2024 AP DAILY: PRACTICE SESSIONS

AP Statistics Session 1 – MCQ

1. For a middle school science project, Jalen measured the pH of 25 vinegar products. The summary statistics for the values of the pH are shown in the following computer output.

Variable	N	Mean	Median	StDev	Minimum	Maximum	Q1	Q3
pH	25	2.50	2.49	0.26	2.11	2.93	2.23	2.78

Based on the 1.5 × IQR rule for outliers, which of the following statements is true?

A. The minimum pH value of 2.11 is an outlier, and no other pH value could be identified as an outlier.
B. The maximum pH value of 2.93 is an outlier, and no other pH value could be identified as an outlier.
C. The minimum pH value of 2.11 is an outlier, and there could be other pH values identified as outliers that are below the first quartile, but no pH value above the third quartile could be identified as an outlier.
D. The maximum pH value of 2.93 is an outlier, and there could be other pH values identified as outliers that are above the third quartile, but no pH value below the first quartile could be identified as an outlier.
E. There are no pH values that could be identified as outliers.

2. The tail length of Siberian tigers is approximately normally distributed with a mean of 0.85 meter and a standard deviation of 0.13 meter.

Which of the following is the best interpretation of the z-score for a particular Siberian tiger with a tail length of 0.8 meter?

A. The tiger's tail length is approximately 0.38 standard deviation below the mean.
B. The tiger's tail length is approximately 0.38 standard deviation above the mean.
C. The tiger has an approximate 0.38 probability of having a tail length of 0.8 meter.
D. The tiger's tail length is approximately 0.0065 meter greater than the standard deviation.
E. The tiger's tail length is approximately 0.05 meter below the mean.

3. Suppose a hypothesis test will be used to investigate whether the proportion of United States adults who have been a victim of a cybercrime, such as identity theft, is greater than 0.25. Suppose that the hypothesis test is conducted using a significance level of 0.05 and the power of the test is determined for a specific alternative value using the significance level of 0.05.

   If the significance level of the hypothesis test is changed to 0.01 and the power of the test is computed for the same alternative value using a significance level of 0.01, which of the following best describes the change(s) to the probability of a Type I error and the power of the test?

   A. The probability of a Type I Error would decrease, and the power of the test would stay the same.
   B. The probability of a Type I Error would decrease, and the power of the test would increase.
   C. The probability of a Type I Error would decrease, and the power of the test would decrease.
   D. The probability of a Type I Error would increase, and the power of the test would increase.
   E. The probability of a Type I Error would increase, and the power of the test would decrease.

4. An agriculturalist wants to estimate the average time from germination to ripe fruit for a new type of seedless strawberry. From a random sample of 25 seedless strawberries of the new type, the mean time from germination to ripe fruit is 42.1 days with standard deviation 3.6 days.

   Assume all conditions for inference were met. Which of the following is a 90 percent confidence interval for the mean time from germination to ripe fruit for the new type of seedless strawberry?

   A. 42 ± 6.16
   B. 42.1 ± 1.49
   C. 42.1 ± 1.23
   D. 42.1 ± 1.18
   E. 42.1 ± 0.25

5. A large company has operated assuming that the rate of absenteeism is the same for each day of the week. The new human resources director at the company claims that the assumption is false and that the rate of absenteeism is different for some days of the week as compared with others. To test the claim, a random sample of 150 absences was selected, and the day of the week on which the absence occurred was recorded. The counts are shown in the following table.

	Monday	Tuesday	Wednesday	Thursday	Friday
Number of Absences	40	27	21	34	28

   The appropriate chi-square test will be performed to test the claim.

   What is the contribution of the Monday absences to the calculation of the chi-square test statistic?

   A. 0.333
   B. 2.500
   C. 3.000
   D. 3.333
   E. 10.000