QF624-2025-W5

Number of participants: 30

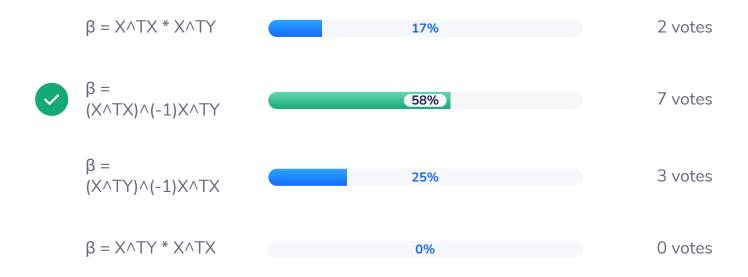**1.** **Which option is FALSE about the linear regression model? f(x)=ax+b**

13 correct answers
out of 14 respondents

x is the input variable	0%	0 votes
b is the intercept with y-axis	0%	0 votes
a is the gradient of the fitted line	7%	1 vote
✅ a is the intercept with y-axis	93%	13 votes

2. Which of the following represents the closed-form solution for the coefficients in a linear regression model?
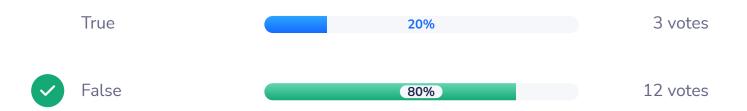
7 correct answers out of 12 respondents

$\beta = X^TX * X^TY$ 17%   2 votes

✓ $\beta = (X^TX)^{-1}X^TY$ 58%   7 votes

$\beta = (X^TY)^{-1}X^TX$ 25%   3 votes

$\beta = X^TY * X^TX$ 0%   0 votes

3. Which option is FALSE about Multiple Linear Regression (MLR) and R2?

11 correct answers out of 16 respondents

MLR allows Ceteris paribus analysis: 1 factor bumped; others stay constant

0%

0 votes

✓ If R2 gets higher, the model definitely becomes a better fit of the dataset

69%

11 votes

As we include more input variables, R2 usually increases

25%

4 votes

MLR assumes that no input variable is constant

6%

1 vote

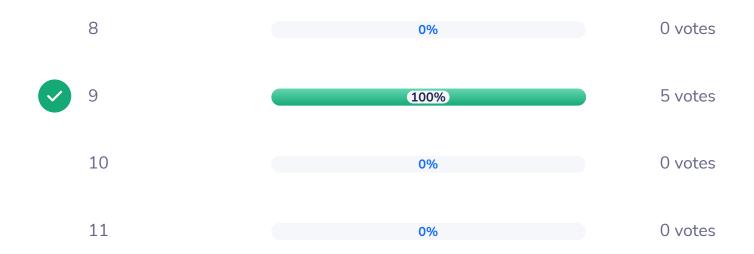4. **A positive coefficient for an input variable in MLR implies that y and f(x) are positively correlated.**

12 correct answers
out of 15 respondents

True

20%

3 votes

✓ False

80%

12 votes

5. **If a categorical variable has 10 values, how many dummy variables shall be created in MLR?**

5 correct answers
out of 5 respondents

8   0%   0 votes

✓ 9   100%   5 votes

10   0%   0 votes

11   0%   0 votes

6. **Which of the following statements best describes the purpose of including an interaction term in a Multiple Linear Regression (MLR) model?**

9 correct answers
out of 12 respondents

To account for non-linear relationships between the input variables.

0%

0 votes

To capture the independent effect of an input variable on the output variable.

8%

1 vote

To model the combined effect of two or more input variables on the output variable.

75%

9 votes

To adjust for multicollinearity between input variables.

17%

2 votes