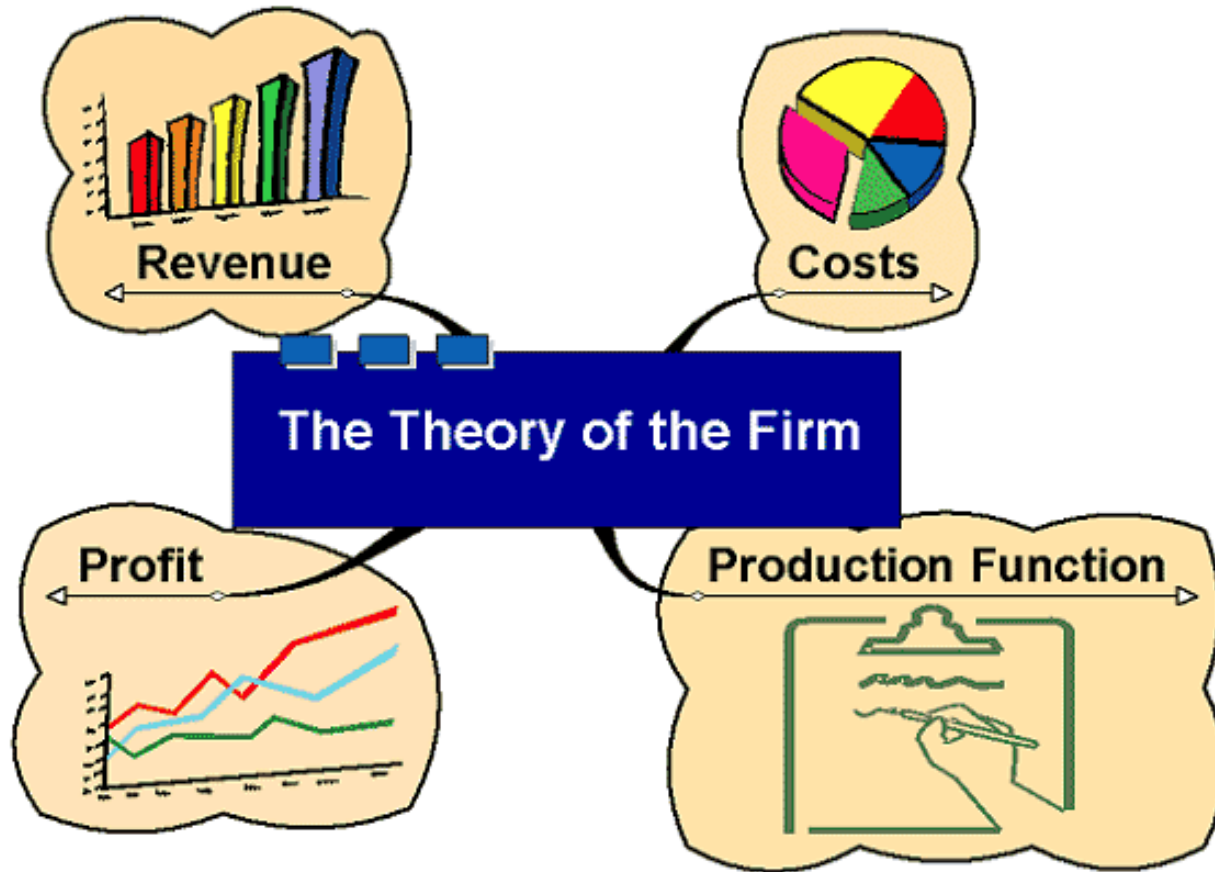


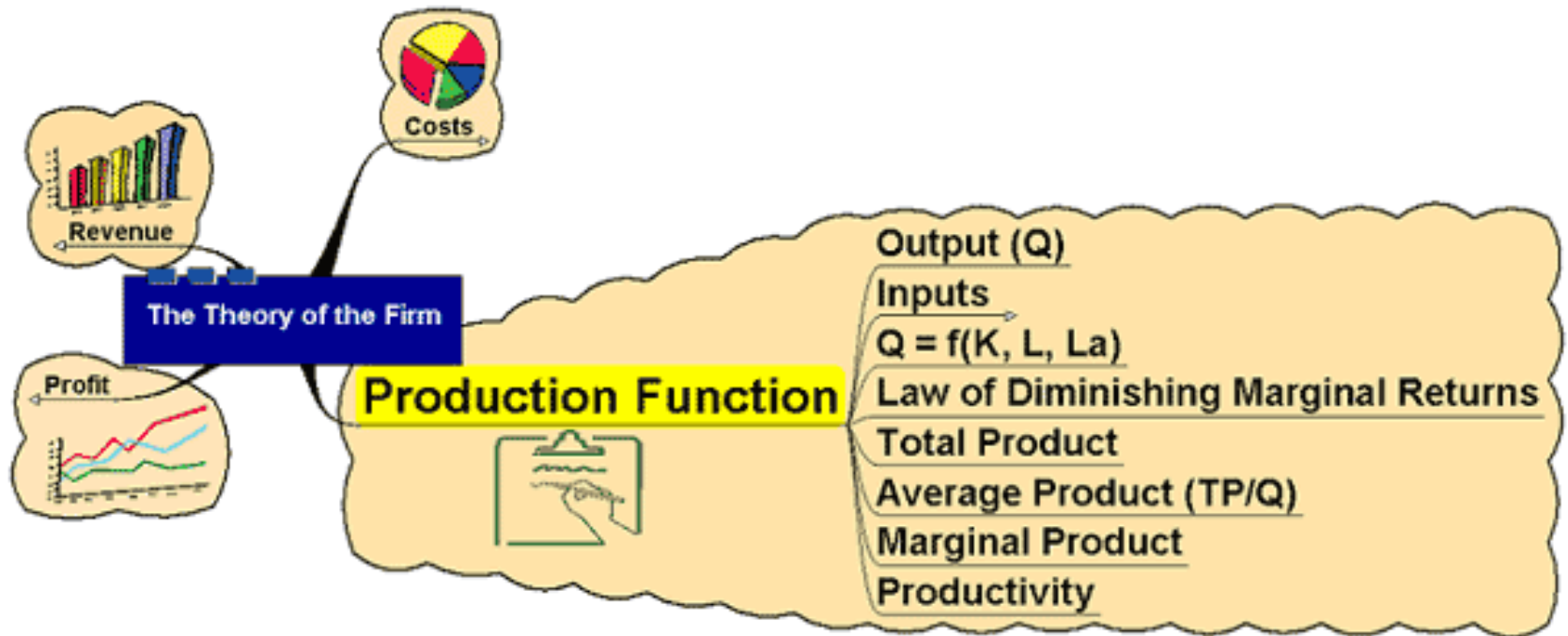
The Theory of the Firm

The title "The Theory of the Firm" is centered on the page. It is surrounded by six light purple circles. Three circles are arranged in a top row, and three are in a bottom row. The top-left circle is an outline, while the top-middle and top-right circles are solid. In the bottom row, the left and middle circles are solid, and the right circle is an outline.

