Unit #1: Foundations of Economics
Ch. #5: The Law of Increasing Opportunity Cost and The Law of Diminishing Marginal Returns

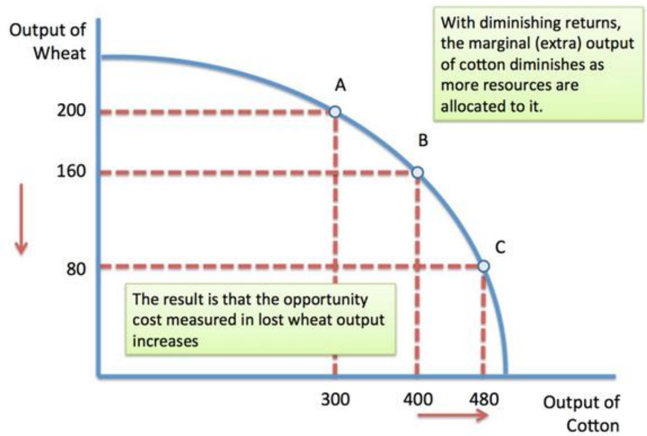
Recall in Ch. #4 that the production possibilities curve or frontier (PPC or PPF) shows production with limited resources and its impacts (given the following assumptions: It is a simple model of a society's ability to produce – the PPC or PPF uses two resources to represent many resources and assume the resources and technology are ae fixed.

In addition, there is another limitation beyond not having enough resources. Production is also limited by the **law of increasing opportunity costs.** This law states that as more resources are devoted to producing more of one good, more is lost from the other good. The same table and graph from Ch. #5 demonstrates this. Please refer to the table and graph below.

A table (shown below) is plotted into a graph to create the PPC or PPF.

	Wheat	Cotton
A	200	300
B	160	400
C	80	480

The points (A,B, and C) are graphed to give the PPC or PPF:



Source: http://beta.tutor2u.net/economics/reference/production-possibility-frontier

The law of increasing opportunity cost and the production possibilities curve or frontier (PPC or PPF) also introduces the concept of **marginal analysis**. Marginal analysis is explained on the next page.

Law of increasing opportunity cost, explained.

As more resources are diverted (shifted) from wheat to cotton, the production of cotton will increases, but by smaller and smaller amounts (it is increasing at a decreasing rate).

At the same time, more and more wheat is lost. In other words, the production of wheat is declining by greater and greater amounts: the opportunity cost is increasing.

The reason for the law of increasing opportunity cost is due to the fact that some resources are not well suited for certain types of production. Some resources are better at producing some goods as opposed to others. In this case, the workers, field, and fertilizer may work better at producing wheat than cotton. This is demonstrated by the fact that again, the production of cotton is rising, but by smaller amounts each time, and the production of wheat is declining by larger amounts each time.

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The Law of Diminishing Marginal Returns
The law of diminishing marginal returns is a law of economics that states an increasing number of new employees causes the marginal product of another employee to be smaller than the marginal product of the previous employee at some point.

For example, a factory employs workers to manufacture its product. As long as all other factors of production stay the same, at one point, each supplementary worker generates less output than the worker before him. Thus, each worker who follows provides smaller and smaller returns. If the factory continues to add new workers, it eventually becomes so cramped that additional workers hinder the efficiency of other employees, thereby decreasing the factory's production

Source: http://www.investopedia.com/terms/l/lawofdiminishingmarginalreturn.asp#ixzz4sZT9NYsh

In other words, because the land and capital is fixed, as you add workers to production, there are less resources for them to use and eventually they will add less and less to total production.

***Marginal Product of Labor = Marginal Product**

Marginal Product of Labor

Labor (number of workers)	Output (beanbags per hour)	Marginal product of labor
0	0	—
1	4	4
2	10	6
3	17	7
4	23	6
5	28	5
6	31	3
7	32	1
8	31	–1

If we assume (*ceteris paribus*), that the capital equipment the workers have to use is fixed and cannot be increased, then as more workers are added they will run out of capital equipment. Less capital equipment per worker means they will be less productive.