Marginal Product

The marginal product of some input is the change in output resulting from a one-unit change in that input. For instance, the marginal product of labor can be represented mathematically as:

$$MP_L = \frac{\Delta Q}{\Delta L}$$

$$\Delta Q = Change\ in\ output.$$
$$\Delta L = Change\ in\ labor.$$

The marginal product of all inputs usually eventually decline because of the law of diminishing marginal returns. As more labor is added (for instance), all workers can specialize in just those tasks they do the best. They very likely will not only increase output, but output per worker as well. Eventually, though, adding more workers has a crowding out effect that causes productivity to plateau and then reverse.

The principles of marginal product and marginal cost are closely linked. For instance, the point at which the marginal product of some input declines (because of diminishing marginal returns) is precisely the point at which the marginal cost of that input begins to increase.

In fact, the shapes of the average cost and marginal cost curves mirror the shapes of the average product and marginal product curves. As long as the firm can hire all inputs it requires at constant prices, changes in short-run costs can be explained entirely by changes in the average and marginal products of it inputs.

Consequently, if an investor has some knowledge about average or marginal products for a firm, he or she can gain some insight on the average or marginal costs (or vice versa).