The Theory of the Firm



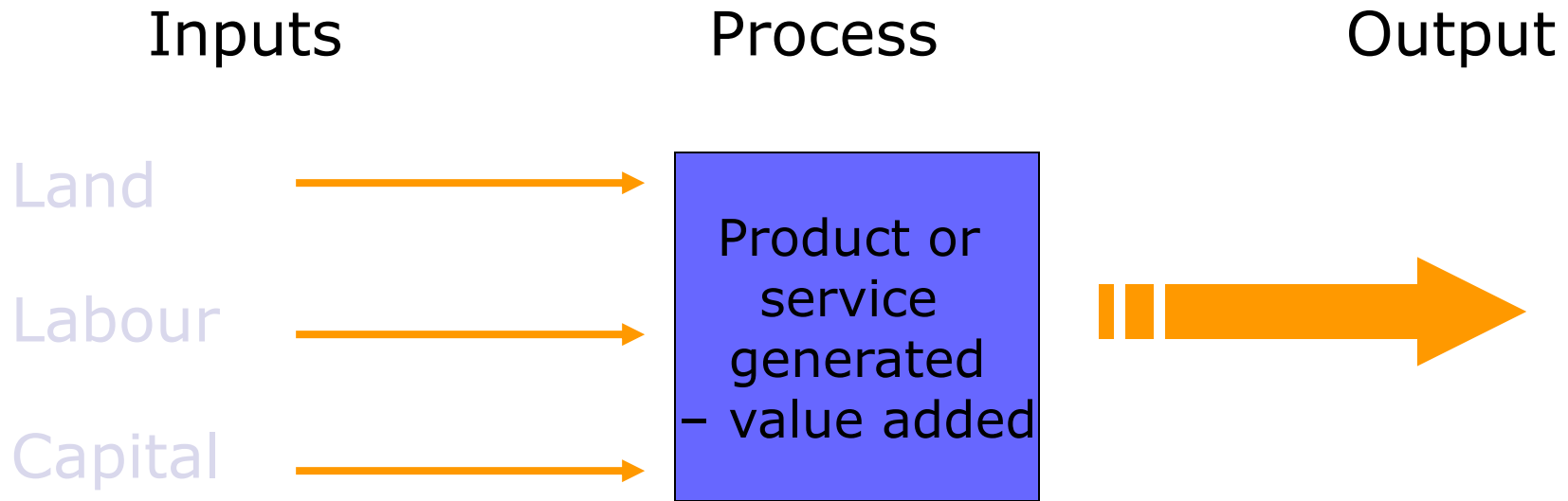
Production Function



Production Function

- States the relationship between inputs and outputs
- **Inputs** – the factors of production classified as:
 - **Land** – all natural resources of the earth – not just ‘terra firma’!
 - Price paid to acquire land = **Rent**
 - **Labour** – all physical and mental human effort involved in production
 - Price paid to labour = **Wages**
 - **Capital** – buildings, machinery and equipment not used for its own sake but for the contribution it makes to production
 - Price paid for capital = **Interest**

