C(q) = Cost to produce quantity *q* items

Ex: We are starting a business that sells mugs. To begin, we must first purchase space for our facility, machinery to produce the mugs, etc. totaling $200,000. In addition, we spend $20 per case in materials to make the mugs. In general, what is the cost to produce the mugs?

Fixed cost = the portion of cost which does not depend on how many cases we produce.

Variable cost = the portion of cost which depends on the number of cases we produce.

Ex: How much will it cost to produce 1000 cases of mugs?

The additional cost to produce *one more* unit is called the Marginal Cost. This is the *rate of change* of Cost.

$MC(q) = C(q+1) - C(q)$

$R(q)$ = Amount of money brought in for the sale of quantity q items

Ex (revisited): We started a business that sells mugs. We are able to sell cases of mugs to the retailers for $60 per case. What is our revenue?

Ex: How much revenue do we get from selling 1000 cases of mugs?

The additional revenue from selling *one more* unit is called the Marginal Revenue. This is the *rate of change* of Revenue.

$MR(q) = R(q+1) - R(q)$

P(q) = amount of money that a company makes from the production and sales of quantity *q* items.

Profit = Revenue – Cost

$P(q) = R(q) - C(q)$

Ex (revisited again): We started a business that sells mugs. To begin, we first invested $200,000 up front. In addition, we spend $20 per case in materials to make the mugs. We are able to sell cases of mugs to the retailers for $60 per case. What is our profit?

Ex: How much profit do we get from selling 1000 cases of mugs?

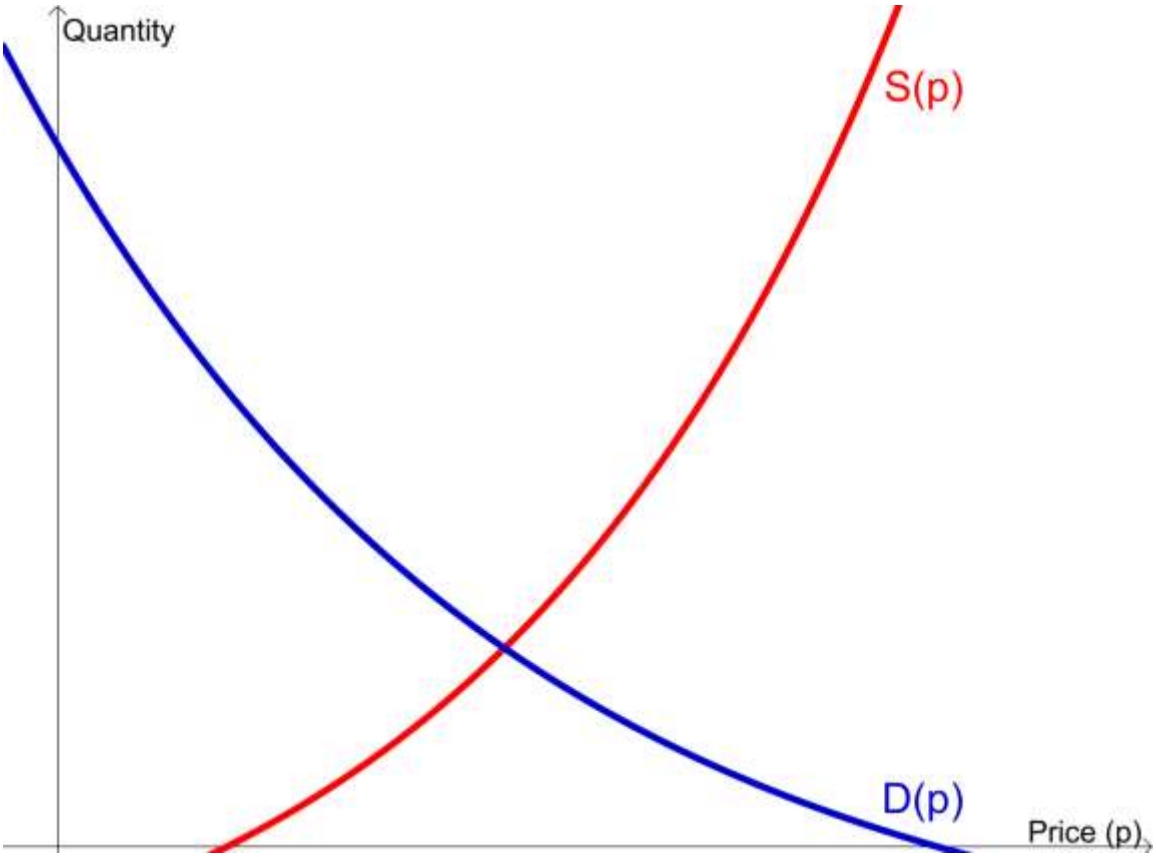
How many do we need to sell so that we don't lose money?

The break-even point is:

Ex (revisited): What is the break-even point for our mug business?

Supply is the quantity of a product that the manufacturer is willing to produce. Supply can be thought of as a function of the price, p, that the product sells for.

Demand is the quantity of a product that the public is willing to buy. Demand can be thought of as a function of the price, p, that the product sells for.



The Equilibrium Point is the point at which

$$S(p) = D(p)$$

The price at the Equilibrium Point is called the Equilibrium Price.

The quantity at the Equilibrium Point is called the Equilibrium Quantity.

Example: Suppose that the supply and demand functions are given by:

$S(p) = 2p - 4; D(p) = 5 - p$

What is the equilibrium point?