Lesson 91, Lesson Practice

a. $(3) + (3)(-2) - (-2)$
$(3) + (-6) - (-2)$
$(-3) - (-2)$
$\mathbf{-1}$

b. $-(-2) + (-5) - (-2)(-5)$
$-(-2) + (-5) - (+10)$
$(-3) - (+10)$
$\mathbf{-13}$

c. $-3 + 4 - 5 - 2$
$+4 \underline{- 3 - 5 - 2}$
$+4 \qquad -10$
$\mathbf{-6}$

d. $-2 + 3(-4) - 5(-2)$
$-2 + (-12) - (-10)$
$-14 - (-10)$
$\mathbf{-4}$

e. $-3(-2) - 5(2) + 3(-4)$
$(+6) - (+10) + (-12)$
$\mathbf{-16}$

f. $-4(-3)(-2) - 6(-4)$
$-4(+6) - (-24)$
$(-24) - (-24)$
$\mathbf{0}$

Lesson 91, Mixed Practice

1. $6(86) + 4(94) = 516 + 376$
$= 892$

$$10\overline{)892.0}\quad \mathbf{89.2}$$

2. Median $= \frac{7 + 9}{2} = 8$ **11 − 8 = 3**

Median $= 88 \div 8 = 11$

3. $\frac{130 \text{ miles}}{2.5 \text{ hours}} =$ **52 miles per hour**

4.

	Ratio	Actual Count
Laborers	3	L
Supervisors	5	S
Total	8	120

$\frac{3}{8} = \frac{L}{120}$
$8L = 360$
$L =$ **45 laborers**

5.

	Case 1	Case 2
Notebooks	3	5
Price	\$8.55	p

$\frac{3}{\$8.55} = \frac{5}{p}$
$3p = \$42.75$
$p =$ **\$14.25**

6.

	Percent	Actual Count
Sale price	90	S
Regular price	100	\$36

$\frac{90}{100} = \frac{S}{\$36}$
$100S = \$3240$
$S =$ **\$32.40**

7.

	Percent	Actual Count
People who came	80	40
Invited people	100	I

$\frac{80}{100} = \frac{40}{I}$
$80I = 4000$
$I =$ **50 people**

8. (a) $\mathbf{20 = 0.4 \times W_N}$
$\frac{20}{0.4} = \frac{0.4 \times W_N}{0.4}$
$\mathbf{50} = W_N$

(b) $\mathbf{20 = W_P \times 40}$
$\frac{20}{40} = \frac{W_P \times 40}{40}$
$\frac{1}{2} = W_P$
$W_P = \frac{1}{2} \times 100\% =$ **50%**

9. $\cancel{3600}^{25}\ \cancel{\text{in.}^2} \cdot \frac{1 \text{ foot}}{\cancel{12 \text{ in.}}_{1}} \cdot \frac{1 \text{ foot}}{\cancel{12 \text{ in.}}_{1}}$
$=$ **25 square feet**

10.

	80 questions
$\frac{3}{4}$ were multiple choice (60).	20 questions
	20 questions
$\frac{1}{4}$ were not multiple choice.	20 questions
	20 questions

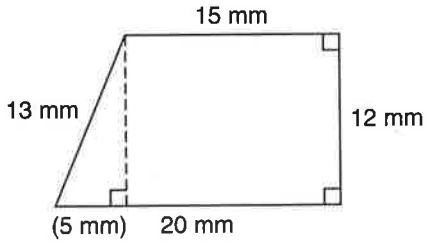
(a) $60 \div 3 = 20$
$4(20 \text{ questions}) =$ **80 questions**

(b) **25%**

11. $(-3) - (-2) - (-3)(-2)$
$(-3) - (-2) - (+6)$
$\mathbf{-7}$

12. Insufficient information

13.



(a) **Trapezoid**

(b) Perimeter $= 15$ mm $+ 12$ mm $+ 20$ mm $+ 13$ mm $=$ **60 mm**

(c) Area of rectangle $= (15 \text{ mm})(12 \text{ mm})$
$= 180 \text{ mm}^2$

$$\text{Area of triangle} = \frac{(5 \text{ mm})(12 \text{ mm})}{2}$$
$$= 30 \text{ mm}^2$$

Area of figure $= 180 \text{ mm}^2 + 30 \text{ mm}^2$
$= \mathbf{210 \text{ mm}^2}$

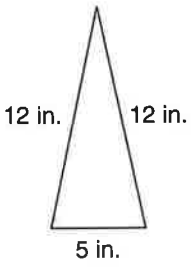
(d) $180° - 75° =$ **105°**

14. (a) **Associative property of addition**

(b) **Commutative property of multiplication**

(c) **Distributive property**

15.



Perimeter $= 12$ in. $+ 12$ in. $+ 5$ in.
$=$ **29 in.**

16. $(2.4 \times 10^{-4})(5 \times 10^{-7})$
12×10^{-11}
$(1.2 \times 10^{1}) \times 10^{-11}$
$\mathbf{1.2 \times 10^{-10}}$

17. (a) **5 faces**

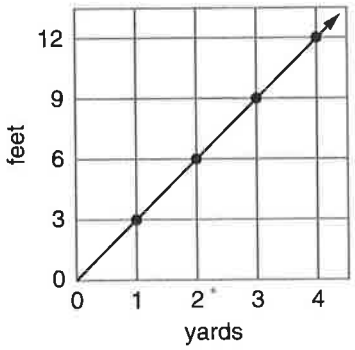
(b) **8 edges**

(c) **5 vertices**

18. (a) $C \approx 3.14(8 \text{ cm})$
$C \approx$ **25.12 cm**

(b) $A \approx 3.14(16 \text{ cm}^2)$
$A \approx$ **50.24 cm²**

19.



20. (a) $m\angle x = 180° - (90° + 30°) =$ **60°**

(b) $m\angle y = m\angle x =$ **60°**

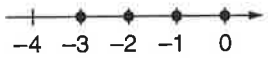
(c) $m\angle A = 180° - (60° + 65°) =$ **55°**

(d) **No. The triangles do not have the same shape, nor do they have matching angles.**

21. (a) $-3x - 3 - x - 1$
$-3x - x - 3 - 1$
$\mathbf{-4x - 4}$

(b) $(-3x)(-3)(-x)(-1)$
$(-3) \cdot x \cdot (-3) \cdot (-1) \cdot x \cdot (-1)$
$(-3)(-3)(-1)(-1) \cdot x \cdot x$
$\mathbf{9x^2}$

22.