Production Function

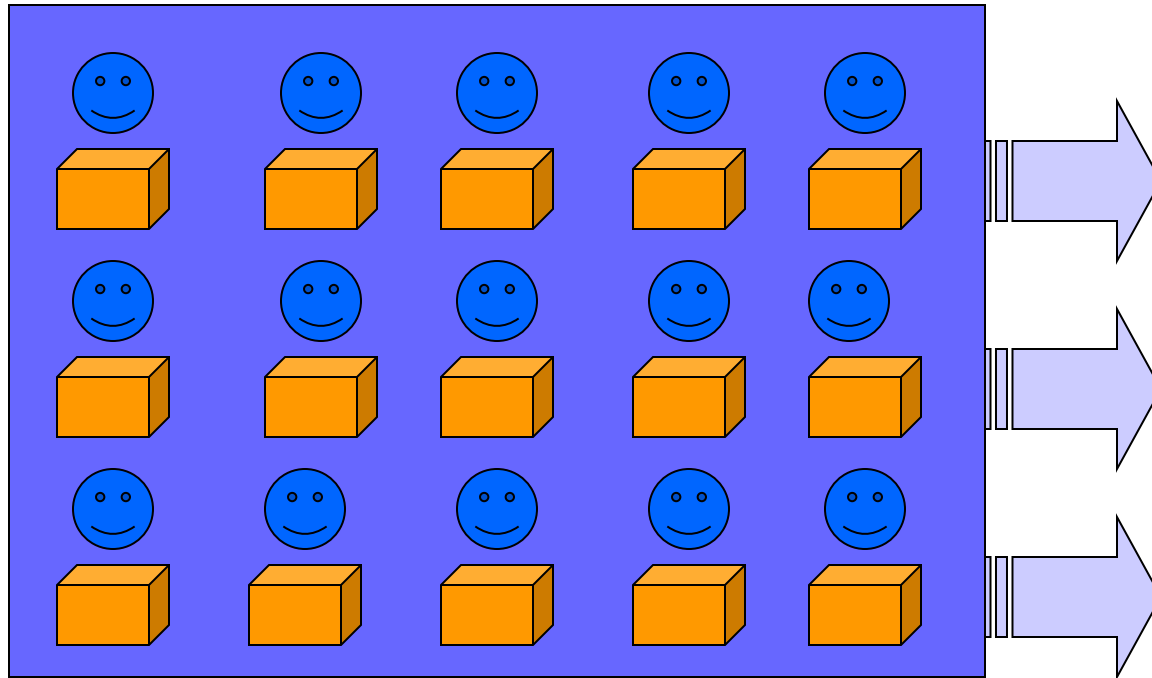




Analysis of Production Function: Short Run

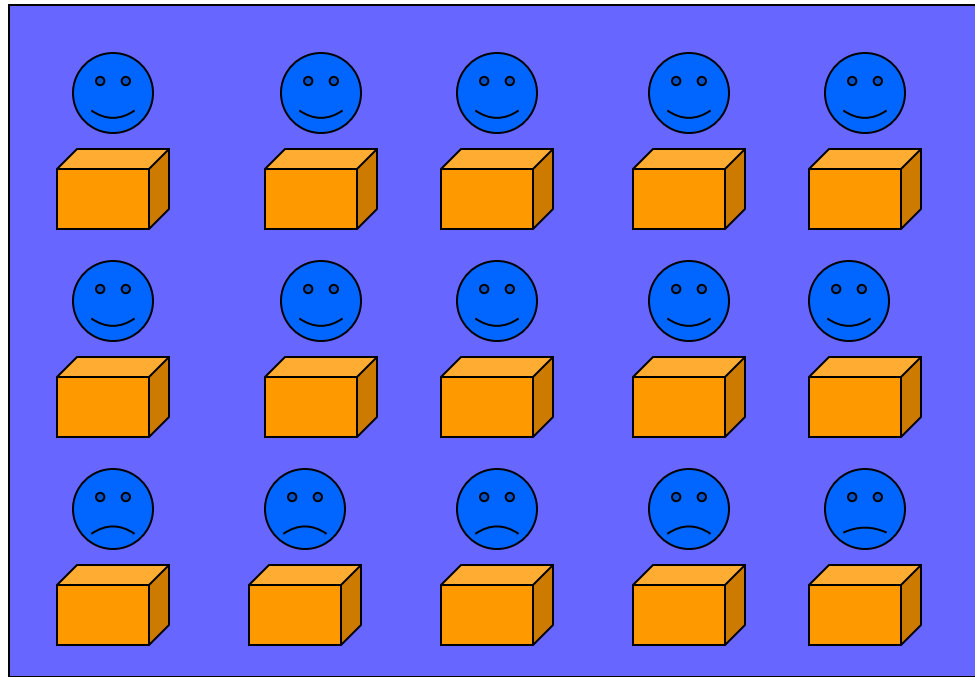
- In the short run at least one factor fixed in supply but all other factors capable of being changed
- Reflects ways in which firms respond to changes in output (demand)
- Can increase or decrease output using more or less of some factors but some likely to be easier to change than others
