# Response to Multiple Choice Question

The correct answer is (C) the expected y value when x is zero.

In a simple linear regression model of the form $y = \beta\_0 + \beta\_1x + \varepsilon$, the intercept term $\beta\_0$ represents the expected value of the dependent variable $y$ when the independent variable $x$ equals zero.

To explain why the other options are incorrect:

(A) The strength of the relationship between x and y is typically measured by the correlation coefficient (r) or the coefficient of determination (R²), not by the intercept.

(B) This reverses the relationship. The intercept tells us about y when x is zero, not x when y is zero.

(D) While technically the intercept is a population parameter that we estimate from data (we estimate $\hat{\beta\_0}$ as an approximation of the true $\beta\_0$), this answer is too vague because all regression coefficients are population parameters. This option doesn't specify what the intercept actually represents conceptually.

The intercept can be interpreted as the "baseline" value of y when x has no effect (because x = 0). Geometrically, it's the point where the regression line crosses the y-axis.