1. On the day before an election in a large city, each person in a random sample of 1,000 likely voters is asked which candidate he or she plans to vote for. Of the people in the sample, 55 percent say they will vote for candidate Taylor. A margin of error of 3 percentage points is calculated. Which of the following statements is appropriate?

(A) The proportion of all likely voters who plan to vote for candidate Taylor must be the same as the proportion of voters in the sample who plan to vote for candidate Taylor (55 percent), because the data were collected from a random sample.

(B) The sample proportion minus the margin of error is greater than 0.50, which provides evidence that more than half of all likely voters plan to vote for candidate Taylor.

(C) It is not possible to draw any conclusion about the proportion of all likely voters who plan to vote for candidate Taylor because the 1,000 likely voters in the sample represent only a small fraction of all likely voters in a large city.

(D) It is not possible to draw any conclusion about the proportion of all likely voters who plan to vote for candidate Taylor because this is not an experiment.

(E) It is not possible to draw any conclusion about the proportion of all likely voters who plan to vote for candidate Taylor because this is a random sample and not a census.

2. An airline claims that the mean flight time between City X and City Y is 38 minutes. After taking many flights, a local business group believes that the claim is unrealistic and that the actual mean flight time is greater than 38 minutes. If the group conducts a study to investigate its belief, which of the following hypotheses should be tested?

(A) $H_0 : \bar{x} = 38$ versus $H_a : \bar{x} \neq 38$

(B) $H_0 : \bar{x} = 38$ versus $H_a : \bar{x} < 38$

(C) $H_0 : \bar{x} = 38$ versus $H_a : \bar{x} > 38$

(D) $H_0 : \mu = 38$ versus $H_a : \mu < 38$

(E) $H_0 : \mu = 38$ versus $H_a : \mu > 38$

3. All surveyed 200 students at a school and recorded the eye color and the gender of each student. Of the 80 male students who were surveyed, 60 had brown eyes. If eye color and gender are independent, how many female students surveyed would be expected to have brown eyes?

(A) 5

(B) 20

(C) 30

(D) 90

(E) 100

(4) Data on homes recently sold in a certain town included the area of the home, reported in square feet. The table below shows summary statistics of the reported areas, in square feet.

Mean	Minimum	Q1	Median	Q3	Maximum	Standard Deviation
1,754.14	1,656	1,704	1,758	1,806	1,843	61.0723

An auditor determined that an error was made in the reported areas and that all of the areas should have been 100 square feet greater than what was reported. The areas were corrected and new summary statistics were reported.

What are the interquartile range (IQR) and the standard deviation of the corrected areas?

(A) IQR 102, standard deviation 61.0723

(B) IQR 102, standard deviation 161.0723

(C) IQR 202, standard deviation 61.0723

(D) IQR 202, standard deviation 161.0723

(E) IQR 187, standard deviation 61.0723

(5) A school administrator is interested in estimating the proportion of students in the district who participate in community service activities. From a random sample of 100 students in the district, the administrator will construct a 99 percent confidence interval for the proportion of all district students who participate in community service activities. Which of the following statements must be true?

(A) The population proportion will be in the confidence interval.

(B) The probability that the confidence interval will include the population proportion is 0.99.

(C) The probability that the confidence interval will include the sample proportion is 0.99.

(D) The population proportion and the sample proportion will be equal.

(E) The probability that the population proportion and the sample proportion will be equal is 0.99.

(6) The height of 3-year-old boys is approximately normally distributed. Duncan and Shane are 3-year-old boys. Duncan is 32.0 inches tall and is at the 32nd percentile of the distribution. Shane is 34.0 inches tall and is at the 62nd percentile of the distribution. Which of the following is closest to the mean of the height distribution?

(A) 32.50 inches

(B) 32.79 inches

(C) 33.00 inches

(D) 33.21 inches

(E) 36.53 inches