23. AB is 60 mm
BC is 40 mm
60 mm $-$ 40 mm $=$ **20 mm**

24. $5 = y - 4.75$
$5 + 4.75 = y - 4.75 + 4.75$
$\mathbf{9.75} = y$

25. $3\frac{1}{3}y = 7\frac{1}{2}$

$\frac{10}{3}y = \frac{15}{2}$

$\left(\frac{\cancel{3}^{1}}{\cancel{10}_{1}}\right)\frac{\cancel{10}^{1}}{\cancel{3}_{1}}y = \left(\frac{3}{\cancel{10}_{2}}\right)\frac{\cancel{15}^{3}}{2}$

$y = \mathbf{\frac{9}{4}}$

26. $-9x = 414$

$$\frac{-9x}{-9} = \frac{414}{-9}$$

$$x = \mathbf{-46}$$

27. $\frac{32 \text{ ft}}{1 \text{ s}} \cdot \frac{60 \text{ s}}{1 \text{ min}} = \mathbf{1920 \frac{ft}{min}}$

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

$$= 7\frac{6}{6} = \mathbf{8}$$

29. $\frac{2.75 + 3.5}{2.5} = \frac{6.25}{2.5} = \mathbf{2.5}$

30. (a) $\frac{(-3) - (-4)(+5)}{-2}$

$$\frac{(-3) - (-20)}{-2}$$

$$\frac{17}{-2}$$

$$\mathbf{-8\frac{1}{2}}$$

(b) $-3(+4) - 5(+6) - 7$

$(-12) - (+30) - 7$

$\mathbf{-49}$

Lesson 92, Lesson Practice

a.

	Percent	Actual Count
Original	100	\$24.50
− Change	30	C
New	70	N

$$\frac{100}{70} = \frac{\$24.50}{N}$$

$$100N = \$1715$$

$$N = \mathbf{\$17.15}$$

b.

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

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

$$120O = 6000$$

$$O = \mathbf{50 \text{ students}}$$

c.

	Percent	Actual Count
Original	100	O
− Change	20	C
New	80	\$120

$$\frac{20}{80} = \frac{C}{\$120}$$

$$80C = \$2400$$

$$C = \mathbf{\$30}$$

d.

	Percent	Actual Count
Original	100	\$15
+ Change	80	C
New	180	N

$$\frac{100}{180} = \frac{\$15}{N}$$

$$100N = 2700$$

$$N = \mathbf{\$27}$$

Lesson 92, Mixed Practice

1. $(7 + 11 + 13) - (2 \times 3 \times 5)$

$$= 31 - 30$$

$$= \mathbf{1}$$

2. $5(88) = 440$

$7(90) = 630$

$630 - 440 = 190$

$190 \div 2 = \mathbf{95}$

3. $\frac{2 \text{ miles}}{0.25 \text{ hour}} = \mathbf{8 \text{ miles per hour}}$

4.

	Ratio	Actual Count
Girls	9	45
Boys	7	35
Total	16	80

$$\frac{35}{45} = \frac{\mathbf{7}}{\mathbf{9}}$$

5.

	Case 1	Case 2
Sparklers	24	60
Price	\$3.60	p

$$\frac{24}{\$3.60} = \frac{60}{p}$$

$$24p = \$216$$

$$p = \mathbf{\$9.00}$$

6.

	Percent	Actual Count
Original	100	340,000
+ Change	20	C
New	120	N

$$\frac{100}{120} = \frac{340{,}000}{N}$$
$$100N = 40{,}800{,}000$$
$$N = \mathbf{408{,}000}$$

7.

	Percent	Actual Count
Original	100	O
+ Change	50	C
New	150	96

$$\frac{100}{150} = \frac{O}{96}$$
$$150O = 9600$$
$$O = \mathbf{64¢\ per\ pound}$$

8. (a) $\mathbf{60 = W_P \times 75}$

$$\frac{60}{75} = \frac{W_P \times 75}{75}$$
$$\frac{12}{15} = W_P$$
$$W_P = \frac{12}{15} \times 100\% = \mathbf{80\%}$$

(b) $\mathbf{75 = W_P \times 60}$

$$\frac{75}{60} = \frac{W_P \times 60}{60}$$
$$\frac{15}{12} = W_P$$
$$W_P = \frac{15}{12} \times 100\% = \mathbf{125\%}$$

9. $100\ \cancel{\text{cm}}^2 \cdot \frac{10\text{ mm}}{1\ \cancel{\text{cm}}} \cdot \frac{10\text{ mm}}{1\ \cancel{\text{cm}}}$

$= \mathbf{10{,}000\ square\ millimeters}$

10.

256 trees

$\frac{5}{8}$ were deciduous (160).

- 32 trees
- 32 trees
- 32 trees
- 32 trees
- 32 trees

$\frac{3}{8}$ were not deciduous.

- 32 trees
- 32 trees
- 32 trees

(a) $160 \div 5 = 32$

$8(32\text{ trees}) = \mathbf{256\ trees}$

(b) $3(32\text{ trees}) = \mathbf{96\ trees}$

11. $y = 3(-5) - 1$

$y = -15 - 1$

$y = \mathbf{-16}$

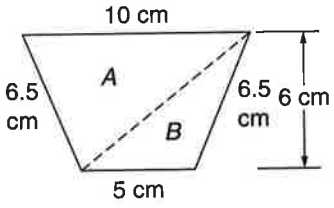
12. $30\% \times 20 = \frac{3}{10} \times 20 = 6$

$20\% \times 30 = \frac{2}{10} \times 30 = 6$

$6 = 6$

30% of 20 $\circledcirc$ 20% of 30

13.



(a) Area of triangle $A = \frac{(10\text{ cm})(6\text{ cm})}{2}$

$= 30\text{ cm}^2$

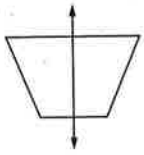
Area of triangle $B = \frac{(5\text{ cm})(6\text{ cm})}{2}$

$= 15\text{ cm}^2$

Area of figure $= 30\text{ cm}^2 + 15\text{ cm}^2$

$= \mathbf{45\ cm^2}$

(b)



14.

