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 table in the appendix, pages 592 etc., to find the probabilities (in percent) of obtaining a score less than or equal to the computed z-score. Note: in mathematical notation this means that we want to find \( P(z \leq z_0) \), where \( z_0 \) is the computed z-score. **Careful: the numbers in the table do not give you \( P(z \leq z_0) \) directly!**

3. Each score listed below comes from a sample with the indicated mean and standard deviation. Convert each one to a z-score and find the indicated probability (in percent):
   \( X = 9 \) (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).