- Increase in total capacity only possible in the long run

Analysis of Production Function: Short Run



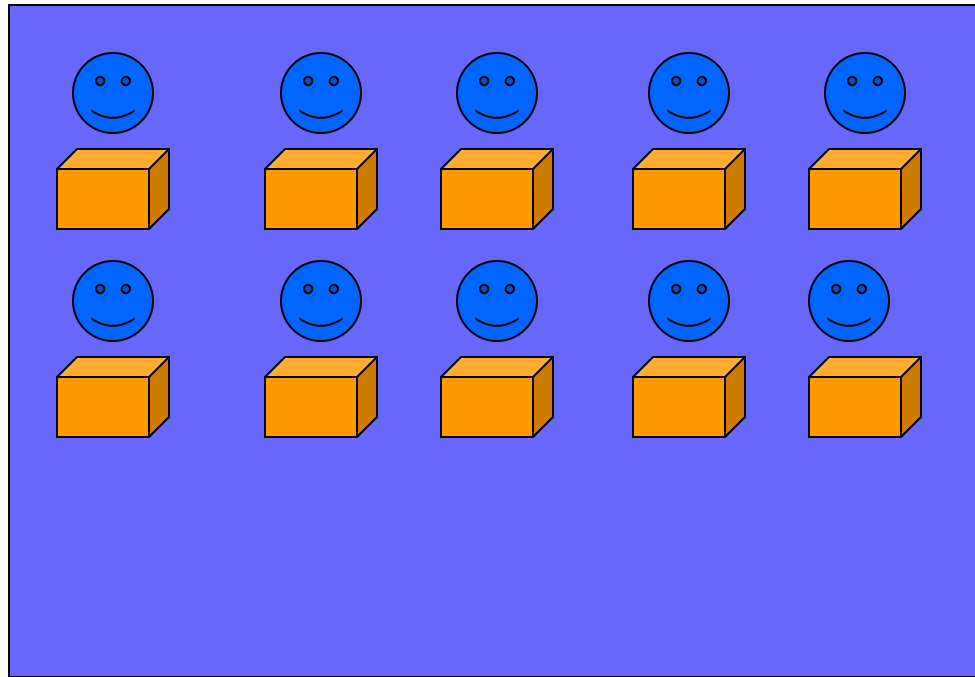
In times of rising sales (demand) firms can increase labour and capital but only up to a certain level – they will be limited by the amount of space. In this example, land is the **fixed factor** which cannot be altered in the short run.

