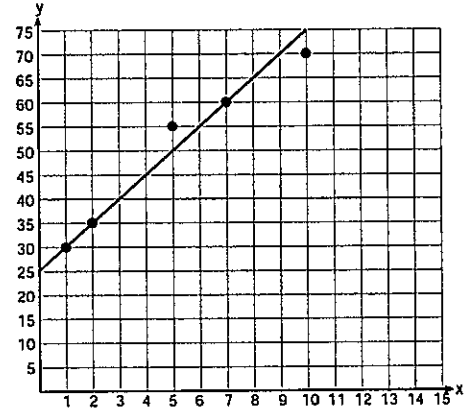**Do Now:** A scatter plot was constructed on the graph below and a line of best fit was drawn. What is the equation of this line of best fit?

1) $y = x + 5$
2) $y = x + 25$
3) $y = 5x + 5$
4) $y = 5x + 25$ (circled)

$m = \dfrac{5}{1}$

$b = 25$

AIM: Calculating the Line of Best Fit

**Line of Best Fit:** line that runs through the majority of the data points

1. The scatter plot below shows the profit, by month, for a new company for the first year of operation. Kate drew a line of best fit, as shown in the diagram. Using this line, what is the best estimate for profit in the 18th month?

1) $35,000

2) $37,750

3) $42,500 (circled)

4) $45,000
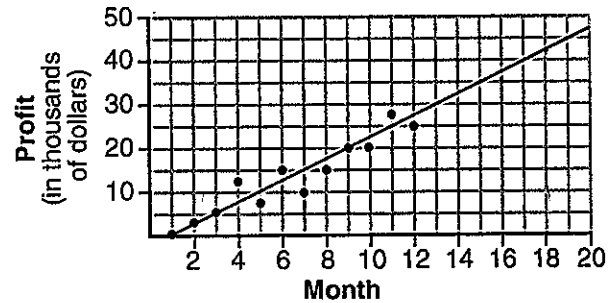
2. Based on the line of best fit drawn below, which value could be expected for the data in June 2015?

1) 230
2) 310
3) 480 (circled)
4) 540
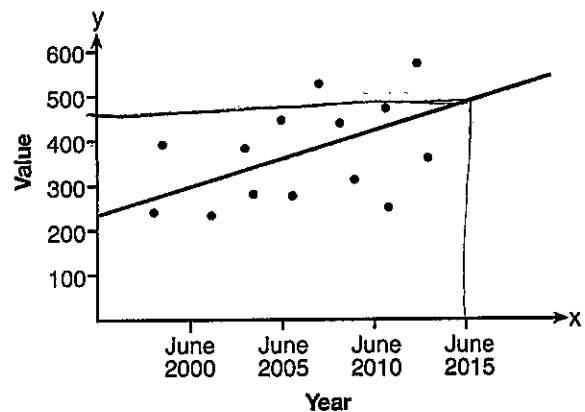
Correlation Coefficient: the "r" value that measures how close to data values are to the line of best fit $(-1 \leq r \leq 1$. The closer to **1**, the stronger the correlation

✱ The closer to -1, the stronger the correlation

3. The following data is from a survey of eight female high school juniors comparing right foot size and height to answer the following questions. $y = ax + b$

X Right foot (cm)	y Height (cm)
22.1	157.1
22.9	160.8
23.1	161.4
23.4	161
24.1	162.8
24.6	164
25.4	164.7
26.1	164

a) What is the linear regression equation for these data, to the nearest hundredth?

$$y = 1.65y + 122.4$$

b) Find the correlation coefficient to the nearest thousandth. Explain its meaning.

$$r = .901717 \dots \quad r = .902$$

c) Describe what kind of correlation this scatter plot would have.

⊕ and strong $(r = .902) \rightarrow$ very close to 1

4. During the months of February and March, the weekly number of jars of strawberry jam sold at a local market in New York was recorded. For the same time frame, the number of copies of a popular classical music CD sold in Florida was recorded.

X L_1 y L_2

Weekly Data Collection	
The jars of jam	The number of CDs
5 jars	25 CDs
7	30
9	35
10	42
11	48
11	52
12	56

a) Find the equation of the line of best fit. Round values to the nearest hundredth. $y = ax + b$

$$y = 4.48x - .47$$

b) Find the value of the correlation coefficient to the nearest thousandth. Explain its meaning.

$$r = .964$$

✳ strong correlation

c) Describe what kind of correlation this scatter plot would have.

Strong positive correlation because the correlation coefficient (r) is close to 1.