

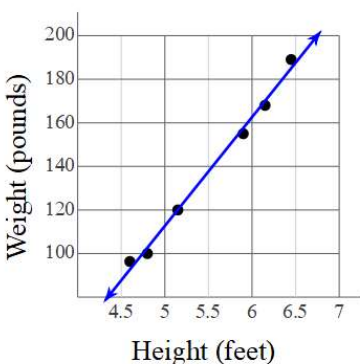
Interpreting Slope and y-intercept

Example 1:

The height and weight of several adults were recorded:

Height (ft)	Weight (lbs)
4.6	96.3
4.8	100
5.15	120
5.9	155
6.15	168
6.45	189

It was discovered that this can be modeled by the equation $y = 49.9x - 137$ where x is height in feet and y is weight in pounds.



What does the slope of the line represent?

What does the y-intercept of the line represent?

We know that the slope of a line is represented by change in y divided by change in x . We know that the y -values represent weight in pounds and the x -values represent height in feet. We can see that the slope is 49.9. So, if we apply that slope is the change in those values, we can say the slope represents the change in weight as height changes. Or, specifically, **weight increases by 49.9 pounds per foot increase in height.**

We know that the y -intercept of the line is the place where the graph crosses the y -axis. We know that the x -value at the y -intercept is always zero. So, the y -intercept represents the weight when height is zero. Or, specifically, **a person who is zero feet tall would weight -137 pounds.**

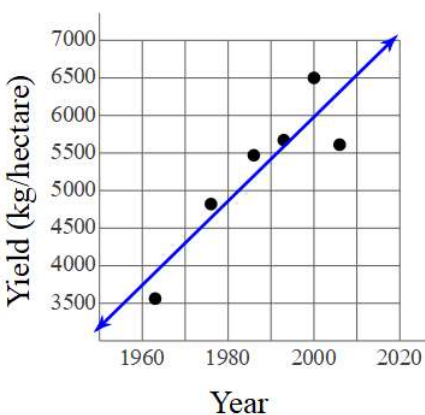
**It is often the case that the y -intercept doesn't make sense logically. We cannot have a person who is zero feet tall or a negative weight. However, all we are doing is stating what it would theoretically represent.

Example 2:

With the help of scientists, farmers in the United Kingdom have been able to produce more and more grain per hectare each year. Here are the crop yields for several years:

Year	Yield (kg/hectare)
1963	3,560
1976	4,820
1986	5,470
1993	5,670
2000	6,500
2006	5,610

The crop yield can be described by the equation $y = 55.9x - 1106000$ where x is the year and y is the grain yield in kilograms per hectare (kg/ha).



What does the slope of the line represent?

What does the y-intercept of the line represent?

We know that the slope of a line is represented by change in y divided by change in x . We know that the y -values represent yield in kg/ha and the x -values represent year. We can see that the slope is 55.9. So, if we apply that slope is the change in those values, we can say the slope represents the change in yield as the year changes. Or, specifically, **yield increases by 55.9 kg/ha every year.**

We know that the y-intercept of the line is the place where the graph crosses the y-axis. We know that the x -value at the y-intercept is always zero. So, the y-intercept represents the yield when the year is zero. Or, specifically, **in year zero the yield would have been -1,106,000 kg/ha.**

**It is often the case that the y-intercept doesn't make sense logically. Just remember that all we are doing is stating what it would theoretically represent.