Analysis of Production Function: Short Run



If demand slows down, the firm can reduce its variable factors – in this example it reduces its labour and capital but again, land is the factor which stays fixed.

Analysis of Production Function: Short Run



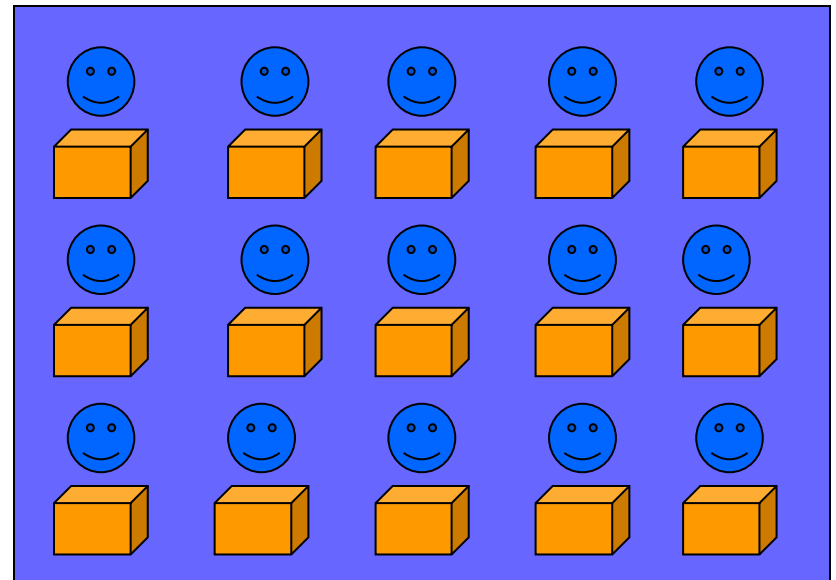
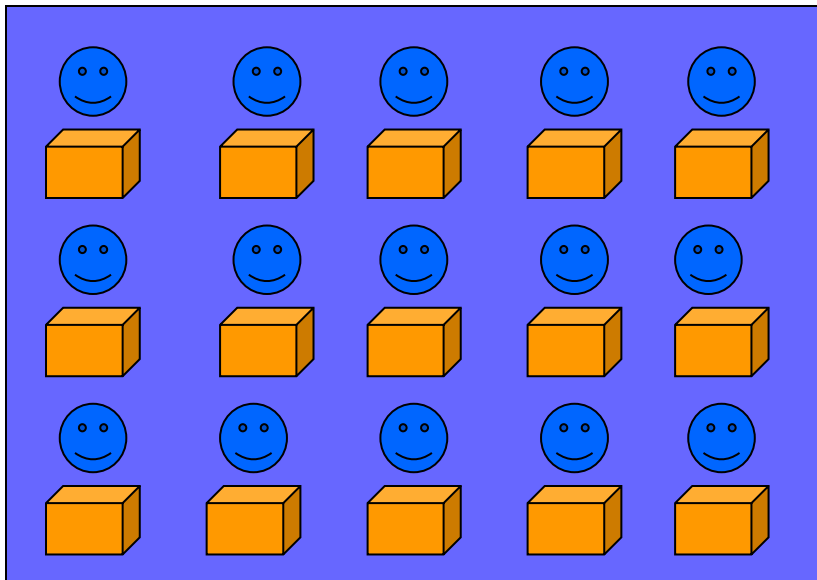
If demand slows down, the firm can reduce its variable factors – in this example, it reduces its labour and capital but again, land is the factor which stays fixed.



