Z-Scores Worksheet

1. The following scores were obtained as part of a sample with **mean 10** and **standard deviation 2**. For each score, find the appropriate z-score:

   X = 10: z =

   X = 14: z =

   X = 20: z =

   X = 6: z =

   X = 18: z =

   X = -1: z =

2. For each z-score found in the first problem, use the StatCrunch "Normal" Calculator to find the probabilities (in percent) of obtaining a score *less than or equal to* the computed z-score above. Note: in mathematical notation this means that we want to find $P(z \leq z_0)$, where z_0 is the computed z-score.

3. Each score listed below comes from a sample with the indicated mean and standard deviation. You could convert each one to a z-score and find the indicated probability or you could use the given normal distribution without first converting to z-scores to find the probabilities:

   X = 9 (mean 3, standard deviation 3), $P(x \geq 9)$

   $z_0 =$

   $P(z \geq z_0) =$

   X = 6 (mean 3, standard deviation 1.5), $P(x \leq 6)$

   $z_0 =$

   $P(z \leq z_0) =$

   X = 2 (mean 0, standard deviation 1), $P(-2 \leq x \leq 2)$

   $z_0 =$

   $P(-z_0 \leq z \leq z_0) =$

   X = 2 (mean 3, standard deviation 1), $P(x \geq 2)$

   $z_0 =$

   $P(z \geq z_0) =$

   Note that drawing a picture will help to find the indicated probabilities (percentages).