	Percent	Actual Count
Original	100	\$90.00
+ Change	75	C
New	175	N

(a) $\frac{100}{175} = \frac{\$90}{N}$

$100N = \$15{,}750$

$N = \mathbf{\$157.50}$

(b) $\$157.50 \times 0.06 = \$9.45$ $\qquad$ $\$157.50 + \$9.45 = \mathbf{\$166.95}$

15. $(8 \times 10^{-5})(3 \times 10^{12})$

24×10^{7}

$(2.4 \times 10^{1}) \times 10^{7}$

$\mathbf{2.4 \times 10^{8}}$

16. (a) $\mathbf{2.\overline{3}}$

(b) $\mathbf{233\frac{1}{3}\%}$

(c) $\mathbf{\frac{1}{30}}$

(d) $\mathbf{0.0\overline{3}}$

17. $\frac{3}{51} = \frac{1}{17}$

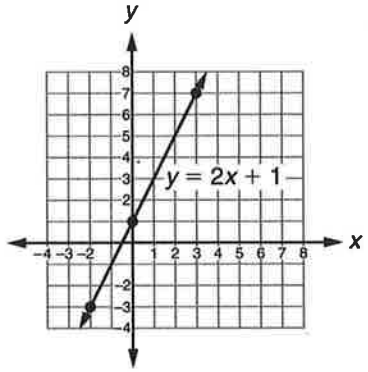
18. $W_N = 2.5 \times 60$
$W_N = \mathbf{150}$

19. (a) **2**

(b) **3**

20. $C \approx 3.14(24 \text{ inches})$
$C \approx 75.36 \text{ inches}$
$C \approx \mathbf{75 \text{ inches}}$

21. $y = 2(0) + 1$
$y = 0 + 1$
$y = \mathbf{1;}$
$y = 2(3) + 1$
$y = 6 + 1$
$y = \mathbf{7;}$
$y = 2(-2) + 1$
$y = -4 + 1$
$y = \mathbf{-3}$

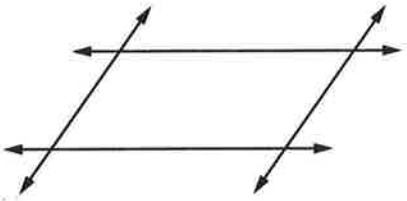


22. $180° \div 9 = 20°$
$4(20°) = \mathbf{80°}$

23. (a) $x + y + 3 + x - y - 1$
$x + x + y - y + 3 - 1$
$\mathbf{2x + 2}$

(b) $(3x)(2x) + (3x)(2)$
$[(3) \cdot x \cdot (2) \cdot x] + [(3) \cdot x \cdot (2)]$
$[(3)(2) \cdot x \cdot x] + [(3)(2) \cdot x]$
$\mathbf{6x^2 + 6x}$

24. **One possibility:**



Parallelogram

25. $3\frac{1}{7}x = 66$
$\frac{22}{7}x = 66$
$\left(\frac{\cancel{7}^{1}}{\cancel{22}_{1}}\right)\frac{\cancel{22}^{1}}{\cancel{7}_{1}}x = \left(\frac{7}{\cancel{22}}\right)^{3}\cancel{66}$
$x = \mathbf{21}$

26. $w - 0.15 = 4.9$
$w - 0.15 + 0.15 = 4.9 + 0.15$
$w = \mathbf{5.05}$

27. $-8y = 600$
$\frac{-8y}{-8} = \frac{\cancel{600}^{-75}}{\cancel{-8}_{1}}$
$y = \mathbf{-75}$

28. $(2 \cdot 3)^2 - 2(3^2)$
$= (6)^2 - 2(9) = 36 - 18 = \mathbf{18}$

29. $5 - \left(3\frac{1}{3} - 1\frac{1}{2}\right)$
$= 4\frac{6}{6} - \left(3\frac{2}{6} - 1\frac{3}{6}\right)$
$= 4\frac{6}{6} - \left(2\frac{8}{6} - 1\frac{3}{6}\right)$
$= 4\frac{6}{6} - 1\frac{5}{6} = \mathbf{3\frac{1}{6}}$

30. (a) $\frac{(-8)(-6)(-5)}{(-4)(-3)(-2)}$
$\frac{(48)(-5)}{(12)(-2)}$
$\frac{-240}{-24}$
10

(b) $-6 - 5(-4) - 3(-2)(-1)$
$-6 - (-20) - 3(2)$
$-6 - (-20) - (6)$
8

LESSON 93, LESSON PRACTICE

a.
$$\begin{aligned} 8x - 15 &= 185 \\ 8x - 15 + 15 &= 185 + 15 \\ 8x &= 200 \\ \frac{8x}{8} &= \frac{200}{8} \\ x &= \mathbf{25} \end{aligned}$$

b.
$$\begin{aligned} 0.2y + 1.5 &= 3.7 \\ 0.2y + 1.5 - 1.5 &= 3.7 - 1.5 \\ 0.2y &= 2.2 \\ \frac{0.2y}{0.2} &= \frac{2.2}{0.2} \\ y &= \mathbf{11} \end{aligned}$$

c.
$$\begin{aligned} \frac{3}{4}m - \frac{1}{3} &= \frac{1}{2} \\ \frac{3}{4}m - \frac{1}{3} + \frac{1}{3} &= \frac{1}{2} + \frac{1}{3} \\ \frac{3}{4}m &= \frac{5}{6} \\ \left(\frac{4}{3}\right)\frac{3}{4}m &= \left(\frac{4}{3}\right)\frac{5}{6} \\ m &= \frac{20}{18} \\ m &= \mathbf{\frac{10}{9}} \end{aligned}$$

d.
$$\begin{aligned} 1\tfrac{1}{2}n + 3\tfrac{1}{2} &= 14 \\ 1\tfrac{1}{2}n + 3\tfrac{1}{2} - 3\tfrac{1}{2} &= 14 - 3\tfrac{1}{2} \\ 1\tfrac{1}{2}n &= 14 - 3\tfrac{1}{2} \\ 1\tfrac{1}{2}n &= 10\tfrac{1}{2} \\ \left(\frac{2}{3}\right)\frac{3}{2}n &= \left(\frac{2}{3}\right)\frac{21}{2} \\ n &= \frac{42}{6} \\ n &= \mathbf{7} \end{aligned}$$

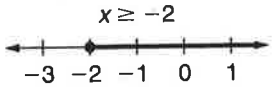
e.
$$\begin{aligned} -6p + 36 &= 12 \\ -6p + 36 - 36 &= 12 - 36 \\ -6p &= -24 \\ \frac{-6p}{-6} &= \frac{-24}{-6} \\ p &= \mathbf{4} \end{aligned}$$

f.
$$\begin{aligned} 38 &= 4w - 26 \\ 38 + 26 &= 4w - 26 + 26 \\ 64 &= 4w \\ \mathbf{16} &= w \end{aligned}$$