Analysing the Production Function: Long Run

- The long run is defined as the period of time taken to vary all factors of production
 - By doing this, the firm is able to increase its **total capacity** – not just short term capacity
 - Associated with a change in the **scale of production**
 - The period of time varies according to the firm and the industry
 - In electricity supply, the time taken to build new capacity could be many years; for a market stall holder, the ‘long run’ could be as little as a few weeks or months!

Analysis of Production Function: Long Run



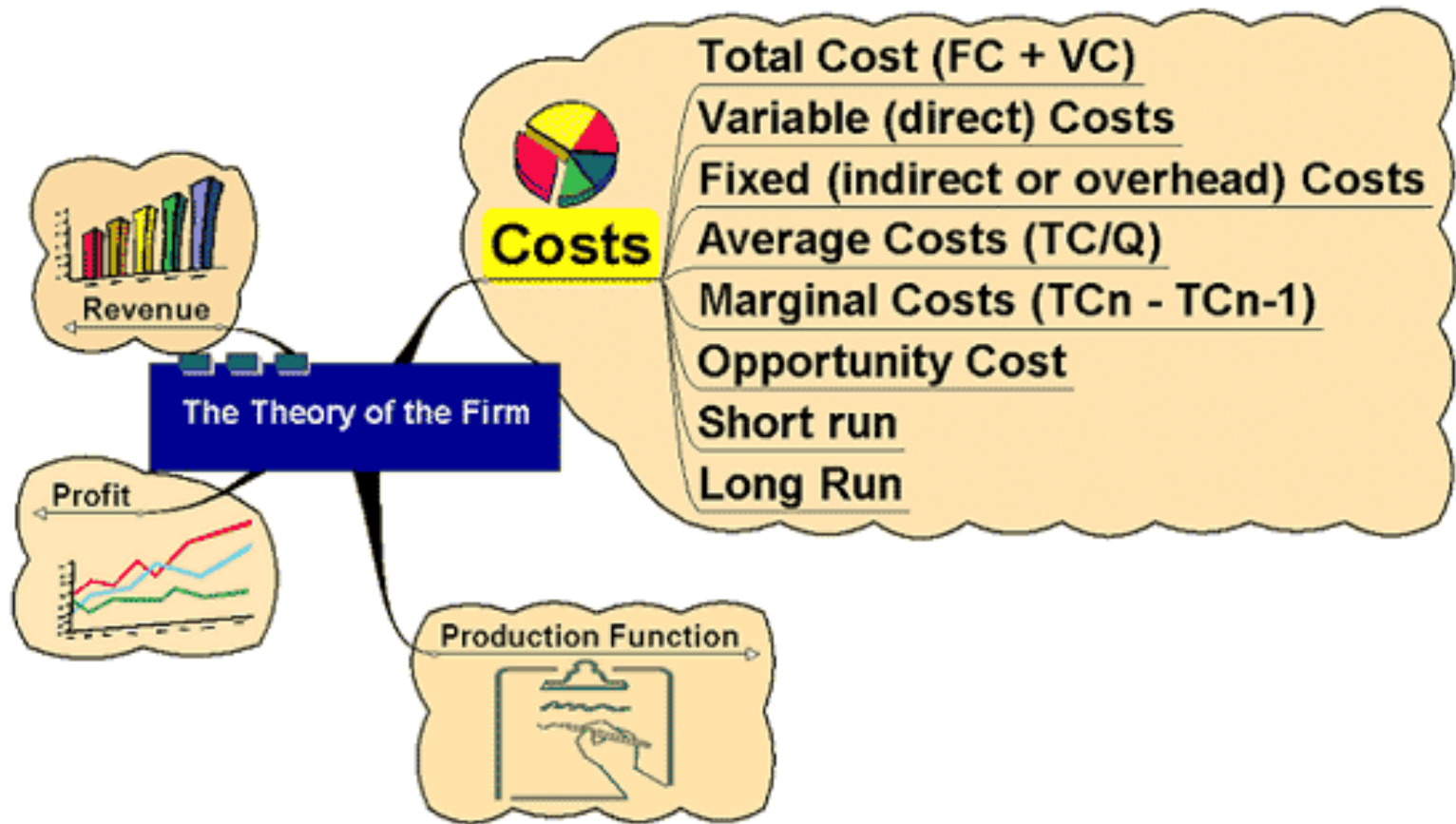
In the long run, the firm can change all its factors of production thus increasing its total capacity. In this example it has doubled its capacity.

