

8.4

#2

x	1	3	5	7	9
y	9	8	6	3	2

$$(1^2 + 3^2 + 5^2 + 7^2 + 9^2)m + (1 + 3 + 5 + 7 + 9)b = 9 + 24 + 30 + 21 + 18$$

$$(1 + 9 + 25 + 49 + 81)m + (25)b = 102$$

$$165m + 25b = 102 \quad (1)$$

35 + 13

$$(1 + 3 + 5 + 7 + 9)m + 5b = 9 + 8 + 6 + 3 + 2$$

$$25m + 5b = 28 \quad (2)$$

$$165m + 25b = 102$$

$$25m + 5b = 28$$

$$5b = 28 - 25m$$

$$165m + 5(28 - 25m) = 102$$

$$165m + 140 - 125m = 102$$

$$40m = -38$$

$$20m = -19$$

$$m = -\frac{19}{20}$$

$$5b = 28 - 25\left(-\frac{19}{20}\right)$$

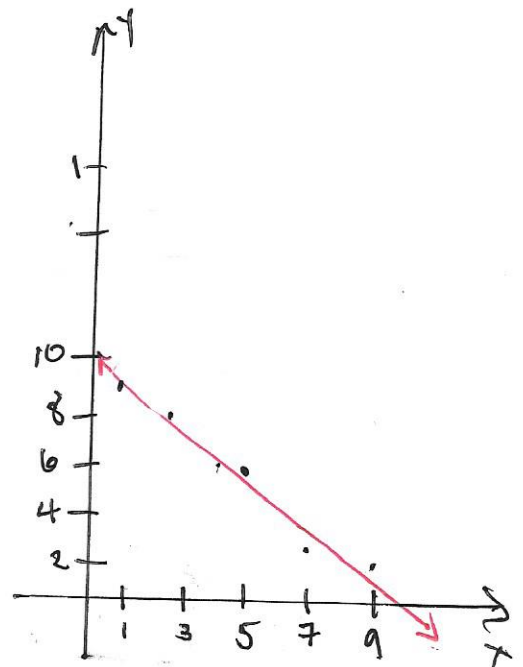
$$= 28 + \frac{95}{4}$$

$$= \frac{112 + 95}{4}$$

$$= \frac{207}{4}$$

$$= \frac{207}{20}$$

$$y = -\frac{19}{20}x + \frac{207}{20}$$



#8

x	1	2	3	4	5
y	426	437	460	473	477

$$(1^2 + 2^2 + 3^2 + 4^2 + 5^2)m + (1 + 2 + 3 + 4 + 5)b = 426 + 874 + 1380 + 1892 + 2385$$

$$(1 + 4 + 9 + 16 + 25)m + 15b = 1300 + 3272 + 2385$$

$$55m + 15b = 6957 \quad (1)$$

$$5m + 5b = 426 + 437 + 460 + 473 + 477$$

$$15m + 5b = 863 + 933 + 477$$

$$15m + 5b = 2273 \quad (2)$$

$$5b = 2273 - 15m$$

$$55m + 3(2273 - 15m) = 6957$$

$$55m + 6819 - 45m = 6957$$

$$10m = 138$$

$$m = \frac{69}{5}$$

$$5b = 2273 - 15\left(\frac{69}{5}\right)$$

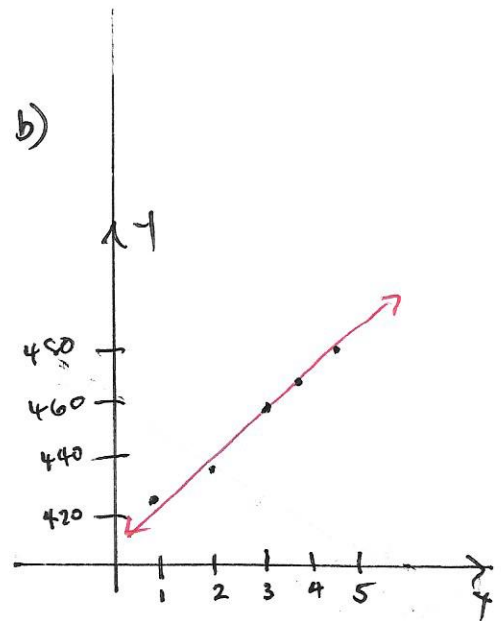
$$= 2273 - 3(69)$$

$$= 2273 - 207$$

$$= 2066$$

$$b = \frac{2066}{5}$$

$$\therefore y = \frac{69}{5}x + \frac{2066}{5}$$



c) $x = 6$

$$y = \frac{69}{5}(6) + \frac{2066}{5}$$

$$= \frac{414 + 2066}{5}$$

$$= \frac{2480}{5} = 496$$

\$ 496 million net sales (predicted)

#10.

x	2011	2012	2013
y	2.1	2.4	2.7

$$a) (1^2 + 2^2 + 3^2)m + (1+2+3)b = 2.1 + 2.4 + 2.7$$

$$(1+2+3)m + 3b = 2.1 + 2.4 + 2.7$$

$$14m + 6b = 7.2$$

$$6m + 3b = 3.6$$

$$2m + b = 1.2$$

$$b = 1.2 - 2m$$

$$14m + 6(1.2 - 2m) = 7.2$$

$$14m + 7.2 - 12m = 7.2$$

$$2m = 0$$

$$m = 0$$

$$b = 1.2 - 2(0)$$

$$= 1.2$$

$$= 1.2$$

$$\therefore y = 0x + 1.2$$

$$b) y = \frac{3}{10}(5) + \frac{9}{5}$$

$$= \frac{3}{2} + \frac{9}{5}$$

$$= \frac{15+18}{10}$$

$$= \frac{33}{10}$$

$\frac{33}{10}$ billion dollars.

$$\begin{array}{r} 1 \\ 2.1 \\ 2.4 \\ 2.7 \\ \hline 7.2 \end{array}$$

#14.

y	2007	2008	2009	2010	2011
y	26.2	26.8	27.5	28.3	28.7

$$(1) (0 + 1^2 + 2^2 + 3^2 + 4^2)m + (0 + 1 + 2 + 3 + 4)b = 0 + 26.8 + 55 + 84.9 + 114.8$$

$$(2) 10m + 5b = 26.2 + 26.8 + 27.5 + 28.3 + 28.7$$

$$(1) 30m + 10b = 281.5$$

$$(2) 10m + 5b = 137.5$$

$$5b = 137.5 - 10m$$

$$30m + 2(137.5 - 10m) = 281.5$$

$$30m + 275.0 - 20m = 281.5$$

$$10m = 281.5 - 275$$

$$m = .65$$

$$30(.65) + 10b = 281.5$$

$$10b = 281.5 - 19.50$$

$$= 262$$

$$b = 26.2$$

which it should be because we started when $x=0$ $y=26.2$

$$y = .65x + 26.2$$

$$\text{if } y=7$$

$$y = .65(7) + 26.2$$

$$= 4.55 + 26.2$$

$$= 30.75\%$$