text{ cards}) = \mathbf{468 \text{ cards}}$

11. $a - b \textcircled{>} b - a$

12. $p(c, c, c, c, c) = \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2}$

$= \left(\frac{1}{2}\right)^5 = \mathbf{\frac{1}{32}}$

13.



Area of triangle $A = \frac{(13 \text{ cm})(4 \text{ cm})}{2} = 26 \text{ cm}^2$

\+ Area of triangle $B = \frac{(5 \text{ cm})(4 \text{ cm})}{2} = 10 \text{ cm}^2$

Area of figure $= \mathbf{36 \text{ cm}^2}$

14. Area of base $= \frac{(6 \text{ in.})(3 \text{ in.})}{2} = 9 \text{ in.}^2$

Volume $= (9 \text{ in.}^2)(6 \text{ in.}) = \mathbf{54 \text{ in.}^3}$

15. $C \approx 3.14(6 \text{ in.})$

$C \approx 18.84 \text{ in.}$

Area $\approx (18.84 \text{ in.})(3 \text{ in.}) \approx \mathbf{56.52 \text{ in.}^2}$

16. (a) \$36.00

$\times$ 0.065

\$2.34

(b) \$36.00

\+ \$2.34

\$38.34

17. (a) $\mathbf{\frac{1}{200}}$

(b) **0.005**

18. $\dfrac{100}{166\frac{2}{3}} = \dfrac{\frac{100}{1}}{\frac{500}{3}} \cdot \dfrac{\frac{3}{500}}{\frac{3}{500}} = \dfrac{\frac{300}{500}}{1} = \dfrac{3}{5}$

$$\frac{3}{5} = \frac{48}{n}$$
$$3n = 240$$
$$n = \mathbf{80}$$

19. $(6 \times 10^{-8})(8 \times 10^{4})$

48×10^{-4}

$(4.8 \times 10^{1}) \times 10^{-4}$

$\mathbf{4.8 \times 10^{-3}}$

20. $y = \frac{2}{3}(6) - 1$

$y = 2(2) - 1$

$y = 4 - 1$

$y = \mathbf{3;}$

$y = \frac{2}{3}(0) - 1$

$y = 0 - 1$

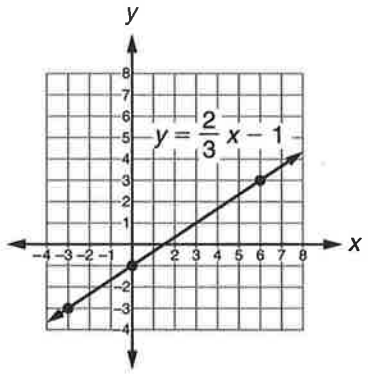
$y = \mathbf{-1;}$

$y = \frac{2}{3}(-3) - 1$

$y = 2(-1) - 1$

$y = -2 - 1$

$y = \mathbf{-3}$



$\frac{\text{rise}}{\text{run}} = \mathbf{\frac{2}{3}}$

21.

	Ratio	Actual Count
Angle 1	7	A_1
Angle 2	8	A_2
Total	15	90°

$$\frac{7}{15} = \frac{A_1}{90^\circ}$$
$$15A_1 = 630^\circ$$
$$A_1 = \mathbf{42^\circ}$$

