# Response to Multiple Choice Question

## Question: When the correlation coefficient, r, is close to one:

The answer is \*\*(B) there is a strong linear relationship between the two variables\*\*.

## Explanation:

The correlation coefficient (r) measures the strength and direction of a linear relationship between two variables. It ranges from -1 to +1, with values near these extremes indicating strong linear relationships.

When r approaches +1, this indicates that:

- There is a strong positive linear relationship between the variables

- The data points closely follow a straight line with positive slope

- As one variable increases, the other reliably increases in a proportional manner

Option (A) is incorrect because r ≈ 1 specifically indicates a strong relationship, not an absence of relationship (which would be indicated by r ≈ 0).

Option (C) is incorrect because r ≈ 1 gives us definitive information about the relationship - namely, that it is strong and linear.

Option (D) is incorrect because there is no necessary connection between the correlation coefficient and the actual slope of the regression line. The correlation coefficient measures the strength of the linear relationship, while the slope depends on the scales of the variables and their relative variability. A perfect correlation (r = 1) can occur with slopes of any positive value, not just slopes near 1.