

2023 AP Daily: Practice Sessions



AP Statistics

Session 1 – MCQ

1. A company determines the mean and standard deviation of the number of sick days taken by its employees in one year. Which of the following is the best description of the standard deviation?
 - A. Approximately the mean distance between the number of sick days taken by individual employees and the mean number of sick days taken by all employees
 - B. Approximately the median distance between the number of sick days taken by individual employees and the median number of sick days taken by all employees
 - C. The distance between the greatest number of sick days taken by an employee and the mean number of sick days taken by all employees
 - D. The number of days separating the fewest sick days taken and the most sick days taken when considering all employees
 - E. The number of days separating the fewest sick days taken and the most sick days taken when considering the middle 50 percent of the distribution

2. A researcher collected data on the latitude, in degrees north of the equator, and the average low temperature, in degrees Fahrenheit, for a random sample of cities in Europe. The data were used to create the following equation for the least-squares regression line.

$$\text{predicted average low temperature} = 65.5 - 0.70 (\text{latitude})$$

Which of the following is the best interpretation of the slope of the line?

- A. For each one degree north of the equator increase, the predicted average low temperature increases on average by 0.70 degree Fahrenheit.
- B. For each one degree north of the equator increase, the predicted average low temperature decreases on average by 0.70 degree Fahrenheit.
- C. For each 0.70 degree north of the equator increase, the predicted average low temperature decreases on average by 1 degree Fahrenheit.
- D. For each one degree Fahrenheit increase in average low temperature, the predicted latitude increases on average by 0.70 degree north of the equator.
- E. For each one degree Fahrenheit increase in average low temperature, the predicted latitude decreases on average by 0.70 degree north of the equator.

3. Which of the following is NOT a characteristic of stratified random sampling?
- A. Random sampling is part of the sampling procedure.
 - B. The population is divided into groups of units that are similar on some characteristic.
 - C. The strata are based on facts known before the sample is selected.
 - D. Each individual unit in the population belongs to one and only one of the strata.
 - E. Every possible subset of the population, of the desired sample size, has an equal chance of being selected.
4. An experiment has three mutually exclusive outcomes, A, B, and C. If $P(A) = 0.12$, $P(B) = 0.61$, and $P(C) = 0.27$, which of the following must be true?
- I. A and C are independent.
 - II. $P(A \text{ and } B) = 0$
 - III. $P(B \text{ or } C) = P(B) + P(C)$
- A. I only
 - B. I and II only
 - C. I and III only
 - D. II and III only
 - E. I, II, and III
5. Random variable X is normally distributed with mean 10 and standard deviation 3, and random variable Y is normally distributed with mean 9 and standard deviation 4. If X and Y are independent, which of the following describes the distribution of $Y - X$?
- A. Normal with mean 1 and standard deviation -1
 - B. Normal with mean -1 and standard deviation 1
 - C. Normal with mean -1 and standard deviation 5
 - D. Normal with mean 1 and standard deviation 7
 - E. Normal with mean -1 and standard deviation 7

6. In one region of the country, the mean length of stay in hospitals is 5.5 days with standard deviation 2.6 days. Because many patients stay in the hospital for considerably more days, the distribution of length of stay is strongly skewed to the right. Consider random samples of size 100 taken from the distribution with the mean length of stay, \bar{x} , recorded for each sample. Which of the following is the best description of the sampling distribution of \bar{x} ?
- A. Strongly skewed to the right with mean 5.5 days and standard deviation 2.6 days
 - B. Strongly skewed to the right with mean 5.5 days and standard deviation 0.26 day
 - C. Strongly skewed to the right with mean 5.5 days and standard deviation 0.026 day
 - D. Approximately normal with mean 5.5 days and standard deviation 2.6 days
 - E. Approximately normal with mean 5.5 days and standard deviation 0.26 day