

Quiz #1

Quiz, 14 questions

9/14 points (64.28%)

**Congratulations! You finished!**[Next Item](#)1 / 1
point

1.

Consider tossing a fair six-sided die once. Define event $A = \{\text{The value on the die is an even number}\}$. What is $P(A)$?

1 / 1
point

2.

Continue with Question 1.

Define event $C = \{\text{The value on the die is 1, 2, 3, or 4}\}$. What's $P(A | C)$?

1 / 1
point

3.

Continue with Questions 1-2.

Are Event A and Event C independent?

0 / 1
point

4.

Given the following statistics, what is the probability that an over 50 woman has cancer if she has a positive mammogram result? (Round your answer to two decimal places.)

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- One percent of women over 50 have breast cancer.
- Ninety percent of women over 50 who have breast cancer test positive on mammograms.
- Eight percent of women over 50 will have false positives. (False positive = non-cancer women have a positive mammogram result.)



1 / 1
point

5.

The off-diagonal elements in a variance-covariance matrix contain:



0 / 1
point

6.

What is the probability that a standard normal random variable is between -0.4 and 1.4? (Round your answer to three decimal places)



1 / 1
point

7.

In which of the following situations is the Central Limit Theorem *not* applicable?



0 / 1
point

8.

Let A denote a matrix $\begin{pmatrix} 1 & 2 & 0 \\ 3 & 1 & 2 \\ 1 & 2 & 0 \end{pmatrix}$.

What is the trace of $A \cdot A$?



1 / 1
point

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Consider two vectors, $u = \begin{pmatrix} 1 \\ 0 \\ 2 \end{pmatrix}$ and $v = \begin{pmatrix} 0 \\ 2 \\ 0 \end{pmatrix}$.

What is the absolute value of the sine of the angle between the two vectors?



1 / 1
point

10.

Consider a function: $f(x) = (1 - x)^2$.

What is the derivative of f evaluated at $x = 0.5$. (Round your answer to the first decimal place.)



0 / 1
point

11.

Let A be a matrix $\begin{pmatrix} 4 & 3 \\ 6 & 9 \end{pmatrix}$.

What is the $(2, 2)$ -th entry of the inverse of A ? (Round your answer to the first decimal place.)



1 / 1
point

12.

Which of the following are classification problems? Select all that apply.



0 / 1
point

13.

The table below provides a training data set containing six observations, three predictors, and one qualitative response variable.

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| Obs. | X_1 | X_2 | X_3 | Y |
|------|-------|-------|-------|-------|
| 1 | 1 | 2 | 1 | Sunny |
| 2 | 1 | 0 | 0 | Rainy |
| 3 | 3 | 1 | 0 | Rainy |
| 4 | 0 | 2 | 3 | Rainy |
| 5 | -2 | 0 | 1 | Sunny |
| 6 | 1 | 0 | 1 | Sunny |

Suppose we wish to use this data set to make a prediction for Y when $X_1 = X_2 = X_3 = 0$ using K-nearest neighbors.



1 / 1
point

14.

Which of the following problems are best addressed using a supervised learning algorithm? Select all that apply.