22. $4x + 3x + 2x + x = 360^\circ$

$10x = 360^\circ$

$x = \mathbf{36^\circ}$

23. $d^2 = (2 \text{ units})^2 + (5 \text{ units})^2$

$d^2 = 4 \text{ units}^2 + 25 \text{ units}^2$

$d^2 = 29 \text{ units}^2$

$d = \mathbf{\sqrt{29} \text{ units}}$

24. $3m^2 + 2 = 50$

$3m^2 + 2 - 2 = 50 - 2$

$3m^2 = 48$

$m^2 = 16$

$m = \mathbf{4, -4}$

25. $7(y - 2) = 4 - 2y$

$7y - 14 = 4 - 2y$

$7y - 14 + 2y = 4 - 2y + 2y$

$9y - 14 = 4$

$9y - 14 + 14 = 4 + 14$

$9y = 18$

$\frac{9y}{9} = \frac{18}{9}$

$y = \mathbf{2}$

26. $\sqrt{144} - (\sqrt{36})(\sqrt{4})$

$= 12 - (6)(2) = 12 - 12 = \mathbf{0}$

27. $x^2y + xy^2 + x(xy - y^2)$

$= x^2y + xy^2 + x^2y - xy^2$

$= \mathbf{2x^2y}$

28. $\left(1\frac{5}{9}\right)\left(1\frac{1}{2}\right) \div 2\frac{2}{3}$

$= \left(\frac{14}{9}\right)\left(\frac{3}{2}\right) \div \frac{8}{3} = \frac{7}{3} \div \frac{8}{3}$

$= \frac{7}{3} \times \frac{3}{8} = \mathbf{\frac{7}{8}}$

29. $9.5 - (4.2 - 3.4)$

$= 9.5 - 0.8 = \mathbf{8.7}$

30. (a) $\dfrac{(-18) + (-12) - (-6)(3)}{-3}$

$\dfrac{(-30) - (-18)}{-3}$

$\dfrac{-12}{-3}$

$\mathbf{4}$

(b) $\sqrt[3]{1000} - \sqrt[3]{125} = 10 - 5 = \mathbf{5}$

(c) $2^2 + 2^1 + 2^0 + 2^{-1}$

$= 4 + 2 + 1 + \frac{1}{2} = \mathbf{7\frac{1}{2}}$ or **7.5**

LESSON 110, LESSON PRACTICE

a. **$132,528.15**

b. $\$6000 \times 0.08 = \$480$

$\frac{8}{12} \times \$480 = \$320$

$\$6000 + \$320 = \mathbf{\$6320}$

$\frac{\mathbf{8}}{\mathbf{12}}$ or $\frac{\mathbf{2}}{\mathbf{3}}$

c. 80% of 80% of \$300

$= 0.8 \times 0.8 \times \$300$

$= 0.64 \times \$300 = \mathbf{\$192}$

LESSON 110, MIXED PRACTICE

1. $3(\$5.95) = \$17.85$

$$\begin{array}{r} \$17.85 \\ \times \quad 0.06 \\ \hline \$1.071 \end{array} \longrightarrow \$1.07 \qquad \begin{array}{r} \$17.85 \\ + \quad \$1.07 \\ \hline \$18.92 \end{array}$$

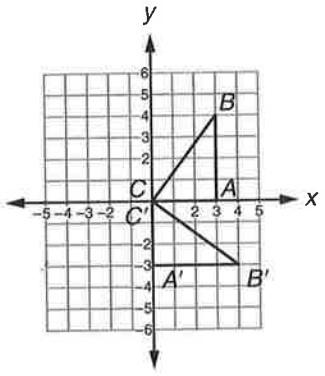
$$\begin{array}{r} \$20.00 \\ - \$18.92 \\ \hline \mathbf{\$1.08} \end{array}$$

2. 90% of 75% of \$24

$= 0.9 \times 0.75 \times \$24 = 0.675 \times \$24$

$= \mathbf{\$16.20}$

3.



$\mathbf{A'(0, -3), B'(4, -3), C'(0, 0)}$

4.

	Case 1	Case 2
Miles	1	m
Calories	100	350

$\frac{1}{100} = \frac{m}{350}$

$100m = 350$

$m = \mathbf{3.5\ miles}$

5.

	Case 1	Case 2
Roses	12	30
Dollars	\$4.90	d

$\frac{12}{\$4.90} = \frac{30}{d}$

$12d = \$147$

$d = \mathbf{\$12.25}$

6. $C \approx \frac{\frac{22}{7}(7\text{ in.})}{2}$

$C \approx \frac{22\text{ in.}}{2}$

$C \approx 11\text{ in.}$

Perimeter $\approx 11\text{ in.} + 7\text{ in.} + 7\text{ in.} + 7\text{ in.} \approx \mathbf{32\ in.}$

