# Find the Slope From Two Points on the ISEE

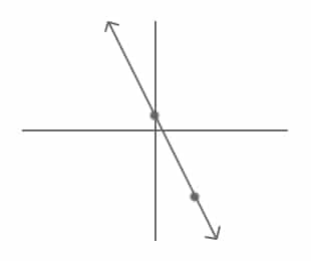
## Middle and Upper Level

LESSON GOAL: Be able to find the slope of a line when given two points.

***ISEE Question:*** What is the slope of the line that includes the points (0, 2) and (2, -5)?

A) -4
B) -7/2
C) -1
D) 3

***Quick Strategy:*** Make a rough sketch of the two points on the coordinate plane to see the direction and general steepness of the line. In the sketch below, I can tell that the slope of the line is negative and steeper than -1, so I can eliminate C and D. Don't take time to do an exact drawing.



***Exact Solution:*** Use the slope formula.

The formula for slope is $\frac{\text{rise}}{\text{run}}$.

This can also be defined as $\frac{\Delta \text{ in } y}{\Delta \text{ in } x}$ (the change in the y-value divided by the change in the x-value).

Another way to write this formula is $\frac{y_2 - y_1}{x_2 - x_1}$, when given two ordered pairs $(x_1, y_1)$ and $(x_2, y_2)$.

STEP 1: In order to not get mixed up, label each number in your set of ordered pairs:

| $X_1$ | $Y_1$ | $X_2$ | $Y_2$ |
|---|---|---|---|
| (0, | 2) | (2, | -5) |

***Helpful Tip:*** it doesn't matter which pair is "1" and which pair is "2," as long as you're consistent during your computation. If I reverse the order for the ordered pair above, I get

$$\frac{2 - -5}{0 - 2} = \frac{7}{-3 - 2} = \frac{-7}{2}$$

STEP 2: Plug your numbers into the slope formula, and then simplify.

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{-5 - 2}{2 - 0} = \frac{-7}{2}$$

***Helpful Tip:*** In most cases, the slope will be expressed as an improper fraction in simplest form. Glance at the answer choices before you take the additional step of converting slope into a mixed number or decimal.

If you have time, double check your calculations against your rough sketch to make sure your answer makes sense. You're done!