Production Function



- Mathematical representation of the relationship:
 - $Q = f(K, L, La)$
- Output (Q) is dependent upon the amount of capital (K), Land (L) and Labour (La) used

Costs





Costs

- In buying factor inputs, the firm will incur costs
- Costs are classified as:
 - **Fixed costs** – costs that are not related directly to production – rent, rates, insurance costs, admin costs. They can change but not in relation to output
 - **Variable Costs** – costs directly related to variations in output. Raw materials primarily

Costs



- **Total Cost** - the sum of all costs incurred in production

- $TC = FC + VC$

- **Average Cost** – the cost per unit of output

- $AC = TC/Output$

- **Marginal Cost** – the cost of one more or one fewer units of production

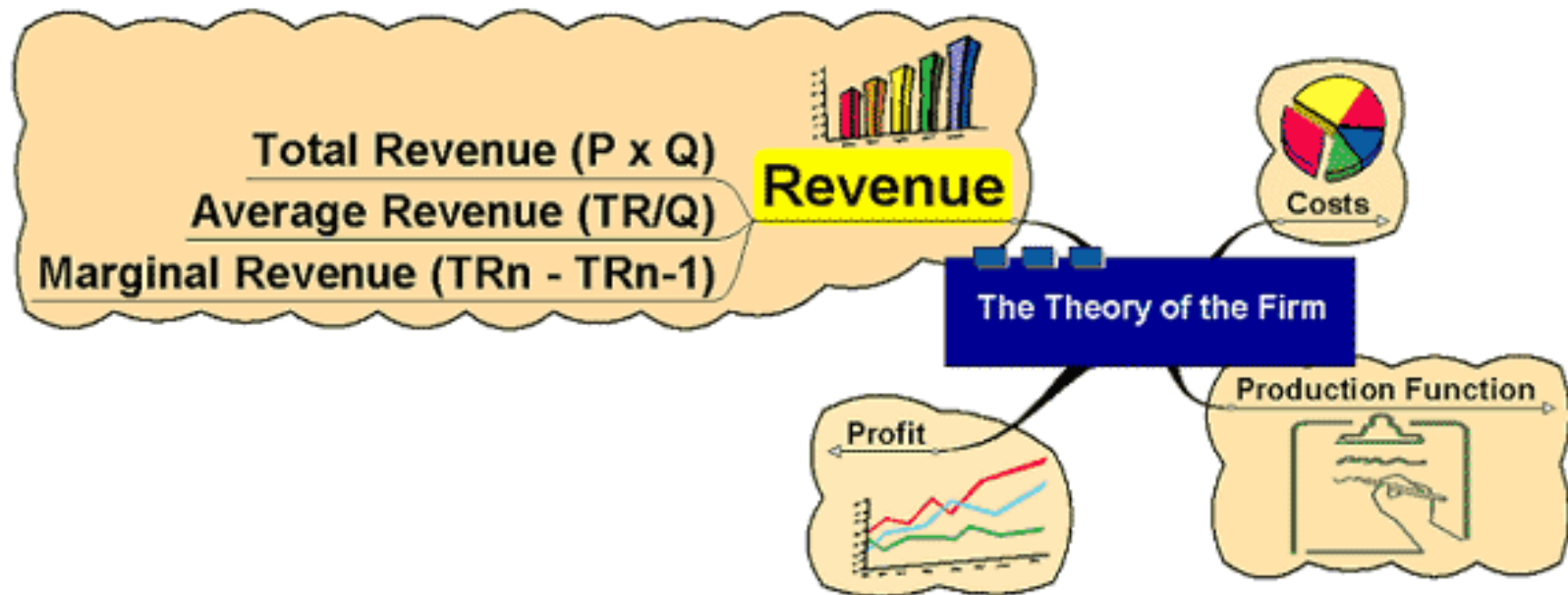
- $MC = TC_n - TC_{n-1}$ units

Costs



- **Short run** – Diminishing marginal returns results from adding successive quantities of variable factors to a fixed factor
- **Long run** – Increases in capacity can lead to increasing, decreasing or constant returns to scale

