Name _____ Date _____ Class _____

WISE Sampling Distribution of the Mean Tutorial
Exercise 1 Follow-up Questions

1.   Define "sampling distribution of the mean."

2.   How is the standard error of the mean (i.e., the standard deviation of the sampling distribution of the mean) calculated?

3.   Let's assume that the distribution of the speed of all cars traveling in the fast lane of a certain highway is normally distributed with an average speed of 65 mph and a standard deviation of 5 mph. What is the probability that the speed of a randomly "clocked" car is between 60 and 70 mph?

4.   What is the standard error for the mean of a randomly selected sample of 10 test scores from a normally distributed population if the population mean is 78 and the standard deviation is 3.4?

5.   A scientist at Rubber Tires Inc. (RTI) wanted to find out how long RTI's tires last before they must be replaced. This scientist found that for the population of RTI tires, on average the tires last for 30,000 miles with a standard deviation of 3,000 miles. This distribution is approximately normally distributed.

a.   For samples of $N = 6$ randomly selected tires, what is the approximate mean and standard error of the distribution for the life of these tires?

b.   If the population values given above are correct, how surprising would it be to test 6 randomly selected tires and find that they had an average life of 27,500 miles or less?

6.   Imagine you are working as a research consultant for a large organization. The organization is interested in examining employee satisfaction (essentially, how happy workers are with their jobs). The organization employs over 10,000 employees so having everyone complete the scale is not practical. The organization decides to take a random sample of employees and only administer the scale to these employees. The organization is assuming that the sample of employees will represent the attitudes of the entire population of employees. The organization is unsure as to how many people to administer the survey. One researcher at the organization wants to use a sample of 20 employees whereas the other researcher wants to use a sample of 100 employees. Which sample size should they choose? Why? Present statistical evidence for your answer.