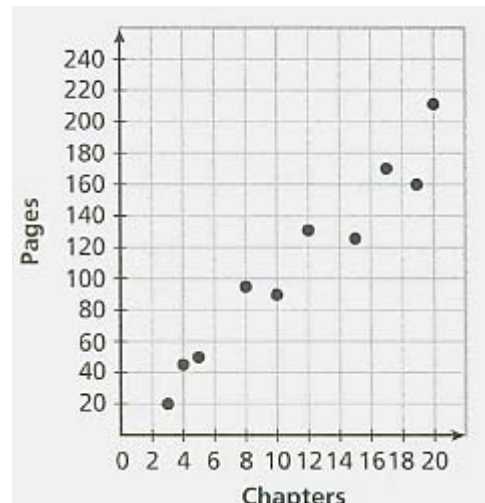




### Lines of Best Fit Writing & Interpreting Equations #3 (page 1)

1. The scatter plot shows the relationship between the number of chapters and the total number of pages for several books. Draw a trend line, write an equation in slope-intercept form for the line, and describe the meaning of slope and y-intercept.



- Draw a line of best fit. It will be easier to write an equation if you use (5, 50) as one of the points on the line.
- Identify another point on the line \_\_\_\_\_
- What type of association does the scatter plot show?  
\_\_\_\_\_
- Do you expect the slope of the line to be positive or negative? \_\_\_\_\_
- Find the slope of the line using the two points you identified.

$$m \text{ (slope)} = \frac{\text{change in } y}{\text{change in } x} = \frac{\square - \square}{\square - \square} = \text{_____}$$

- Using the equation  $y = mx + b$ , plug in one of the ordered pair values for a point on the line; solve for b.

$$\begin{aligned} \text{_____} &= \text{_____} \cdot \text{_____} + b && \text{Plug in } y, m \text{ and } x. \\ \text{_____} &= \text{_____} + b && \text{Solve for } b. \\ \text{_____} &= b \end{aligned}$$

- Slope-intercept form for the line of best fit: \_\_\_\_\_

- What is the meaning of the y-intercept as it relates to the scatter plot and function?

When you use a trend line or its equation to *predict a value between data points* that you already know, you **interpolate** the predicted value. When you *make a prediction that is outside the data* that that you know, you **extrapolate** the predicted value.

- Refer to the scatter plot for the above problem and your trend line. Use the equation of the trend line to predict how many pages would be in a book with 26 chapters.

I predict that a book with 26 chapters would have \_\_\_\_\_ pages.

Is this prediction extrapolation or interpolation? \_\_\_\_\_

- Use the equation of the trend line to predict how many pages would be in a book with 14 chapters.

I predict that a book with 14 chapters would have \_\_\_\_\_ pages.

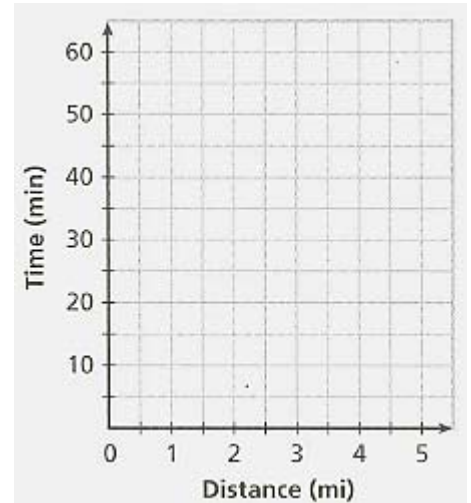
Is this prediction extrapolation or interpolation? \_\_\_\_\_

## Lines of Best Fit Writing & Interpreting Equations #3 (page 2)

2. **Joyce is training for a 10K race. For some of her training runs, she records the distance she ran and how many minutes she ran.**

- a. Make a scatter plot of Joyce's running data.
- b. Draw a line of best fit (one that has about the same number of points above and below it). Ignore any outliers.
- c. Use your trend line to predict how long it would take Joyce to run 4.5 miles. (Locate 4.5 miles on the axis with miles, go vertically up to the line and then trace horizontally back to the y-axis so you can read the time) This will be an ordered pair.

Distance (mi)	Time (min)
4	38
2	25
1	7
2	16
3	26
5	55
2	20
4	45
3	31



- d. What type of association does the data exhibit? Is it possible to make an accurate prediction? Why?

3. **Angela recorded the price of different number of ounces of bulk grains. She made a scatter plot of her data and drew a trend line.**

- a. What type of association does the data exhibit?
- b. Find an equation in slope-intercept form for the trend line.
- c. Use the equation for your trend line to find the price of 7 ounces.
- d. Was this interpolation or extrapolation?
- e. Use the equation for your trend line to find the price of 50 ounces.
- f. Was this interpolation or extrapolation?