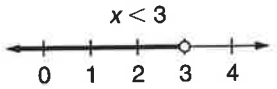
g.
$$\begin{aligned} -\frac{5}{3}m + 15 &= 60 \\ -\frac{5}{3}m + 15 - 15 &= 60 - 15 \\ -\frac{5}{3}m &= 45 \\ \left(-\frac{3}{5}\right)\left(-\frac{5}{3}m\right) &= \left(-\frac{3}{5}\right)45 \\ m &= \mathbf{-27} \end{aligned}$$

h.
$$\begin{aligned} 4.5 &= 0.6d - 6.3 \\ 4.5 + 6.3 &= 0.6d - 6.3 + 6.3 \\ 10.8 &= 0.6d \\ \frac{10.8}{0.6} &= \frac{0.6d}{0.6} \\ \mathbf{18} &= d \end{aligned}$$

i.
$$\begin{aligned} 2x + 5 &\geq 1 \\ 2x + 5 - 5 &\geq 1 - 5 \\ 2x &\geq -4 \\ \frac{2x}{2} &\geq \frac{-4}{2} \\ \boldsymbol{x} &\boldsymbol{\geq -2} \end{aligned}$$



j.
$$\begin{aligned} 2x - 5 &< 1 \\ 2x - 5 + 5 &< 1 + 5 \\ 2x &< 6 \\ \frac{2x}{2} &< \frac{6}{2} \\ \boldsymbol{x} &\boldsymbol{< 3} \end{aligned}$$



LESSON 93, MIXED PRACTICE

1. $\frac{60 \text{ kilometers}}{2.5 \text{ hours}} = \mathbf{24 \text{ kilometers per hour}}$

2. (a)

3	**9**
9	$12\overline{)108}$
7	
5	
10	
4	
5	
8	
5	
4	
8	
+ 40	
108	

(b) $40 - 3 = \mathbf{37}$

3.

	Ratio	Actual Count
Red marbles	7	R
Blue marbles	5	B
Total	12	600

(a) $\frac{5}{12} = \frac{B}{600}$

$12B = 3000$

$B =$ **250 marbles**

(b) $\mathbf{\frac{5}{12}}$

4.

	Case 1	Case 2
Pterodactyls	500	p
Minutes	20	90

$\frac{500}{20} = \frac{p}{90}$

$20p = 45{,}000$

$p =$ **2250 plastic pterodactyls**

5. (a)

	Percent	Actual Count
Original	100	\$24
− Change	25	C
New	75	N

$\frac{100}{75} = \frac{\$24}{N}$

$100N = \$1800$

$N =$ **\$18**

(b)

	Percent	Actual Count
Original	100	O
− Change	25	C
New	75	\$24

$\frac{100}{75} = \frac{O}{\$24}$

$75O = \$2400$

$O =$ **\$32**

6. $(-3x^2)(2xy)(-x)(3y^2)$

$(-3) \cdot x \cdot x \cdot (2) \cdot x \cdot y \cdot (-1) \cdot x \cdot (3) \cdot y \cdot y$

$(-3)(2)(-1)(3) \cdot x \cdot x \cdot x \cdot x \cdot y \cdot y \cdot y$

$\mathbf{18x^4y^3}$

7. $\mathbf{\frac{2}{50} = \frac{1}{25}}$

8. $7 \text{ days} \cdot \frac{24 \text{ hours}}{1 \text{ day}} \cdot \frac{60 \text{ minutes}}{1 \text{ hour}}$

$=$ **10,080 minutes**

9. 45 cars

$\frac{5}{9}$ were not cattle cars.

$\frac{4}{9}$ were cattle cars.

5 cars
5 cars
5 cars
5 cars
5 cars
5 cars
5 cars
5 cars
5 cars

(a) **20 cattle cars**

(b) $\mathbf{55\frac{5}{9}\%}$

10. $\frac{1}{3} \geqslant 33\%$

11. $(-3)(-1) - (-3) - (-1)$

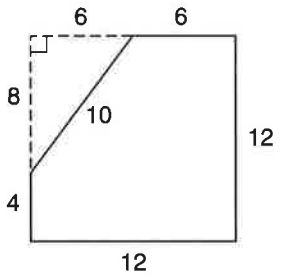
$(3) - (-3) - (-1)$

7

12.

\$7.95	\$11.20	\$11.20
\$0.90	× 0.05	+ \$0.56
\$2.35	\$0.56	**\$11.76**
\$11.20		

13.



(a) Perimeter $=$ 6 in. + 12 in. + 12 in. + 4 in. + 10 in. $=$ **44 in.**

(b) Area of square $=$ (12 in.)(12 in.)

$=$ 144 in.^{2}

Area of triangle $= \frac{(6 \text{ in.})(8 \text{ in.})}{2}$

$=$ 24 in.^{2}

Area of figure $=$ 144 in.^{2} − 24 in.^{2}

$=$ **120 in.^{2}**

14. (a) $\mathbf{\frac{2}{25}}$

(b) **8%**

(c) $\mathbf{\frac{1}{12}}$

(d) $\mathbf{0.08\overline{3}}$

15.

	Percent	Actual Count
Original	100	$3.60
+ Change	120	C
New	220	N

$$\frac{100}{220} = \frac{\$3.60}{N}$$
$$100N = \$792$$
$$N = \mathbf{\$7.92}$$

16. $(8 \times 10^{-3})(6 \times 10^{7})$
48×10^{4}
$(4.8 \times 10^{1})10^{4}$
$\mathbf{4.8 \times 10^{5}}$

17. (a) $(10\text{ cm})(10\text{ cm})(10\text{ cm})$
$= \mathbf{1000\text{ cm}^3}$

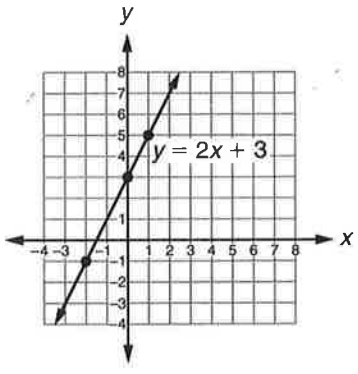
(b) $6(100\text{ cm}^2) = \mathbf{600\text{ cm}^2}$

