b. $\overline{X} \sim N\left(4.59, \frac{0.10}{\sqrt{16}}\right)$
c. $\overline{X} \sim N\left(4.59, \frac{16}{0.10}\right)$
d. $\overline{X} \sim N\left(4.59, \frac{\sqrt{16}}{0.10}\right)$

7.2 The Central Limit Theorem for Sums

72. Which of the following is NOT TRUE about the theoretical distribution of sums?
a. The mean, median and mode are equal.
b. The area under the curve is one.
c. The curve never touches the *x*-axis.
d. The curve is skewed to the right.

73. Suppose that the duration of a particular type of criminal trial is known to have a mean of 21 days and a standard deviation of seven days. We randomly sample nine trials.
a. In words, $\Sigma X =$ _____
b. $\Sigma X \sim$ _____(_____,_____)
c. Find the probability that the total length of the nine trials is at least 225 days.
d. Ninety percent of the total of nine of these types of trials will last at least how long?

74. Suppose that the weight of open boxes of cereal in a home with children is uniformly distributed from two to six pounds with a mean of four pounds and standard deviation of 1.1547. We randomly survey 64 homes with children.
a. In words, $X =$ _____
b. The distribution is _____.
c. In words, $\Sigma X =$ _____
d. $\Sigma X \sim$ _____(_____,_____)
e. Find the probability that the total weight of open boxes is less than 250 pounds.
f. Find the 35th percentile for the total weight of open boxes of cereal.

75. Salaries for teachers in a particular elementary school district are normally distributed with a mean of $44,000 and a standard deviation of $6,500. We randomly survey ten teachers from that district.
a. In words, $X =$ _____
b. $X \sim$ _____(_____,_____)
c. In words, $\Sigma X =$ _____
d. $\Sigma X \sim$ _____(_____,_____)
e. Find the probability that the teachers earn a total of over $400,000.
f. Find the 90th percentile for an individual teacher's salary.
g. Find the 90th percentile for the sum of ten teachers' salary.
h. If we surveyed 70 teachers instead of ten, graphically, how would that change the distribution in part d?
i. If each of the 70 teachers received a $3,000 raise, graphically, how would that change the distribution in part b?

7.3 Using the Central Limit Theorem

76. The attention span of a two-year-old is exponentially distributed with a mean of about eight minutes. Suppose we randomly survey 60 two-year-olds.
a. In words, $X =$ _____
b. $X \sim$ _____(_____,_____)
c. In words, $\overline{X} =$ _____
d. $\overline{X} \sim$ _____(_____,_____)
e. Before doing any calculations, which do you think will be higher? Explain why.
    i. The probability that an individual attention span is less than ten minutes.
    ii. The probability that the average attention span for the 60 children is less than ten minutes?
f. Calculate the probabilities in part e.
g. Explain why the distribution for $\overline{X}$ is not exponential.