a. $\overline{X}$ ~ _____(_____,_____)
b. Find the probability that the runner will average between 142 and 146 minutes in these 49 marathons.
c. Find the 80th percentile for the average of these 49 marathons.
d. Find the median of the average running times.

65. The length of songs in a collector's Apple Music album collection is uniformly distributed from two to 3.5 minutes. Suppose we randomly pick five albums from the collection. There are a total of 43 songs on the five albums.
a. In words, X = _____
b. X ~ _____
c. In words, $\overline{X}$ = _____
d. $\overline{X}$ ~ _____(_____,_____)
e. Find the first quartile for the average song length, $\overline{X}$.
f. The IQR (interquartile range) for the average song length, $\overline{X}$, is from ___ - ___.

66. In 1940 the average size of a U.S. farm was 174 acres. Let's say that the standard deviation was 55 acres. Suppose we randomly survey 38 farmers from 1940.
a. In words, X = _____
b. In words, $\overline{X}$ = _____
c. $\overline{X}$ ~ _____(_____,_____)
d. The IQR for $\overline{x}$ is from _____ acres to _____ acres.

67. Determine which of the following are true and which are false. Then, in complete sentences, justify your answers.
a. When the sample size is large, the mean of $\overline{X}$ is approximately equal to the mean of X.
b. When the sample size is large, $\overline{x}$ is approximately normally distributed.
c. When the sample size is large, the standard deviation of $\overline{x}$ is approximately the same as the standard deviation of X.

68. The percent of fat calories that a person in America consumes each day is normally distributed with a mean of about 36 and a standard deviation of about ten. Suppose that 16 individuals are randomly chosen. Let $\overline{x}$ = average percent of fat calories.
a. $\overline{x}$ ~ _____(_____, _____)
b. For the group of 16, find the probability that the average percent of fat calories consumed is more than five. Graph the situation and shade in the area to be determined.
c. Find the first quartile for the average percent of fat calories.

69. The distribution of income in some developing countries is considered wedge shaped (many low income people, very few middle income people, and even fewer high income people). Suppose we pick a country with a wedge shaped distribution. Let the average salary be $2,000 per year with a standard deviation of $8,000. We randomly survey 1,000 residents of that country.
a. In words, X = _____
b. In words, $\overline{X}$ = _____
c. $\overline{X}$ ~ _____(_____,_____)
d. How is it possible for the standard deviation to be greater than the average?
e. Why is it more likely that the average of the 1,000 residents will be from $2,000 to $2,100 than from $2,100 to $2,200?

70. Which of the following is NOT TRUE about the distribution for averages?
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.

71. The cost of unleaded gasoline in the Bay Area once followed an unknown distribution with a mean of $4.59 and a standard deviation of $0.10. Sixteen gas stations from the Bay Area are randomly chosen. We are interested in the average cost of gasoline for the 16 gas stations. The distribution to use for the average cost of gasoline for the 16 gas stations is:
a. $\overline{X}$ ~ N(4.59, 0.10)