A population of scores forms a normal distribution with a mean of $\mu = 60$ and a standard deviation of $\sigma = 12$. Consider a sample of $N = 36$ scores.

- What is the probability that a *single score* in the sample is greater than 64?
- What is the probability that the *sample mean* greater than 64?

A population of scores forms a normal distribution with a mean of $\mu = 80$ and a standard deviation of $\sigma = 10$.

- What is the probability of obtaining a sample mean greater than 85 for a sample of $N = 9$ scores?
- What is the probability of obtaining a sample mean greater than 85 for a sample of $N = 36$ scores?
- For a sample of $N = 16$ scores, what is the probability that the sample mean will be within 5 points of the population mean?

The scores on a standardized mathematics test form a normal distribution with a mean of $\mu = 70$ and a standard deviation of $\sigma = 10$.

- What proportion of the students in the state have scores less than $X = 75$?
- If samples of $N = 4$ are selected from the population, what proportion of the samples will have means less than $\overline{X} = 75$?
- If samples of $N = 25$ are selected from the population, what proportion of the samples will have means less than $\overline{X} = 75$?