18. (a) $A \approx 3.14(100\text{ cm}^2)$
$A \approx \mathbf{314\text{ cm}^2}$

(b) $C \approx 3.14(20\text{ cm})$
$C \approx \mathbf{62.8\text{ cm}}$

19. $-x + 2x^2 - 1 + x - x^2$
$2x^2 - x^2 - x + x - 1$
$\mathbf{x^2 - 1}$

20. $y = 2(1) + 3$
$y = 2 + 3$
$y = \mathbf{5;}$
$y = 2(0) + 3$
$y = 0 + 3$
$y = \mathbf{3;}$
$y = 2(-2) + 3$
$y = -4 + 3$
$y = \mathbf{-1}$

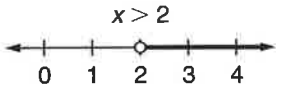


21. $60 = \frac{3}{8} \times W_N$

$\frac{8}{3} \cdot \cancel{60}^{20} = \left(\frac{\cancel{8}^{1}}{\cancel{3}_{1}}\right)\frac{\cancel{3}^{1}}{\cancel{8}_{1}} \times W_N$

$\mathbf{160} = W_N$

22. $2x - 5 > -1$
$2x - 5 + 5 > -1 + 5$
$2x > 4$
$\frac{2x}{2} > \frac{4}{2}$
$\mathbf{x > 2}$



23. (a) $m\angle x = 180° - (90° + 50°)$
$= \mathbf{40°}$
$m\angle y = m\angle x = \mathbf{40°}$
$m\angle z = 180° - (90° + 40°)$
$= \mathbf{50°}$

(b) **Yes. The triangles have the same shape. Their corresponding angles are congruent.**

24. 0.42
$+ \ 0.45$
$\mathbf{0.87}$

25. $3x + 2 = 9$
$3x + 2 - 2 = 9 - 2$
$3x = 7$
$\frac{3x}{3} = \frac{7}{3}$
$x = \mathbf{\frac{7}{3}}$

26. $\frac{2}{3}w + 4 = 14$
$\frac{2}{3}w + 4 - 4 = 14 - 4$
$\frac{2}{3}w = 10$
$\left(\frac{3}{2}\right)\frac{2}{3}w = \left(\frac{3}{2}\right)10$
$w = \mathbf{15}$

27. $0.2y - 1 = 7$
$0.2y - 1 + 1 = 7 + 1$
$0.2y = 8$
$\frac{0.2y}{0.2} = \frac{8}{0.2}$
$y = \mathbf{40}$

28. $-\frac{2}{3}m = -6$
$\left(-\frac{3}{2}\right)\left(-\frac{2}{3}m\right) = \left(-\frac{3}{2}\right)(-6)$
$m = \mathbf{9}$

29. $3(2^3 + \sqrt{16}) - 4^0 - 8 \cdot 2^{-3}$

$3(8 + 4) - 1 - 8 \cdot \frac{1}{8}$

$3(12) - 1 - 1$

$36 - 2$

34

30. (a) $\frac{(-9)(+6)(-5)}{(-4) - (-1)}$

$\frac{(-54)(-5)}{-3}$

$\frac{270}{-3}$

−90

(b) $-3(4) + 2(3) - 1$

$(-12) + (6) - 1$

−7

Lesson 94, Lesson Practice

a.

$$p(4, 5) = \frac{1}{6} \cdot \frac{1}{6} = \frac{1}{36}$$

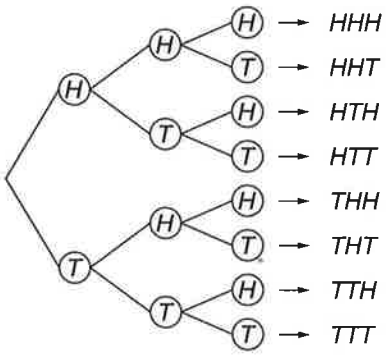
$$p(3, 6) = \frac{1}{6} \cdot \frac{1}{6} = \frac{1}{36}$$

$$p(5, 4) = \frac{1}{6} \cdot \frac{1}{6} = \frac{1}{36}$$

$$p(6, 3) = \frac{1}{6} \cdot \frac{1}{6} = \frac{1}{36}$$

$$\frac{1}{36} + \frac{1}{36} + \frac{1}{36} + \frac{1}{36} = \frac{4}{36} = \frac{1}{9}$$

b.



c. $\frac{1}{3} \cdot \frac{1}{4} = \frac{1}{12}$

d.

Second Draw

First Draw	Red	White	Blue
Red	R, R	R, W	R, B
White	W, R	W, W	W, B
Blue	B, R	B, W	B, B

e.

Second Draw

First Draw	Red	White	Blue
Red		R, W	R, B
White	W, R		W, B
Blue	B, R	B, W	

f. **Independent; dependent**

Lesson 94, Mixed Practice

1.

$$\begin{array}{r} 21{,}000{,}000{,}000 \\ -\ 9{,}800{,}000{,}000 \\ \hline 11{,}200{,}000{,}000 \end{array}$$

$\mathbf{1.12 \times 10^{10}}$

2. $\frac{96 \text{ miles} + 240 \text{ miles}}{2 \text{ hours} + 4 \text{ hours}}$

$= \frac{336 \text{ miles}}{6 \text{ hours}} =$ **56 miles per hour**

3. $\frac{\$8.40}{10 \text{ pounds}} = \frac{\$0.84}{1 \text{ pound}}$

$\frac{\$10.50}{15 \text{ pounds}} = \frac{\$0.70}{1 \text{ pound}}$

$$\begin{array}{r} \$0.84 \\ -\ \$0.70 \\ \hline \end{array}$$

10-pound box; $0.14 per pound more

4. $\frac{6}{12} = \frac{1}{2}$

5.

	Ratio	Actual Count
Won	3	12
Lost	2	L
Total	5	T

$\frac{3}{5} = \frac{12}{T}$

$3T = 5(12)$

$3T = 60$

$T =$ **20 games**

6.

	Case 1	Case 2
First number	24	42
Second number	36	n

$\frac{24}{36} = \frac{42}{n}$

$24n = 1512$

$n =$ **63**

7. $100\% - 20\% = \mathbf{80\%}$

8.

	Percent	Actual Count
Original	100	O
− Change	20	C
New	80	\$20

$$\frac{100}{80} = \frac{O}{\$20}$$
$$80O = \$2000$$
$$O = \mathbf{\$25}$$

9. (a) $12 \text{ ft} \cdot \frac{12 \text{ inches}}{1 \text{ ft}} \cdot \frac{12 \text{ inches}}{1 \text{ ft}}$
$= \mathbf{1728 \text{ square inches}}$

(b) $1 \text{ km} \cdot \frac{1000 \text{ m}}{1 \text{ km}} \cdot \frac{1000 \text{ mm}}{1 \text{ m}}$
$= \mathbf{1{,}000{,}000 \text{ millimeters}}$

10.

