Work Problems Chapter 4

1. In statistics, the word "distribution" comes up a lot.

    a. In your own words, explain what a distribution is.

    A distribution is a collection of scores, arranged in order from smallest to largest.

    b. Then, again in your own words, explain what a "normal distribution" is.

    The normal distribution forms a bell curve and has the mean, median, and mode all in the center of it.

2. What does "asymptotic" mean and why is it important?

    The tails of the distribution never cross the *X* axis, indicating that even extreme scores are possible.

3. In statistics, we use the normal distribution a lot. What is so great about it? In other words, what does it do for us? Describe something that the normal distribution lets us, as statisticians, do that we cannot do without it.

    It allows us to calculate probabilities.

4. Many believe that most human traits form a normal distribution. Height, weight, intelligence, musical ability, friendliness, attractiveness, etc. are all examples of things that might form a normal distribution.

    a. First, explain whether you agree with this assumption, and why or why not.

    This is a matter of opinion, so there is no correct answer.

    b. Second, think of an example of a trait that does NOT form a normal distribution in the population.

    There are lots of examples: Proportion of the population that is left-handed, or homosexual, or Americans who think they are above average in intelligence. (Ironically, over 890% of Americans think they have above-average intelligence.) There are many variables that do not form a normal distribution.

5. If you know that in the population adults the average number of hours slept per night is 7 with a standard deviation of 2, what proportion of the population would you expect to sleep between 7 and 9 hours per night?

.3413, or 34.13% of the normal distribution would be expected to sleep between 7 and 9 hours per night. We know this because if the mean is 7 and the standard deviation is 2, people who sleep 9 hours per night are one standard deviation above the mean on this sleep variable. As we can see in Figure 4.5, .3413 of the normal distribution is contained between the mean and one standard deviation above the mean on any variable that forms a normal distribution.