

Name: _____

1. Suppose we draw simple random samples of size 60 from an unknown distribution with $\mu = 500$ and $\sigma = 15$.
 - a. What is the probability of drawing a sample of size 60 with a mean less than 490?
 - (i) Draw a representation of the sampling distribution of the sample mean with any relevant details to the problem labeled. Any time you are asked to do this, your picture should include the following features:
 - A title for your picture that says what the distribution is (eg. $\bar{X} \sim N(?, ?)$).
 - Labels on the x -axis indicating the center of the distribution and any relevant sample means.
 - A shaded area representing the probability you are tasked with finding.(You may optionally also draw the standardized version)
 - (ii) Show work for finding the probability.
 - b. What is the probability of drawing a sample within 5 of the population mean?
 - (i) Draw a representation of the sampling distribution of the sample mean with any relevant details to the problem labeled.
 - (ii) Show work for finding the probability.

c. Provide a range of values for which 90% of sample means will fall in that range

(i) Draw a representation of the sampling distribution of the sample mean with any relevant details to the problem labeled.

(ii) Show work for finding the probability.

d. What is the probability of drawing a sample of size 60 with a sum less than 29000?

(i) Draw a representation of the sampling distribution of the sample sum with any relevant details to the problem labeled.

(ii) Show work for finding the probability.

e. What is the probability of drawing a sample within 500 of the expected sum?

(i) Draw a representation of the sampling distribution of the sample sum with any relevant details to the problem labeled.

(ii) Show work for finding the probability.

f. Provide a range of values for which 80% of sample sums will fall in that range

(i) Draw a representation of the sampling distribution of the sample sum with any relevant details to the problem labeled.

(ii) Show work for finding the probability.