	300 male serfs
$\frac{2}{5}$ were conscripted (120).	60 male serfs
	60 male serfs
$\frac{3}{5}$ were not conscripted.	60 male serfs
	60 male serfs
	60 male serfs

(a) $120 \div 2 = 60$
$5(60 \text{ male serfs}) = \mathbf{300 \text{ male serfs}}$

(b) $3(60 \text{ male serfs}) = \mathbf{180 \text{ male serfs}}$

11. (a) **0**

(b) $p(1, 1) = \frac{1}{6} \cdot \frac{1}{6} = \mathbf{\frac{1}{36}}$

(c) $p(1, 2) = \frac{1}{6} \cdot \frac{1}{6} = \frac{1}{36}$

$p(2, 1) = \frac{1}{6} \cdot \frac{1}{6} = \frac{1}{36}$

$\frac{1}{36} + \frac{1}{36} = \mathbf{\frac{2}{36} = \frac{1}{18}}$

12. $y = 4(-2) - 3$
$y = -8 - 3$
$y = \mathbf{-11}$

13. $\frac{4 \text{ yards}}{4} = 1 \text{ yard} = 3 \text{ feet}$
$(3 \text{ feet})(3 \text{ feet})$
$= \mathbf{9 \text{ square feet}}$

14. (a)
$$\begin{array}{r} \$14{,}500 \\ \times \quad 0.065 \\ \hline \mathbf{\$942.50} \end{array}$$

(b)
$$\begin{array}{r} \$14{,}500 \\ + \quad 942.50 \\ \hline \mathbf{\$15{,}442.50} \end{array}$$

(c)
$$\begin{array}{r} \$14{,}500 \\ \times \quad 0.02 \\ \hline \mathbf{\$290} \end{array}$$

15. (a) $\mathbf{\frac{2}{3}}$

(b) $\mathbf{0.\overline{6}}$

(c) **1.75**

(d) **175%**

16. (a) $2 \times \$7.50 = \mathbf{\$15.00}$

(b) $\frac{100}{300} = \frac{\$7.50}{P}$
$P = \mathbf{\$22.50}$

17. $(2 \times 10^8)(8 \times 10^2)$
16×10^{10}
$(1.6 \times 10^1) \times 10^{10}$
$\mathbf{1.6 \times 10^{11}}$

18. $(8 \text{ cubes})(6 \text{ cubes})(2 \text{ cubes})$
$= \mathbf{96 \text{ cubes}}$

19. Area of square $= (14 \text{ in.})(14 \text{ in.})$
$= 196 \text{ in.}^2$

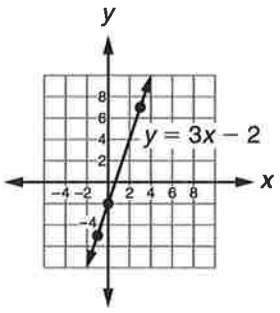
Area of circle $\approx \frac{22}{7}(49 \text{ in.}^2)$
$\approx 154 \text{ in.}^2$

$$\begin{array}{r} 196 \text{ in.}^2 \\ - \ 154 \text{ in.}^2 \\ \hline \mathbf{42 \text{ in.}^2} \end{array}$$

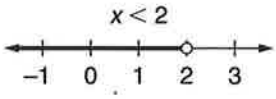
20.
$$\begin{array}{r} 65.4545\ldots \\ 11\overline{)720.0000} \\ 66 \\ \hline 60 \\ 55 \\ \hline 50 \\ 44 \\ \hline 60 \\ 55 \\ \hline 50 \\ 44 \\ \hline 60 \\ 55 \\ \hline 5 \end{array}$$

$\mathbf{65.4545\ldots = 65.\overline{45}}$

21. $y = 3(3) - 2$
$y = 9 - 2$
$y = \mathbf{7;}$
$y = 3(0) - 2$
$y = 0 - 2$
$y = \mathbf{-2;}$
$y = 3(-1) - 2$
$y = -3 - 2$
$y = \mathbf{-5}$



22. $2x - 5 < -1$
$2x - 5 + 5 < -1 + 5$
$2x < 4$
$\frac{2x}{2} < \frac{4}{2}$
$\mathbf{x < 2}$



23. (a) $m\angle AOB = \frac{90°}{3} = \mathbf{30°}$

(b) $m\angle EOC = 90° + 45° = \mathbf{135°}$

24. AB is $1\frac{3}{4}$ in.

BC is $1\frac{1}{2}$ in.

$1\frac{3}{4}$ in. $\longrightarrow$ $1\frac{3}{4}$ in.
$-1\frac{1}{2}$ in. $\longrightarrow$ $-1\frac{2}{4}$ in.
$\mathbf{\frac{1}{4}}$ **in.**

25. $1.2p + 4 = 28$
$1.2p + 4 - 4 = 28 - 4$
$1.2p = 24$
$\frac{1.2p}{1.2} = \frac{24}{1.2}$
$p = \mathbf{20}$

26. $-6\frac{2}{3}m = 1\frac{1}{9}$
$-\frac{20}{3}m = \frac{10}{9}$
$\left(-\frac{3}{20}\right)\left(-\frac{20}{3}m\right) = \left(-\frac{3}{20}\right)\left(\frac{10}{9}\right)$
$m = \mathbf{-\frac{1}{6}}$

27. (a) $6x^2 + 3x - 2x - 1$
$\mathbf{6x^2 + x - 1}$

(b) $(5x)(3x) - (5x)(-4)$
$[(5) \cdot x \cdot (3) \cdot x] - [(5) \cdot x \cdot (-4)]$
$[(5)(3) \cdot x \cdot x] - [(5)(-4) \cdot x]$
$15x^2 - (-20x)$
$\mathbf{15x^2 + 20x}$

