Multiple choice questions - Hypothesis tests: correlation and Normal mean

Year: Year 13 · 10

Question 1 The null hypothesis for a correlation test is

- ◯ **A.** $\rho = 0$
- ◯ **B.** $\rho = 1$
- ◯ **C.** $\rho > 0$
- ◯ **D.** $r = 0$

Question 2 A one-tailed test is used when

- ◯ **A.** the sample is small
- ◯ **B.** the question suggests a direction
- ◯ **C.** the data is Normal
- ◯ **D.** σ is known

Question 3 If $|r|$ is greater than the critical value you

- ◯ **A.** accept H_0
- ◯ **B.** cannot decide
- ◯ **C.** reject H_0
- ◯ **D.** double the sample

Question 4 For $X \sim N(\mu, \sigma^2)$ the mean of a sample of size n has standard deviation

- ◯ **A.** σ
- ◯ **B.** $\dfrac{\sigma}{n}$
- ◯ **C.** $\sigma\sqrt{n}$
- ◯ **D.** $\dfrac{\sigma}{\sqrt{n}}$

Question 5 The probability of a Type I error equals

- ◯ **A.** the significance level
- ◯ **B.** the p-value always
- ◯ **C.** 1 minus the significance level
- ◯ **D.** 0.5

Question 6 Which wording is correct if H_0 is not rejected?

- ◯ **A.** H0 is true

- **B.** There is insufficient evidence to reject H0
- **C.** H1 is false
- **D.** H0 is proved

Question 7 For a two-tailed test at 5%, each tail has

- **A.** 5%
- **B.** 10%
- **C.** 2.5%
- **D.** 1%

Question 8 A significant positive correlation shows

- **A.** that x causes y
- **B.** that y causes x
- **C.** no relationship
- **D.** association, not necessarily causation

Question 9 If $\bar{X} \sim N(50, 2^2)$, $P(\bar{X} > 53.29)$ is about

- **A.** 0.05
- **B.** 0.5
- **C.** 0.025
- **D.** 0.95

Question 10 Coding the data by adding a constant to each x value

- **A.** makes r larger
- **B.** does not change r
- **C.** makes r negative
- **D.** doubles r

Answer grid - Hypothesis tests: correlation and Normal mean

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Question	Answer	Explanation
1	**A**	No correlation in the population.
2	**B**	Direction stated.
3	**C**	Significant.
4	**D**	Standard error.
5	**A**	Definition.
6	**B**	Never claim H0 is true.
7	**C**	Split in two.
8	**D**	Correlation is not causation.
9	**A**	z=1.645.
10	**B**	r is unaffected.