

## Section 1.5

Note Title

2/4/2008

# 39) Set  $y = 690,000$  and solve for  $x$ .

$$\begin{aligned}690,000 &= 828,000 - 2300x \\ -138,000 &= -2300x \\ x &= 60\end{aligned}$$

After 60 months, the building's value will be \$690,000 (5 years).

# 62) Let  $R = 1999$  revenue.

$$4.79R = 36$$

$$x \approx 7.52 \text{ billion dollars.}$$

# 66) Let  $P = \text{total population}$

$$\frac{p}{50} = \frac{50}{20}$$

$$20p = 2500$$

$$p = 125 \text{ sharks.}$$

$$\#35) \quad a) \quad \left. \begin{array}{l} 60 = 5q + 20 \\ 40 = 5q \\ q = 8 \text{ units} \end{array} \right\} \text{Supply}$$

$$\left. \begin{array}{l} 60 = 128 - 4q \\ -68 = -4q \\ q = 17 \text{ units} \end{array} \right\} \text{Demand}$$

$$\begin{aligned} b) \quad 5q + 20 &= 128 - 4q \\ 9q + 20 &= 128 \\ 9q &= 108 \\ q &= 12 \text{ units} \end{aligned}$$

$$\begin{aligned} p &= 5(12) + 20 \\ &= 60 + 20 \\ &= \$80 \end{aligned}$$

When  $p = \$80$ , 12 units are produced & sold (equilibrium pt).

# 43) a)  $x + y = 2400$

b)  $30x$

c)  $45y$

d)  $30x + 45y = 84,000$

e)  $x + y = 2400$   
 $30x + 45y = 84,000$

(multiply 1st equation by  $-30$ )

$$\begin{array}{r} -30x - 30y = -72,000 \\ 30x + 45y = 84,000 \\ \hline \end{array}$$

$$\begin{array}{r} 15y = 12,000 \\ y = 800 \end{array}$$

$$x + 800 = 2400$$

$$x = 1600$$

1600 tickets @ \$30 each;

800 tickets @ \$45 each

$$\#57) \text{ Demand: } \begin{array}{l} (400, 60) \\ (900, 10) \end{array}$$

$$m = \frac{60-10}{400-900} = \frac{50}{-500} = -\frac{1}{10}$$

$$p - 60 = -\frac{1}{10}(q - 400) \quad (\text{pt-slope form})$$

$$p - 60 = -\frac{1}{10}q + 40$$

$$\textcircled{1} \quad p = -\frac{1}{10}q + 100 \quad (\text{Demand function})$$

$$\text{Supply: } \begin{array}{l} (1400, 50) \\ (700, 30) \end{array}$$

$$m = \frac{50-30}{1400-700} = \frac{20}{700} = \frac{2}{70}$$

$$p - 50 = \frac{2}{70}(q - 1400) \quad (\text{pt-slope form})$$

$$p - 50 = \frac{2}{70}q - 40$$

$$\textcircled{2} \quad p = \frac{2}{70}q + 10$$

$$9.3451x + 649.3385 < 1000$$

$$9.3451x < 350.6615$$

$$x < 37.52$$

$$(1950 + 37 = 1987)$$

Prior to 1987, production  
is less than 1000 cigarettes  
per year.

$$40) \quad \underset{\text{months}}{48} < .554x - 2.886 < \underset{\text{months}}{72}$$

$$48 < .554x - 2.886 \quad \text{and}$$

$$.554x - 2.886 < 72$$

$$\begin{array}{r} 50.886 < .554x \\ \hline .554 \quad .554 \end{array}$$

$$91.85 < x$$

AND

$$\begin{array}{r} .554x < 74.886 \\ \hline .554 \quad .554 \end{array}$$

$$x < 135.17$$

Approximately  $92 < x < 135$   
(Prison sentence should be between  
92 and 135 months).