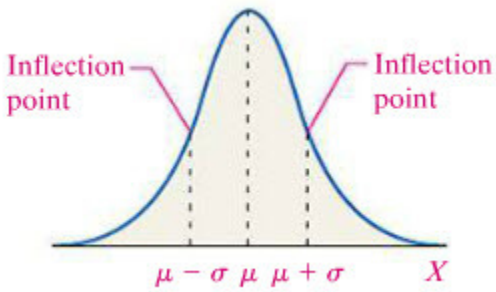
Pointers – Normal Probability
Sections 7.1 & 7.2

These two sections deal with the **normal probability distribution**.

The normal probability distribution is a continuous distribution (the variable *x* can take on decimal values) associated with a bell shaped graph. The area under the graph (which is equal to 1) can be used to represent probabilities.

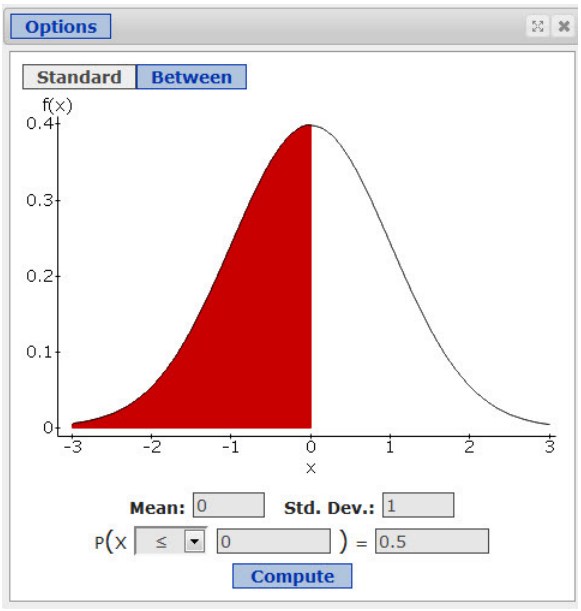
The graph is bell shaped and symmetric, extending infinitely to the left and right, getting closer and closer to the x-axis as it moves outward. There are two inflection points – one on the left where the curve changes from concave up to concave down and one on the right where the curve changes from concave down to concave up.



The mean of the distribution is located along the x-axis at the point where the peak of the curve occurs. The standard deviation is measured from the mean to the location of one of the inflection points.

Finding Probabilities

1. Look for the mean and standard deviation in the problem – you will need these two values.
2. Determine the range of values of x for which you need to calculate the probability.
   For standard probabilities, you must choose between $\leq$ and $\geq$. (There is no <, >, or =.)
   Lower than 125: $x \leq 125$ 140 or lower: $x \leq 140$
   Higher than 87: $x \geq 87$ 105 or higher: $x \geq 105$
3. Use the normal probability calculator.
   (Stat > Calculators > Normal)



Enter the mean and standard deviation in the boxes, choose the correct sign, and enter the value of x. Click compute for the probability.

If you need to find P(# ≤ x ≤ #), switch to the “Between” tab.