**Lesson #9.4: Scatter Plots and Lines of Best Fit**   Date: _____

You purchased some stock for Best Fit Shoes, and you tracked the price of the stock on certain days after the purchase. Let X be the days after buying, and Y be the price of the stock. Plot the points, calculate the line of best fit, then draw the line.

1. Plot the points.
2. Calculate the averages for the x and y coordinates.
3. Fill in the table (next page)
4. Calculate slope.
5. Determine $y = mx + b$.
6. Graph the line.
7. Answer any questions!

X	Y
1	10
5	20

X	Y
33	30
51	40

X	Y
73	60
78	50
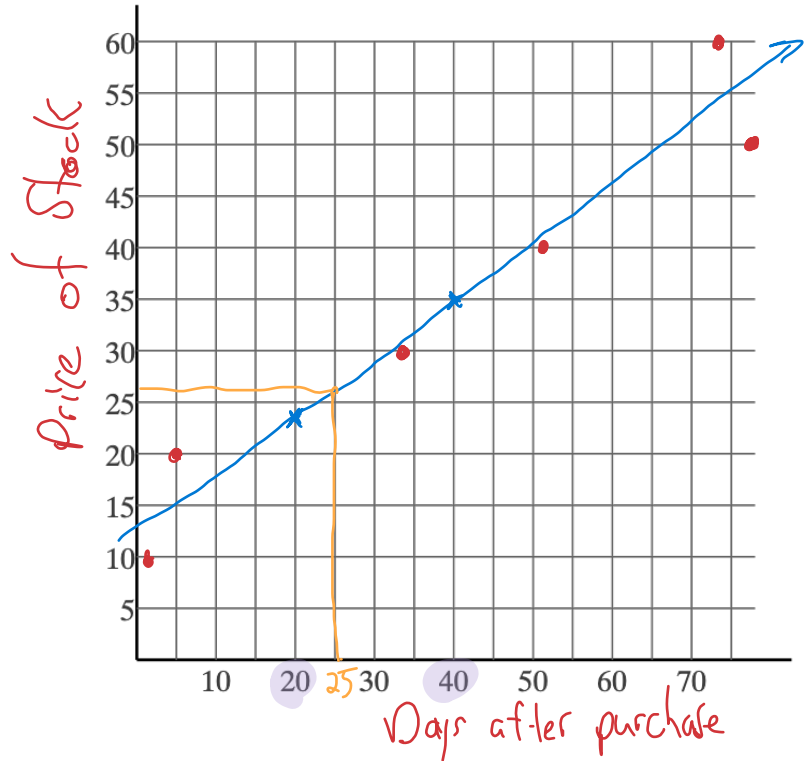
② $X_a = \dfrac{241}{6} = 40.2$

$Y_a = \dfrac{210}{6} = 35$

Questions (once you have the equation)

a) What was the price of the stock after 25 days and then after 90 days?

25 days is $26 or $27 $\overline{X = 90}$

b) After how many days will the price of the stock be $100? (assuming no market crash).

x	y	$x - x_a$ 40.2	$(x - x_a)^2$	$y - y_a$ 35	$(x - x_a)(y - y_a)$
1	10	$1-40.2 = -39.2$	1536.64	$10-35 = -25$	980
5	20	$5-40.2 = -35.2$	1239.04	$20-35 = -15$	528
33	30	$33-40.2 = -7.2$	51.84	$30-35 = -5$	36
51	40	$51-40.2 = 10.8$	116.64	$40-35 = 5$	54
73	60	$73-40.2 = 32.8$	1075.84	$60-35 = 25$	820
78	50	$78-40.2 = 37.8$	1428.84	$50-35 = 15$	567
			5448.84		2985

$$\text{Slope: } \frac{\text{Rise}}{\text{Run}} = \frac{2985}{5448.84} = 0.55$$

$$b = -mX_a + Y_a$$
$$b = -(0.55)(40.2) + 35$$
$$b = -22.11 + 35$$
$$b = 12.89$$

$$\therefore y = 0.55x + 12.89$$

To plot:

$$X = 20$$
$$y = 0.55(20) + 12.89$$
$$y = 23.89 \text{ or}$$
$$y = 24$$

$$\therefore (20, 24)$$

$$X = 40$$
$$y = 0.55(40) + 12.89$$
$$y = 34.89$$
$$y = 35$$

$$\therefore (40, 35)$$