University of Guelph
Numeracy Project

About Examining Graphs

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About Examining Graphs

What is a GRAPH?

● A graph is a visual representation of the data. It uses lines, dots, bars, pictures or "pie slices" to describe and illustrate data for the variables of interest.

● Graphs allow us to organize data in a way that makes it easier to interpret, by providing a visual representation of the numbers.

Background

● Take a look at the following Production Possibility Frontier (PPF):
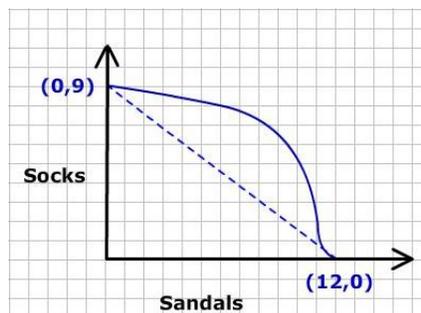
The y-intercept is the value on the y-axis when the x-axis is equal to zero. In the graph above, the y-intercept is (0, 9). This means that when 9 socks are being produced there are not enough resources to produce any sandals.

The x-intercept is the value on the x-axis when the y-axis is equal to zero. In the graph above, the x-intercept is (12, 0). This means that when 12 sandals are being produced there are not enough resources to produce any socks.

Slope

● The slope is the change in the y-axis over the change in the x-axis. For a PPF graph, this tells us the rate at which we can switch from producing one type of good to another.

The Math

- You may remember that an equation for a line is often written in the form y = mx + b. In the figure below, y represents the Real Price Index, while x represents Sales. Additionally, m represents the slope of the line, and b represents the line's y-intercept.
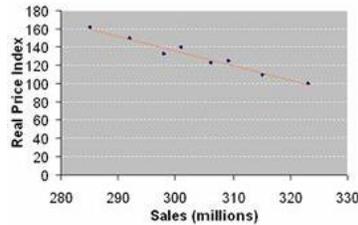
Note: the slope of the line (m) is negative.

- Given the previous information, we have y = (-m)x + b.

Interchanging the x and y axes leads to the following:

y = (-m)x + b
y − b = (-m)x + b − b
(y − b) = (-m)x
(y − b)/(-m) = x
x = (y − b)/(-m)

So, given the interchanging of axes, the slope of the line remains negative; however, -m becomes 1/-m.

- Now, let us consider an interchanging of axes on a line of positive slope.

y = mx + b
y − b = mx + b − b
(y − b) = mx
(y − b)/m = x
x = (y − b)/m

So, given the interchanging of axes, the slope of the line remains positive; however, m becomes 1/m.

Glossary

Production Possibility Frontier (PPF):   is a graph representing the effect of producing one item on the ability to produce another, related item.

Scatter Plot: is a graph representing the distribution of two variables in relation to one another.

Slope: is a measure of the steepness of a line, calculated through the use of two points on that line.

x-axis: the horizontal number line that runs left to right on the Cartesian Plane.

x-Intercept: the value on the x-axis when the y-axis is equal to zero.

y-axis: the vertical number line that runs up and down the Cartesian Plane.

y-Intercept: the value on the y-axis when the x-axis is equal to zero.

References

Bade, Robin, & Parkin, Michael. (2006). *Microeconomics: Canada in the Global*

Environment. (6th ed.) Toronto: Pearson Addison Wesley.