

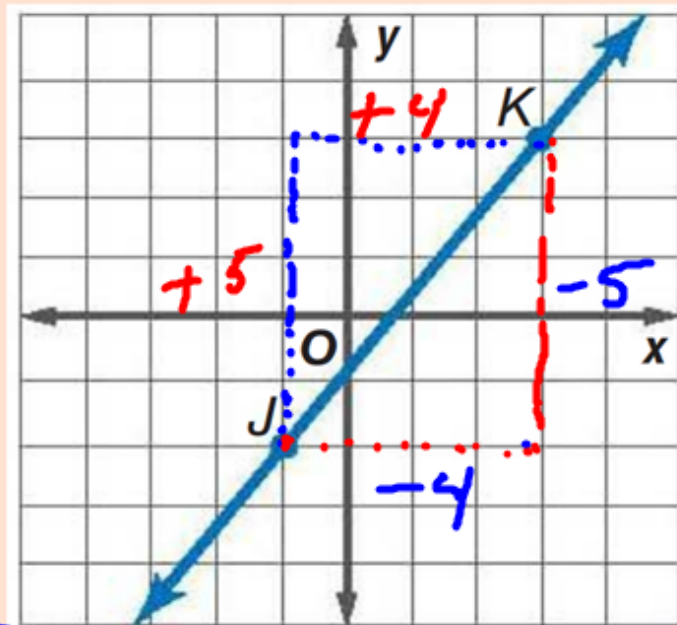
Slopes of Lines

You will find slope and use it to identify parallel and perpendicular lines.



Slope

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



Another Way to Find

$\frac{\text{Rise}}{\text{Run}}$

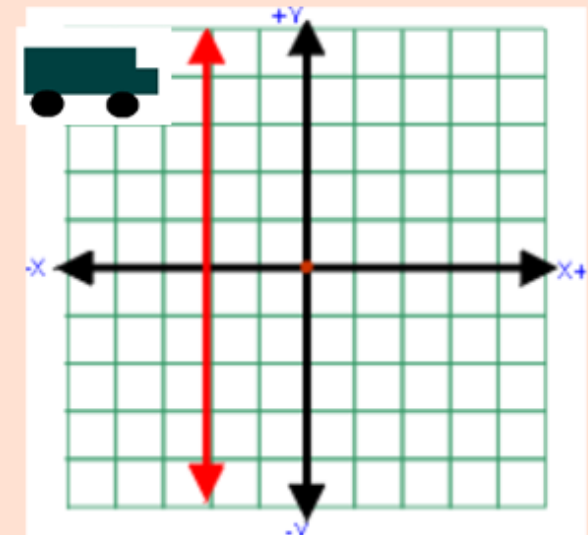
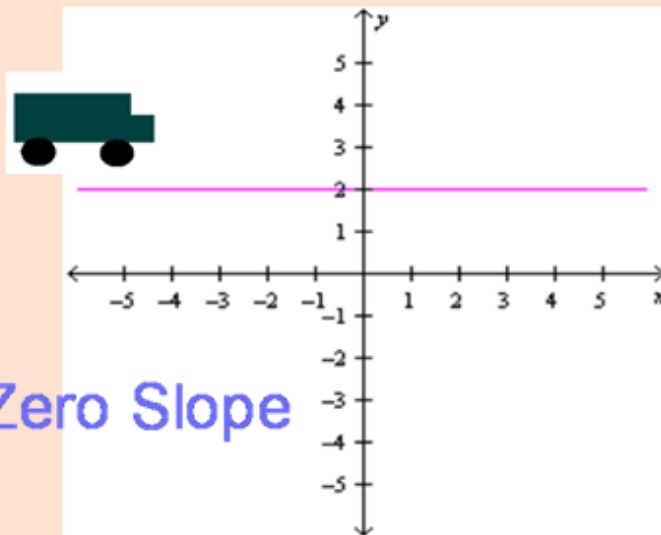
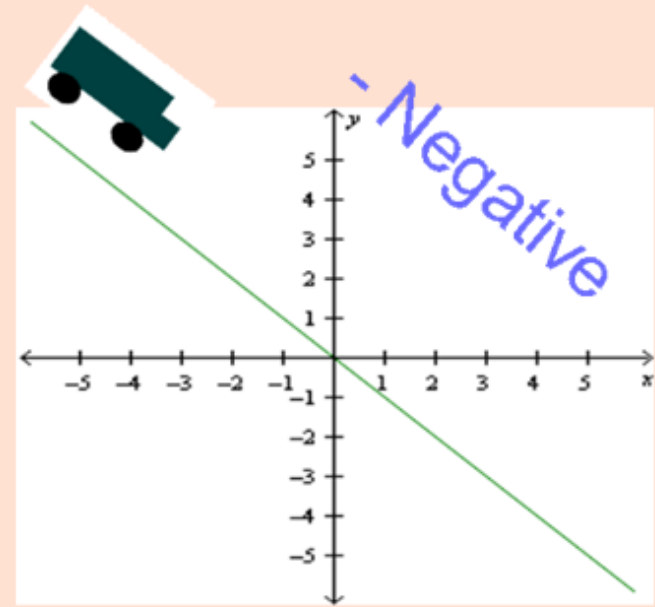
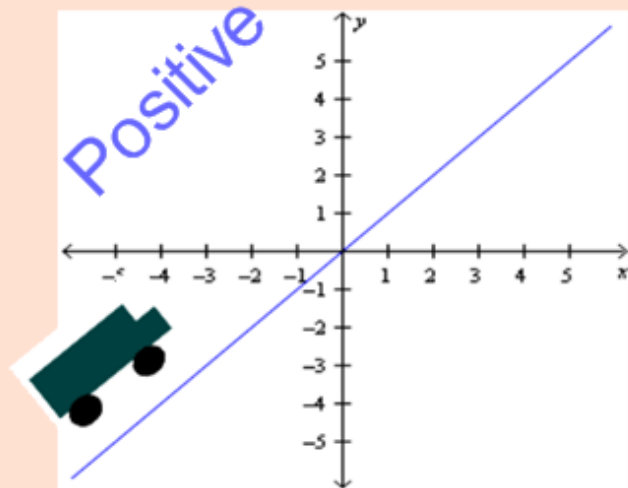
$\frac{5}{4} = \frac{-5}{-4} = \frac{5}{4}$

