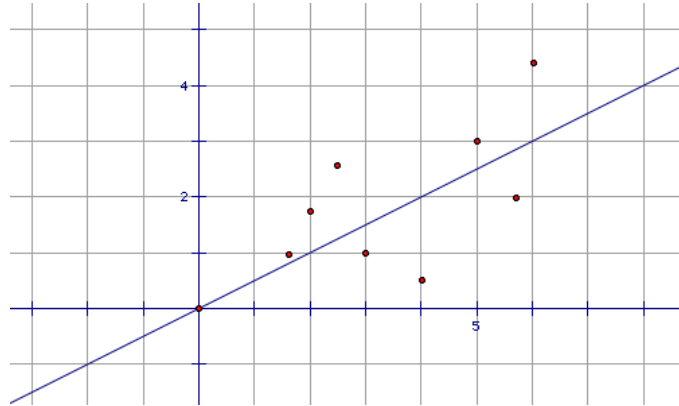


## CHAPTER 7: LINEAR REGRESSION

Residual: How far our \_\_\_\_\_ value is from the \_\_\_\_\_ value



### Things to know about R<sup>2</sup>

- Measures the variance of one variable that is predicted from the other variable
- Provides the percent of data that is closest to the line (least squares line/Line of Best Fit)
- Provides the overall measure of how successful the regression is linearly relating y to x
- It has variables and units (they need to be stated when summarizing it)
- “x” differences explain R<sup>2</sup>% of the variation in “y” → you can use when summarizing

Line of Best Fit: The line that has the smallest sum of the \_\_\_\_\_ of the residuals. AKA the \_\_\_\_\_.

The line that \_\_\_\_\_ the residuals.

The Best-Fit Line is also known as the \_\_\_\_\_ Line.

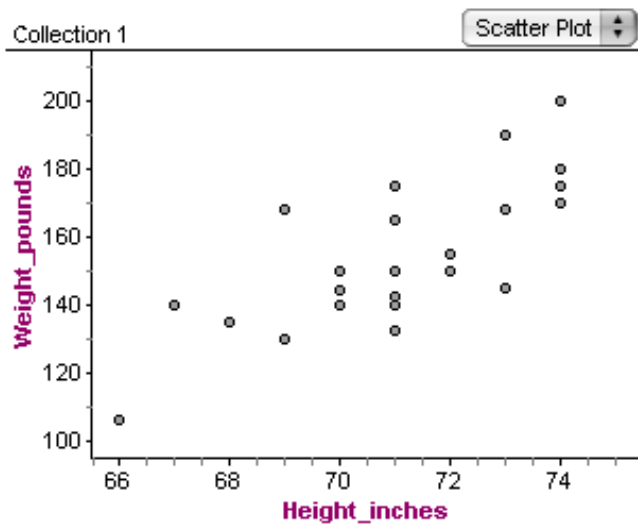
### Equations to Know

$$\hat{y} = b_0 + b_1x$$

$$b_1 = \frac{rs_y}{s_x}$$

$$b_0 = \bar{y} - b_1\bar{x}$$

## Height and Weight of Male Patients



Male Height (inches)

Mean = 70.96

SD = 2.17

Male Weight (pounds)

Mean = 153.6

SD = 21.04

$r = 0.75$

1. Check the conditions
2. Find the equation of the regression line.
3. What does the slope mean?
4. What does the y-intercept mean? Is it helpful?
5. What is  $R^2$ ? What does it say about our regression model?