

$$MC_n = TC_n - TC_{n-1}$$

We know that Marginal Cost is the cost incurred to produce one additional unit of output.

So, we can write

Marginal Cost (MC) = the cost incurred to produce one additional unit of output. In other words, Marginal Cost is the change in the total cost of producing the given quantity.

For example, if we are producing n units of a commodity, then marginal cost of n^{th} unit of a commodity is given as

$$MC_n = TC_n - TC_{n-1}$$

Now, we also know that total cost has two parts.

- Date:
- (i) Total Fixed Cost (TFC)
 - (ii) Total Variable Cost (TVC)

As we have already discussed that Marginal cost is the change in the total cost.

$$\text{i.e., } MC_n = TC_n - TC_{n-1}$$

Now, TC_n = Total cost of producing n units of good.

We also discussed that Total Cost is composed of Total fixed Cost and Total variable cost.

$$\text{i.e., } TC_n = TVC_n + TFC_n$$

$$\text{Similarly, } TC_{n-1} = TVC_{n-1} + TFC_{n-1}$$

Since, we know that total fixed cost is independent of quantity. i.e., In short run, it remains fixed whatever quantities of the commodity produced.

$$\text{i.e., } TFC_n = TFC_{n-1} = TFC$$

$$\therefore MC_n = TC_n - TC_{n-1}$$

$$= (TVC_n + TFC_n) - (TVC_{n-1} + TFC_{n-1})$$

$$TFC_{n-1})$$

$$= TVC_n + \cancel{TFC} - TVC_n - \cancel{TFC}$$

$$= TVC_n - TVC_{n-1}$$

$$MC_n = TVC_n - TVC_{n-1}$$