

Assignment #10

HW # 10	1.1	p 69	# 33, 40, 42, 48
	1.3	p 96	# 3, 54, 58, 62
	1.5	p 121	# 2, 10, 40

Section 1.1

33. $y = 648,000 - 1800x$
 $387,000 = 648,000 - 1800x$
 $1800x = 648,000 - 387,000 = 261,000$
 $x = \frac{261,000}{1800} = 145$ months

40. $4P = 81x - 29970$
 $P = 0$ if $81x - 29970 = 0$
 $81x = 29970$
 $x = 370$ systems

42. Let the pre-tax price of the car be P . Then
 $P + 0.06P = 21,041$
 $1.06P = 21,041$
 $P = \frac{21,041}{1.06}$
 $P = 19,850$

Therefore, the tax on the car is 0.06.

$$0.06(19,850) = 1191$$

We could also find the tax by subtracting the pre-tax price from the total price:

$$21,041 - 19,850 = 1191$$

\$1191.00

48. Let x = the lowest score on the final.
 If the 52 earned during the semester is not replaced,

$$\frac{x + 83 + 67 + 52 + 90}{5} = 80$$

$$x + 292 = 400$$

$$x = 108.$$

This indicates that a grade of 80 is not possible under these circumstances. If the grade of 52 is replaced with the final score x , then

$$\frac{x + 83 + 67 + x + 90}{5} = 80$$

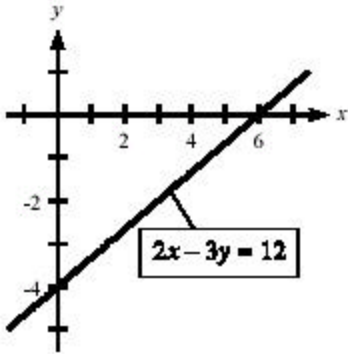
$$2x + 240 = 400$$

$$2x = 160$$

$$x = 80$$

Section 1.3

3. $2x - 3y = 12$

x-intercept: $y = 0$ then $x = 6$.y-intercept: $x = 0$ then $y = -4$ 

54. $P(x) = 26.5x - 194.5$

a. $m = 26.5$

b. After 1998, the percentage of actively recruited workers increases 26.5% each year.

c. Function is not positive until 1998.

58. a. $p = 0.025(80,000)y = 2000y$

b. $p = 0.025 \cdot c \cdot 30 = 0.75c$

62. $P = (\text{age, hours of sleep}) P_1 = (18, 8)$

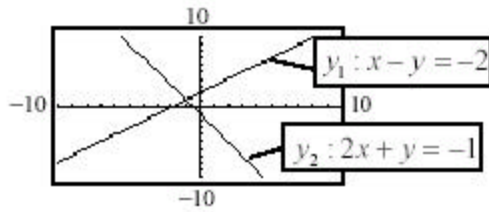
Choose $P_2 = (14, 9)$

$$m = \frac{9 - 8}{14 - 18} = -\frac{1}{4}$$

$$y - 8 = -\frac{1}{4}(x - 18) \text{ or } y - 8 = -\frac{1}{4}x + \frac{9}{2}$$

$$\text{or } y = -\frac{1}{4}x + \frac{25}{2}$$

Section 1.5

2. Solution: $(-1, 1)$.

$$\begin{array}{rcl}
 10. & 5x - 2y = 4 & \rightarrow & 10x - 4y = 8 \\
 & 2x - 3y = 5 & & -10x + 15y = -25 \\
 & & & \hline
 & & & 11y = -17 \\
 & & & y = -\frac{17}{11}
 \end{array}$$

$$2x - 3 - \frac{17}{11} = 5 \rightarrow 2x + \frac{51}{11} = 5 \rightarrow 2x = \frac{4}{11} \rightarrow x = \frac{2}{11}$$

The solution of the system is $x = \frac{2}{11}$ and $y = -\frac{17}{11}$, or $\frac{2}{11}, -\frac{17}{11}$.

40. x = number of glasses of milk y = number of quarter-pound servings of meat

$$\begin{array}{rcl}
 0.1x + 3.4y = 7.15 & \rightarrow & x + 34y = 71.5 & \text{Substitution: } x = 71.5 - 34y \\
 8.5x + 22y = 73.75 & \rightarrow & 8.5x + 22y = 73.75 & 8.5(71.5 - 34y) + 22y = 73.75 \\
 & & & 607.75 - 289y + 22y = 73.75 \\
 & & & 607.75 - 267y = 73.75 \\
 & & & -267y = -534 \\
 & & & y = 2
 \end{array}$$

$$x = 71.5 - 34(2) = 71.5 - 68 = 3.5$$

The proper nutrition would be provided with 3.5 glasses of milk and 2 servings of meat.