

**University of Guelph
Numeracy Project**

About Examining Graphs: Examples



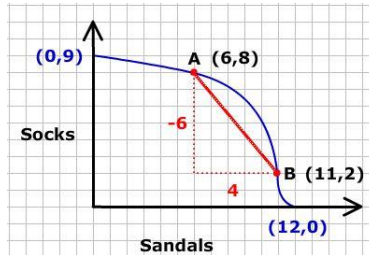
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About Examining Graphs: Examples

Slope

- ▶ Consider the Production Possibility Frontier (PPF), given below:

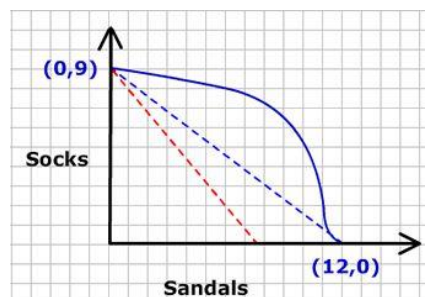


If we were to draw a line from the x-intercept to the y-intercept, the slope would be $-9/12$, which simplifies to $-3/4$. This means that for every 12 sandals produced, there would be 9 fewer socks produced as a result. However, the PPF is not linear, meaning that at different points on the curve, the production ratio will change. Correspondingly, the slope of the line between different points will also vary.

- ▶ Consider point A in the graph above. At this point, there are 6 sandals being produced and 8 socks being produced. Similarly, when we consider point B, there are 11 sandals being produced and 2 socks being produced.

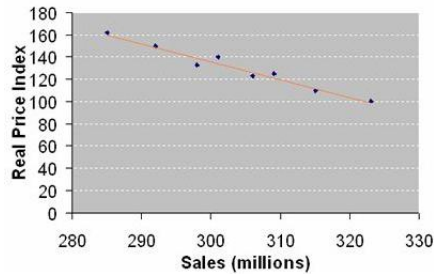
If we draw a straight line between the points A and B, the line has a slope of $-6/5$, meaning that at point B there are 5 more units of sandals being produced and 6 fewer units of socks being produced than at point A.

- ▶ If we compare the two slopes computed ($-3/4$ vs. $-6/5$), we see a variance in rate, illustrated by the following graph:



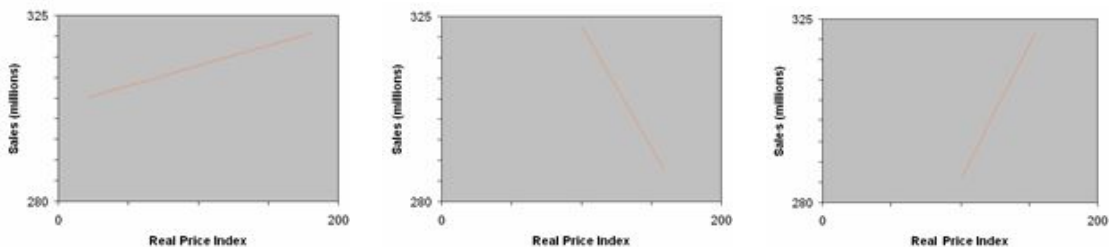
Changing Axis

- ▶ Consider the figure below, a scatter plot that shows the relationship between the Real Price Index and Sales.



How would the graph look if we were to interchange the x and y axes, placing the Real Price Index on the x-axis and the Sales on the y-axis?

- ▶ Given a choice of one of the three graphs below, determine which one you feel is an accurate representation of the scenario described above.



The graph in centre is the correct choice.

If we consider the original graph, before the axes were interchanged, we see that it has a negative slope (i.e. as one value increases, the other decreases). This means that as Sales increase, the Real Price Index decreases. When we interchange the x- and y- axes, the relationship between Sales and the Real Price Index does not change (i.e. as Sales increase, the Real Price Index decreases). In other words, when Sales are high the Real Price Index is low, and when Sales are low the Real Price Index is high.

Examining the other two choices we were given, to the left and right of the correct choice, we see that each has a positive slope (i.e. as Sales increase, the Real Price Index also increases). Conversely, the correct choice has a negative slope, as does the original graph; thus, justifying it as the correct option.