Revenue

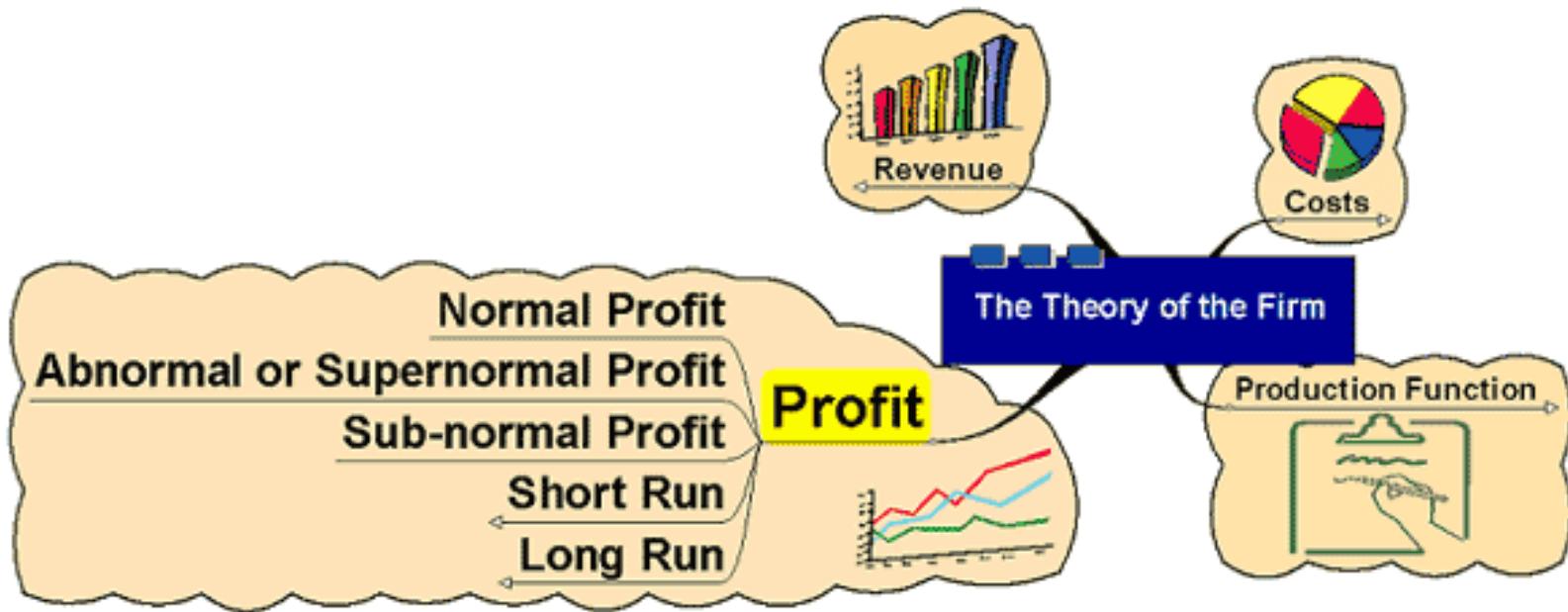


Revenue



- **Total revenue** – the total amount received from selling a given output
 - $TR = P \times Q$
- **Average Revenue** – the average amount received from selling each unit
 - $AR = TR / Q$
- **Marginal revenue** – the amount received from selling one extra unit of output
 - $MR = TR_n - TR_{n-1}$ units

Profit





Profit

- **Profit = TR – TC**

- The reward for enterprise
- Profits help in the process of directing resources to alternative uses in free markets
- Relating price to costs helps a firm to assess profitability in production



Profit

- **Normal Profit** – the minimum amount required to keep a firm in its current line of production
- **Abnormal or Supernormal profit** – profit made over and above normal profit
 - Abnormal profit may exist in situations where firms have market power
 - Abnormal profits may indicate the existence of welfare losses
 - Could be taxed away without altering resource allocation



Profit

- **Sub-normal Profit** – profit below normal profit
 - Firms may not exit the market even if sub-normal profits made if they are able to cover variable costs
 - Cost of exit may be high
 - Sub-normal profit may be temporary (or perceived as such!)



Profit

- Assumption that firms aim to maximise profit
- May not always hold true – there are other objectives