28. (a) $\frac{-8 - (-6) - (4)}{-3}$

$\frac{-8 + 6 - 4}{-3}$

$\frac{-6}{-3}$

$\mathbf{2}$

(b) $-5(-4) - 3(-2) - 1$
$20 - (-6) - 1$
$\mathbf{25}$

29. $(-2)^2 - 4(-1)(3)$
$4 - 4(-3)$
$4 - (-12)$
$\mathbf{16}$

30. $\mathbf{Q_H D_H}$
$\mathbf{Q_H D_T}$
$\mathbf{Q_T D_H}$
$\mathbf{Q_T D_T}$

LESSON 95, LESSON PRACTICE

a. Area of base $= \frac{(8\text{ cm})(6\text{ cm})}{2} = 24\text{ cm}^2$
Volume $= (24\text{ cm}^2)(12\text{ cm}) = \mathbf{288\text{ cm}^3}$

b. Area of base $= \frac{(10\text{ cm})(6\text{ cm})}{2}$
$= 30\text{ cm}^2$
Volume $= (30\text{ cm}^2)(12\text{ cm}) = \mathbf{360\text{ cm}^3}$

c. Area of base $= \pi(3\text{ cm})^2 = 9\pi\text{ cm}^2$
Volume $= (9\pi\text{ cm}^2)(10\text{ cm}) = \mathbf{90\pi\text{ cm}^3}$

d. Area of base = (7 cm)(2 cm) + (3 cm)(3 cm)
= 14 cm^2 + 9 cm^2 = 23 cm^2
Volume = (23 cm^2)(10 cm) = **230 cm^3**

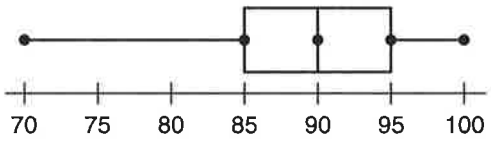
e. Area of base = π(1 cm)^2 = π cm^2
Volume = (π cm^2)(10 cm) = **10π cm^3**

LESSON 95, MIXED PRACTICE

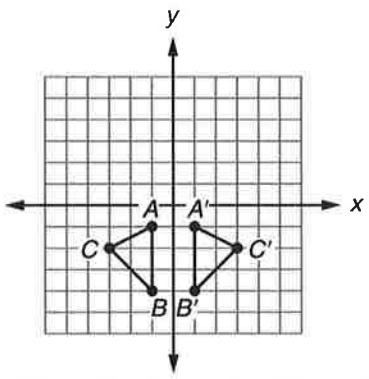
1. \$1.40 + 40(\$0.35)
= \$1.40 + \$14.00 = \$15.40

$$\frac{\$15.40}{4 \text{ miles}} = \textbf{\$3.85 per mile}$$

2.



3.



$A'(1, -1), B'(1, -4), C'(3, -2)$

4. $\$6\left(4\frac{1}{3}\right) = \$6\left(\frac{13}{3}\right) = \textbf{\$26}$

5. Area of rectangle = (12)(8) = 96

$$\text{Area of triangle} = \frac{(6)(8)}{2} = 24$$

$$\frac{24}{96} = \frac{1}{4} = \frac{\text{shaded area}}{\text{total area}}$$

$$\frac{\text{unshaded area}}{\text{total area}} = \frac{3}{4}$$

$$\frac{\text{shaded area}}{\text{unshaded area}} = \frac{\mathbf{1}}{\mathbf{3}}$$

6. 1 ton = 2000 pounds

$$\frac{600}{\$7.20} = \frac{2000}{p}$$

$$600p = \$14{,}400$$

$$p = \textbf{\$24.00}$$

7.

	Percent	Actual Count
Original	100	O
+ Change	30	C
New	130	\$3.90

$$\frac{100}{130} = \frac{O}{\$3.90}$$

$$130O = \$390$$

$$O = \textbf{\$3 per unit}$$

8.

	Percent	Actual Count
Original	100	\$3.90
+ Change	30	C
New	130	N

$$\frac{100}{130} = \frac{\$3.90}{N}$$

$$100N = \$507$$

$$N = \textbf{\$5.07}$$

9. $\overset{10}{\cancel{1000}}\ \cancel{\text{mm}^2} \cdot \frac{1 \text{ cm}}{\cancel{10 \text{ mm}}} \cdot \frac{1 \text{ cm}}{\cancel{10 \text{ mm}}}$
= **10 cm^2**

10.

150 Lilliputians

$\frac{3}{5}$ believed.
- 30 Lilliputians
- 30 Lilliputians
- 30 Lilliputians

$\frac{2}{5}$ did not believe (60).
- 30 Lilliputians
- 30 Lilliputians

(a) 60 ÷ 2 = 30
5(30 Lilliputians) = **150 Lilliputians**

(b) 3(30 Lilliputians) = **90 Lilliputians**

11. **Insufficient information**

12. (−2)[(−2) + (−3)]
−2[−5]
10

13. (a) $p(1, 6) = \frac{1}{6} \cdot \frac{1}{6} = \frac{1}{36}$

$p(3, 4) = \frac{1}{6} \cdot \frac{1}{6} = \frac{1}{36}$

$p(6, 1) = \frac{1}{6} \cdot \frac{1}{6} = \frac{1}{36}$

$p(4, 3) = \frac{1}{6} \cdot \frac{1}{6} = \frac{1}{36}$

$p(2, 5) = \frac{1}{6} \cdot \frac{1}{6} = \frac{1}{36}$

$p(5, 2) = \frac{1}{6} \cdot \frac{1}{6} = \frac{1}{36}$

$$\frac{1}{36} + \frac{1}{36} + \frac{1}{36} + \frac{1}{36} + \frac{1}{36} + \frac{1}{36}$$

$$= \frac{\mathbf{6}}{\mathbf{36}} = \frac{\mathbf{1}}{\mathbf{6}}$$

(b) $p(1, 1 \text{ or } 2 \text{ or } 3 \text{ or } 4 \text{ or } 5) = \frac{1}{6} \cdot \frac{5}{6} = \frac{5}{36}$

$p(2, 1 \text{ or } 2 \text{ or } 3 \text{ or } 4) = \frac{1}{6} \cdot \frac{4}{6} = \frac{4}{36}$

$p(3, 1 \text{ or } 2 \text{ or } 3) = \frac{1}{6} \cdot \frac{3}{6} = \frac{3}{36}$

