

HOMework #2

STAT 651, Dr. Dahl

Please answer the following questions. **Note:** You may use either Table 1 or the distribution calculators on the class website.

1. Ex. 4.8, 4.9, 4.11, 4.17, 4.19 (which should refer to Ex. 4.18), 4.20-4.22
2. By visual inspection of Figure 4.6(b) on page 155, *approximately* what proportion of the distribution is between a and b ?
3. By visual inspection of Figure 4.7 on page 155,
 - *Approximately* what proportion of the distribution is *less* than 80?
 - Is a student's exam score more likely to be between 80-90 or 50-60? How can you tell?
4. Consider an experiment in which two four-side dice are rolled. Let X be the random variable: "The number of dots of the first die minus the number of dots on the second die."
 - What is the sample space of the experiment?
 - What is the sampling distribution of X ?
5. Ex. 4.52, 4.55, 4.57, 4.59, 4.60, 4.63, 4.66, 4.73, 4.74, 4.76, 4.77, and 4.78.
6. Using software,
 - (a) Generate 50 random numbers that are normally distributed with mean 2 and standard deviation 4.
 - (b) Make a histogram of these numbers.
 - (c) What proportion of your sample is greater than 3?
 - (d) What is the probability that a normally distributed random variables with mean 2 and st. dev. 4 is greater than 3?
 - (e) Do the answers to your two previous questions agree? Why or why not?
 - (f) Repeat steps (a) - (e) for a new set of random numbers. Comments on similarity and differences in your results.
 - (g) Repeat steps (a) - (e), but this time, increase the sample size from 50 to 1000. How do the results change when the sample sizes increases?
7. Ex. 4.94, 4.97, 4.98