TRUE FALSE

If consecutive y-values in a table have a constant difference for equally spaced x-values, the relationship must be linear.

If consecutive y-values in a table have a constant difference for equally spaced x-values, the relationship must be linear.

True. A constant difference in y-values for equally spaced x-values indicates a constant rate of change, which defines a linear relationship. The graph will be a straight line.

TRUE FALSE

The x-values in a table must be equally spaced to determine if a graph is linear.

The x-values in a table must be equally spaced to determine if a graph is linear.

False. Uneven x-spacing is acceptable as long as the slope between all point pairs is constant. Linearity depends on consistent rate of change, not x-value spacing.

TRUE FALSE

The y-intercept can always be found in the table by identifying the y-value when $x = 0$.

The y-intercept can always be found in the table by identifying the y-value when $x = 0$.

True. By definition, the y-intercept occurs at $x = 0$. If the table includes this x-value, its corresponding y-value is the intercept.

TRUE FALSE

A straight line graph must pass through the origin (0,0) if the y-intercept is zero.

A straight line graph must pass through the origin (0,0) if the y-intercept is zero.

False. While a y-intercept of zero means the line passes through (0,0), this is not required for linearity. Lines with non-zero intercepts do not pass through the origin.

TRUE FALSE

The slope of a line can be calculated using any two distinct points from its table of values.

The slope of a line can be calculated using any two distinct points from its table of values.

True. Slope is defined as $(y_2 - y_1)/(x_2 - x_1)$ and remains constant for all point pairs in a linear relationship.

TRUE FALSE

If a table shows y decreasing as x increases, the slope must be negative.

If a table shows y decreasing as x increases, the slope must be negative.

True. A negative slope indicates an inverse relationship where y decreases as x increases, consistent with the table's behavior.

TRUE FALSE

Plotting points in the exact order listed in the table is necessary to draw a straight line graph.

Plotting points in the exact order listed in the table is necessary to draw a straight line graph.

False. The order of plotting does not affect the line. Only the positions matter, and the line connects all points regardless of sequence.

TRUE FALSE

A table with only two entries will always produce a straight line graph.

A table with only two entries will always produce a straight line graph.

True. Two distinct points determine a unique straight line, as there is only one possible linear path between them.

TRUE FALSE

The graph of a linear equation must pass through at least three quadrants.

The graph of a linear equation must pass through at least three quadrants.

False. Horizontal lines (e.g., $y = 2$) occupy only two quadrants (I and II), while lines like $y = x$ in quadrant I may not cross others if restricted.

TRUE FALSE

If the first differences in y-values are constant for consecutive x-values, the relationship is linear.

If the first differences in y-values are constant for consecutive x-values, the relationship is linear.

True. Constant first differences imply a uniform rate of change, confirming linearity when x-values are equally spaced.

TRUE FALSE

The point where y = 0 in a table gives the y-intercept.

The point where $y = 0$ in a table gives the y-intercept.

False. $y = 0$ gives the x-intercept. The y-intercept occurs when $x = 0$, not $y = 0$.

TRUE FALSE

A straight line can have multiple y-intercepts.

A straight line can have multiple y-intercepts.

False. A straight line crosses the y-axis exactly once, defining a single y-intercept. Multiple intercepts would violate the definition of a line.

TRUE FALSE

For a linear graph, the change in y is always proportional to the change in x.

For a linear graph, the change in y is always proportional to the change in x.

True. This proportionality defines linearity, with the slope (m) as the constant of proportionality: $\Delta y = m \cdot \Delta x$.

TRUE FALSE

If a table includes (0,0), the graph must pass through the origin.

If a table includes (0,0), the graph must pass through the origin.

True. The point (0,0) lies on the graph, meaning the line passes through the origin. This is independent of the y-intercept value.

TRUE FALSE

A straight line graph with a positive slope always passes through Quadrant I.

A straight line graph with a positive slope always passes through Quadrant I.

False. A line like $y = -2x + 1$ has a positive slope ($m = -2$? Wait, no. Correction: A line with positive slope and negative y-intercept (e.g., $y = 2x - 3$) enters Quadrant IV first and may miss Quadrant I for small x. But eventually, for large positive x, it will enter Quadrant I. Actually, all non-horizontal lines with positive slope eventually enter Quadrant I. However, a line like $y = 2x - 3$ starts in Quadrant III (for $x<0$) and goes to Quadrant I, so it does pass

TRUE FALSE

The slope of a vertical line can be determined from a table using two points.

(Quadrant II). It never goes to III or IV. So it only passes through II and I. So the statement is false.

The slope of a vertical line can be determined from a table using two points.

False. Vertical lines have undefined slope. The formula $(y_2 - y_1)/(x_2 - x_1)$ involves division by zero since x-values are identical.

TRUE FALSE

When points from a table do not align perfectly, you should still draw a straight line through as many as possible.

When points from a table do not align perfectly, you should still draw a straight line through as many as possible.

False. Non-aligned points suggest non-linearity or errors. Forcing a straight line misrepresents the data; instead, check calculations or consider non-linear models.

TRUE FALSE

A constant rate of change in a table guarantees the graph is a straight line.

A constant rate of change in a table guarantees the graph is a straight line.

True. A constant rate of change (constant slope) is the defining characteristic of linear relationships, resulting in a straight-line graph.

TRUE FALSE

The x-intercept can be found in the table by locating where $x = 0$.

The x-intercept can be found in the table by locating where x = 0.

False. x = 0 gives the y-intercept. The x-intercept occurs where y = 0, so it requires finding the x-value when y = 0 in the table.

TRUE FALSE

For a linear graph, any three points from the table must be collinear.

For a linear graph, any three points from the table must be collinear.

True. In a linear relationship, all points lie on the same straight line, so any subset of three points will always be collinear.