$p(4, 1 \text{ or } 2) = \frac{1}{6} \cdot \frac{2}{6} = \frac{2}{36}$

$p(5, 1) = \frac{1}{6} \cdot \frac{1}{6} = \frac{1}{36}$

$$\frac{5}{36} + \frac{4}{36} + \frac{3}{36} + \frac{2}{36} + \frac{1}{36}$$

$$= \frac{\mathbf{15}}{\mathbf{36}} = \frac{\mathbf{5}}{\mathbf{12}}$$

14. Area of base $= \frac{(30 \text{ mm})(40 \text{ mm})}{2}$

$= 600 \text{ mm}^2$

Volume $= (600 \text{ mm}^2)(50 \text{ mm})$

$= \mathbf{30{,}000 \text{ mm}^3}$

15. Area of base $\approx 3.14(9 \text{ cm}^2)$

$\approx 28.26 \text{ cm}^2$

Volume $\approx (28.26 \text{ cm}^2)(10 \text{ cm})$

$\approx \mathbf{282.6 \text{ cm}^3}$

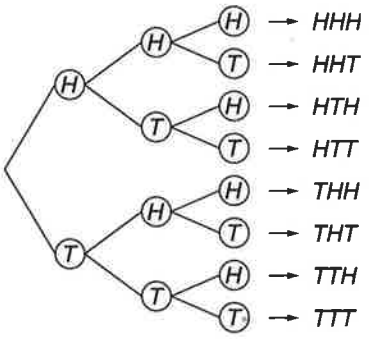
16. $3(\$1.25) + 2(\$0.95) + \$1.30$

$= \$3.75 + \$1.90 + \$1.30 = \$6.95$

\$6.95 · × 0.06 → \$0.417 → \$0.42

\$6.95 + \$0.42 = **\$7.37**

17.



18. (a) $(-2xy)(-2x)(x^2y)$

$(-2) \cdot x \cdot y \cdot (-2) \cdot x \cdot x \cdot x \cdot y$

$(-2)(-2) \cdot x \cdot x \cdot x \cdot x \cdot y \cdot y$

$\mathbf{4x^4y^2}$

(b) $6x - 4y + 3 - 6x - 5y - 8$

$6x - 6x - 4y - 5y + 3 - 8$

$\mathbf{-9y - 5}$

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

32×10^{-2}

$(3.2 \times 10^1) \times 10^{-2}$

$\mathbf{3.2 \times 10^{-1}}$

20. (a) $y = \frac{1}{2}(6) + 1$

$y = 3 + 1$

$y = \mathbf{4};$

$y = \frac{1}{2}(4) + 1$

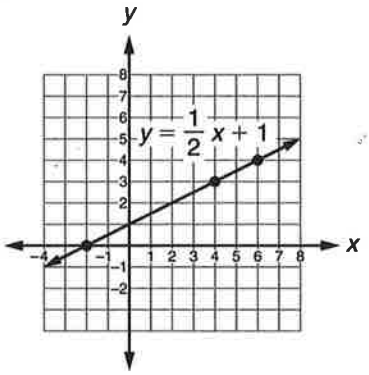
$y = 2 + 1$

$y = \mathbf{3};$

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

$y = -1 + 1$

$y = \mathbf{0}$



(b) **(0, 1)**

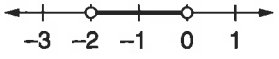
21. (a) $m\angle x = 180° - (90° + 55°) = \mathbf{35°}$

(b) $m\angle y = 180° - (90° + 35°) = \mathbf{55°}$

(c) $m\angle A = 180° - (110° + 55°)$

$= \mathbf{15°}$

22.



23. $(1.52 + 1.56) \div 2 = \mathbf{1.54}$

24. $-5w + 11 = 51$

$-5w + 11 - 11 = 51 - 11$

$-5w = 40$

$\frac{-5w}{-5} = \frac{40}{-5}$

$w = \mathbf{-8}$

25. $\frac{4}{3}x - 2 = 14$

$\frac{4}{3}x - 2 + 2 = 14 + 2$

$\frac{4}{3}x = 16$

$\left(\frac{3}{4}\right)\frac{4}{3}x = \left(\frac{3}{4}\right)16$

$x = \mathbf{12}$

26. $0.9x + 1.2 \le 3$

$0.9x + 1.2 - 1.2 \le 3 - 1.2$

$0.9x \le 1.8$

$\frac{0.9x}{0.9} \le \frac{1.8}{0.9}$

$x \le 2$

$x \le 2$



27. $\frac{10^3 \cdot 10^2}{10^5} - 10^{-1}$

$= \frac{10^5}{10^5} - \frac{1}{10}$

$= 1 - \frac{1}{10} = \frac{10}{10} - \frac{1}{10} = \frac{9}{10}$ or **0.9**

28. $\sqrt{1^3 + 2^3} + (1 + 2)^3$

$= \sqrt{1 + 8} + (3)^3 = \sqrt{9} + 27$

$= 3 + 27 = \mathbf{30}$

29. $5 - 2\frac{2}{3}\left(1\frac{3}{4}\right) = 5 - \frac{8}{3}\left(\frac{7}{4}\right)$

$= 5 - \frac{14}{3} = 4\frac{3}{3} - 4\frac{2}{3} = \frac{1}{3}$

30. (a) $\frac{(-10) + (-8) - (-6)}{(-2)(+3)}$

$\frac{-18 - (-6)}{-6}$

$\frac{-12}{-6}$

2

(b) $-8 + 3(-2) - 6$

$-8 + (-6) - 6$

−20

Lesson 96, Lesson Practice

a. $4 \times 6° = \mathbf{24°}$

b. $20 \times 6° = \mathbf{120°}$

c. $7 \times 6° = \mathbf{42°}$

d. **See student work; 55°**

e. **See student work; 15°**

f. **See student work; 45°**

g. **See student work; 145°**

h. $x(x - y)$

$\mathbf{x^2 - xy}$

i. $-3(2x - 1)$

$\mathbf{-6x + 3}$

j. $-x(x - 2)$

$\mathbf{-x^2 + 2x}$

k. $-2(4 - 3x)$

$\mathbf{-8 + 6x}$

l. $x^2 + 2x - 3(x + 2)$

$x^2 + 2x - 3x - 6$

$\mathbf{x^2 - x - 6}$

m. $x^2 - 2x - 3(x - 2)$

$x^2 - 2x - 3x + 6$

$\mathbf{x^2 - 5x + 6}$

Lesson 96, Mixed Practice

1. $3(\$280) + 5(\$240)$

$= \$840 + \$1200 = \$2040$

$\underline{\mathbf{\$255}}$ **per ton**

$8\overline{)\$2040}$

2. $\frac{9^2}{\sqrt{9}} = \frac{81}{3} = \mathbf{27}$

3. $\frac{2000 \text{ miles}}{25 \text{ miles per gallon}} = 80 \text{ gallons}$

$\frac{80 \text{ gallons}}{16 \text{ gallons per tank}} = \mathbf{5 \text{ tanks}}$

4. $\frac{\text{vertices}}{\text{edges}} = \mathbf{\frac{2}{3}}$