Revenue is the gross amount of money brought in by selling the product. **Cost** is the gross amount of money required to produce and sell the product. **Profit** is the difference: $P = R - C$.

Suppose you can sell corn at \$17 per bushel, but it costs you \$4 per bushel to grow it, process it, and get it to market. Oh, and regardless of how much corn you sell, you still have mortgages and bills, and it costs you \$1001 just to avoid going bankrupt.

(a) How much does it cost you (including bills) to sell 10 bushels?

(b) How much revenue do you make if you sell 10 bushels?

(c) What is the net profit if you sell 10 bushels?

(d) How much more profit do you make each bushel you sell?
(you know, once you are actually making a profit instead of losing money)

(e) How many bushels do you need to sell to actually **break even**? (that is, when does $R = C$?)

Not everyone can make a profit selling corn at \$4 per bushel, and so not everyone tries. On the other hand, more people are able to turn a profit at \$17 per bushel, and so more people try.

When the price changes only a little, the number of bushels supplied is a linear function of the price (this is the "tangent line" again). Assuming the supply equation for a supplier of corn is $x = 40p + 100$ where p is the selling price of a bushel in dollars, and x is the number of bushels that would be supplied at that price:

(a) How many bushels are supplied when the price is \$4?

(b) How many bushels are supplied when the price is \$17 (assuming the equation remains linear)?

(c) How many extra bushels are supplied for every extra dollar in price?

Demand works similarly, but in reverse. Corn is nice. Most people wouldn't mind a little corn around the house; it's festive and nutritious. I suppose I might like a bushel of corn for \$4. A lot of people would. However, a lot fewer people would be willing to pay \$17 for a bushel of corn. The higher the price the less the demand.

To put a number on it: when the price is \$4 per bushel, the demand is 1170 bushels, but at \$17 per bushel the demand has dropped to 0 bushels. Assume the relation between price and demand is linear between \$4 and \$17.

(d) How much did the demand drop? How much did the price increase?

(e) How much does the demand drop per each dollar increase?

Market equilibrium is when the amount sold is equal to the amount bought. For this to happen the price has to be at a nice spot near the middle, at the **equilibrium price**, and then the supply and demand are both equal to the **equilibrium quantity**.

(f) How far apart are the supply and demand at \$4 per bushel?

(g) How much closer do they get for each dollar increase?

(h) What is the equilibrium price and the equilibrium quantity?