



# AQA Economics A-level **Microeconomics**

## Topic 4: Production Costs and Revenue




### **4.3 The law of diminishing returns and returns to scale**

#### Notes






### **The difference between the short run and the long run**

-  In the short run, the scale of production is fixed (there is at least one fixed cost). For firms, the quantity of labour might be flexible, whilst the quantity of capital is fixed.
-  In the long run, the scale of production is flexible and can be changed. All costs are variable.


### **The difference between marginal, average and total returns**




-  The marginal return of a factor, such as labour, is the extra output derived per extra unit of the factor employed. For labour, it is the extra output per unit of labour employed. For example, employing more staff in a small shop will make it overcrowded and the extra output per unit of labour falls.
-  The average return of a factor is the output per unit of input. This is output per worker over a period of time.
-  The total return of a factor is the total output produced by a number of units of factors (e.g. labour) over a period of time. The amount of capital is fixed.

### **The law of diminishing returns**

-  Diminishing returns only occur in the short run.
-  The variable factor could be increased in the short run. For example, firms might employ more labour. Over time, the labour will become less productive, so the marginal return of the labour falls. An extra unit of labour adds less to the total output than the unit of labour before.
-  Therefore, total output still rises, but it increases at a slower rate.
-  This is linked to how productive labour is.
-  The law assumes that firms have fixed factor resources in the short run and that the state of technology remains constant. However, the rise of things like out-sourcing means that firms can cut their costs and their production can be flexible.

### **Returns to scale: increasing, decreasing and constant returns to scale**

-  Returns to scale refers to the change in output of a firm after an increase in factor inputs.

-  Returns to scale increases when the output increases by a greater proportion to the increase in inputs. For example, if input doubles, and output quadruples, there is said to be increasing returns to scale.
-  If, on the other hand, a doubling of input leads to a 1.5 times increase in output, there are decreasing returns to scale. This is linked to diseconomies of scale, since it occurs when the firm becomes less productive.
-  Constant returns to scale are when output increases by the same amount that input increases by.