7. $8(4) = 32$

$32 - (2 + 4 + 6) = \mathbf{20}$

8. $\mathbf{150 = W_P \times 60}$

$\frac{150}{60} = \frac{W_P \times 60}{60}$

$\frac{5}{2} = W_P$

$W_P = \frac{5}{2} \times 100\% = \mathbf{250\%}$

9. $\mathbf{0.6 \times W_N = 150}$

$\frac{0.6 \times W_N}{0.6} = \frac{150}{0.6}$

$W_N = \mathbf{250}$

10. $\mathbf{(-x)^2 + 6 = 150}$

$x^2 + 6 = 150$

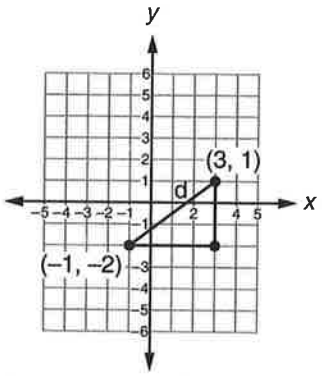
$x^2 + 6 - 6 = 150 - 6$

$x^2 = 144$

$x = 12, -12$

$\mathbf{-12}$

11.



$d^2 = (4 \text{ units})^2 + (3 \text{ units})^2$
$d^2 = 16 \text{ units}^2 + 9 \text{ units}^2$
$d^2 = 25 \text{ units}^2$
$d =$ **5 units**

12.

	Percent	Actual Count
Original	100	O
− Change	40	C
New	60	\$48

$\frac{100}{60} = \frac{O}{\$48}$
$60O = \$4800$
$O =$ **\$80**

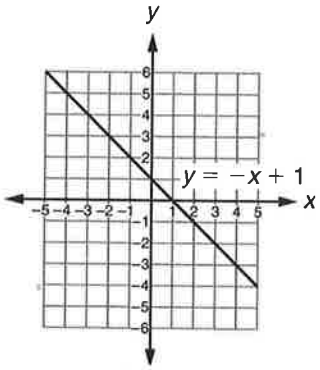
13.

	Scale	Actual Size
Model	1	m
Car	36	180

$\frac{1}{36} = \frac{m}{180}$
$36m = 180$
$m =$ **5 inches**

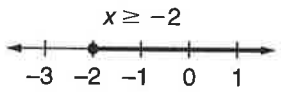
14. **8 and 9**

15. **See student work;**



$\frac{\text{rise}}{\text{run}} = \frac{1}{-1} = -1$

16.
$$5x + 12 \geq 2$$
$$5x + 12 - 12 \geq 2 - 12$$
$$5x \geq -10$$
$$\frac{5x}{5} \geq \frac{-10}{5}$$
$$x \geq -2$$



17. $(6.3 \times 9) \times (10^7 \times 10^{-3})$
$= 56.7 \times 10^4$
$=$ **5.67×10^5**

18. $\frac{1}{2}y = x + 2$
$\left(\frac{2}{1}\right)\frac{1}{2}y = \frac{2}{1}(x + 2)$
$y =$ **$2x + 4$**

19.
$$\begin{array}{r} \$4000 \\ \times\ 1.09 \\ \hline \$4360 \\ \times\ 1.09 \\ \hline \$4752.40 \\ \times\ 1.09 \\ \hline \$5180.116 \end{array} \longrightarrow \textbf{\$5180.12}$$

20. (a) **See student work;**
$\frac{x}{8} = \frac{3}{4}$
$4x = 24$
$x =$ **6 in.**

(b) $4f = 3$
$f = \frac{3}{4} =$ **0.75**

21. Area of base $= \frac{(16 \text{ in.})(12 \text{ in.})}{2}$
$= 96 \text{ in.}^2$
Volume $= (96 \text{ in.}^2)(10 \text{ in.}) =$ **960 in.^{3}**

22.
Area of triangle		$= 96 \text{ in.}^2$
Area of triangle		$= 96 \text{ in.}^2$
Area of rectangle	$= (10 \text{ in.})(20 \text{ in.})$	$= 200 \text{ in.}^2$
Area of rectangle	$= (10 \text{ in.})(16 \text{ in.})$	$= 160 \text{ in.}^2$
+ Area of rectangle	$= (10 \text{ in.})(12 \text{ in.})$	$= 120 \text{ in.}^2$
Total surface area		$=$ **672 in.^{2}**

