Notice in *Example 1*, that switching the order of the points in the slope formula has no bearing on the end result.

$$\begin{aligned} m &= \frac{\text{rise}}{\text{run}} \\ &= \frac{y_1 - y_2}{x_1 - x_2} \\ &= \frac{2 - 8}{3 - 6} \\ &= \frac{-6}{-3} \\ &= 2 \end{aligned}$$

You can think of this line as having a positive rise and a positive run when travelling from point P_1 to point P_2, or as having a negative rise and a negative run travelling from point P_2 to point P_1.

When using the slope formula, be sure that x_1 and y_1 come from one point and that x_2 and y_2 come from the second point.

$$\frac{y_2 - y_1}{x_2 - x_1}$$

x_2 and y_2 represent one point

x_1 and y_1 represent another

Check Up

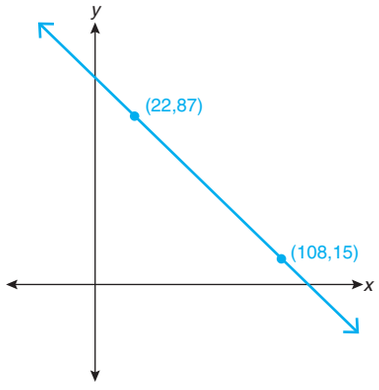
1. Determine the slope of a line that passes through the points $(22, 87)$ and $(108, 15)$.

2. Sketch a line with a slope of 0. Then, sketch a line with an undefined slope.

☑ Compare your answers.

1. Determine the slope of a line that passes through the points $(22, 87)$ and $(108, 15)$.

   It may help to begin by sketching a diagram.



   From the diagram, you know the slope will be negative.

$$m = \frac{\text{rise}}{\text{run}}$$
$$= \frac{y_2 - y_1}{x_2 - x_1}$$
$$= \frac{15 - 87}{108 - 22}$$
$$= \frac{-72}{86}$$
$$= -\frac{36}{43}$$

2. Sketch a line with a slope of 0. Then, sketch a line with an undefined slope.