Practice - Sampling Distribution for Sample Mean
January 5, 2022

1. A population has mean 128 and standard deviation 22.

    (a) Find the mean and standard deviation of $\bar{x}$ for samples of size 36.

    (b) Find the probability that the mean of a sample of size 36 will be within 10 units of the population mean, that is, between 118 and 138.

2. A population has mean 72 and standard deviation 6.

    (a) Find the mean and standard deviation of $\bar{x}$ for samples of size 45

    (b) Find the probability that the mean of a sample of size 45 will differ from the population mean 72 by at least 2 units, that is, is either less than 70 or more than 74.

3. A population has mean 557 and standard deviation 35.

    (a) Find the mean and standard deviation of $\bar{x}$ for samples of size 50.

    (b) Find the probability that the mean of a sample size of 50 will be more than 570.

4. Suppose the mean number of days to germination of a variety of seed is 22, with standard deviation 2.3 days. Find the probability that the mean germination time of a sample of 160 seeds will be within 0.5 day of the population mean.

5. Suppose the mean amount of cholesterol in eggs labeled "large" is 186 milligrams, with standard deviation 7 milligrams. Find the probability that the mean amount of cholesterol in a sample of 144 eggs will be within 2 milligrams of the population mean.

6. Suppose the mean cost across the country of a 30-day supply of a generic drug is $46.58, with standard deviation $4.84. Find the probability that the mean of a sample of 100 prices of 30-day supplies of this drug will be between $45 and $50.