23. $m\angle x = 180° - (80° + 30°) = 70°$
$180° - 70° =$ **110°**

24. $\frac{w}{2} = \frac{18}{w}$

$w^2 = 36$

$w = \mathbf{6, -6}$

25. $3\frac{1}{3}w^2 - 4 = 26$

$3\frac{1}{3}w^2 - 4 + 4 = 26 + 4$

$\frac{10}{3}w^2 = 30$

$\left(\frac{3}{10}\right)\frac{10}{3}w^2 = \left(\frac{3}{10}\right)30$

$w^2 = 9$

$w = \mathbf{3, -3}$

26. $16 - \{27 - 3[8 - (3^2 - 2^3)]\}$

$16 - \{27 - 3[8 - (9 - 8)]\}$

$16 - \{27 - 3[8 - (1)]\}$

$16 - \{27 - 3[7]\}$

$16 - \{27 - 21\}$

$16 - \{6\}$

10

27. $\frac{(6ab^2)(8ab)}{12a^2b^2}$

$= \frac{\overset{1}{2} \cdot \overset{1}{3} \cdot \overset{1}{a} \cdot \overset{1}{b} \cdot \overset{1}{b} \cdot \overset{1}{2} \cdot 2 \cdot 2 \cdot \overset{1}{a} \cdot b}{\underset{1}{2} \cdot \underset{1}{2} \cdot \underset{1}{3} \cdot \underset{1}{a} \cdot \underset{1}{a} \cdot \underset{1}{b} \cdot \underset{1}{b}}$

$= \mathbf{4b}$

28. $3\frac{1}{3} + 1\frac{1}{2} + 4\frac{5}{6}$

$= 3\frac{2}{6} + 1\frac{3}{6} + 4\frac{5}{6} = 8\frac{10}{6} = 9\frac{4}{6}$

$= \mathbf{9\frac{2}{3}}$

29. $20 \div \left(3\frac{1}{3} \div 1\frac{1}{5}\right) = 20 \div \left(\frac{\overset{5}{\cancel{10}}}{3} \times \frac{5}{\underset{3}{\cancel{6}}}\right)$

$= 20 \div \frac{25}{9} = \frac{\overset{4}{\cancel{20}}}{1} \times \frac{9}{\underset{5}{\cancel{25}}} = \frac{36}{5} = 7\frac{1}{5}$

30. $(-3)^2 + (-2)^3 = 9 + (-8) = 1$

Lesson 111, Lesson Practice

a. $2\overline{)3.6}$ $\quad$ **1.8×10^6**

b. $25\overline{)75}$ $\quad$ **3×10^{-6}**

c. $3\overline{)4.5}$ $\quad$ **1.5×10^{-4}**

d. $15\overline{)60}$ $\quad$ **4×10^4**

e. $8\overline{)4.0}$

$0.5 \times 10^8 \longrightarrow \mathbf{5 \times 10^7}$

f. $3\overline{)1.5}$

$0.5 \times 10^{-8} \longrightarrow \mathbf{5 \times 10^{-9}}$

g. $6\overline{)3.6}$

$0.6 \times 10^{-6} \longrightarrow \mathbf{6 \times 10^{-7}}$

h. $9\overline{)1.8}$

$0.2 \times 10^6 \longrightarrow \mathbf{2 \times 10^5}$

Lesson 111, Mixed Practice

1. $\begin{array}{r} 1909 \\ -\ 1859 \\ \hline 50 \end{array}$

50 years + 1 year = **51 years (The year 1859 should be counted.)**

2. $15y = 600$

$\frac{15y}{15} = \frac{600}{15}$

$y = 40$

$40 + 15 = \mathbf{55}$

3. (a) $70\% = \frac{70}{100} = \mathbf{\frac{7}{10}}$

(b) $\frac{\text{agreed}}{\text{disagreed}} = \mathbf{\frac{3}{7}}$