Example $J(x_1, y_1) = (-1, -2)$ $K(x_2, y_2) = (3, 3)$

$\frac{3 - (-2)}{3 - (-1)} = \frac{5}{4}$

Same answer
Found it 3 ways

Types of Slopes



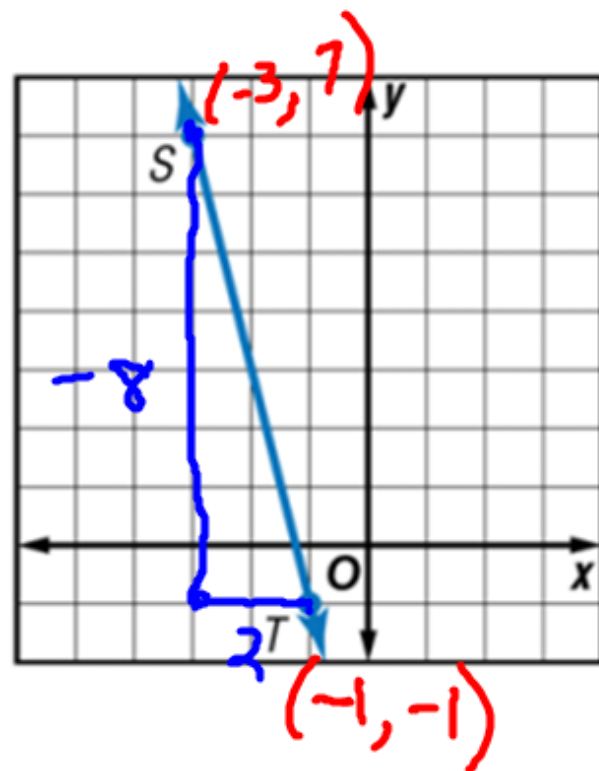
EXAMPLE 1**Find the Slope of a Line**

A. Find the slope of the line.

$$\frac{7 - (-1)}{-3 - (-1)} = \frac{8}{-2} = -4$$

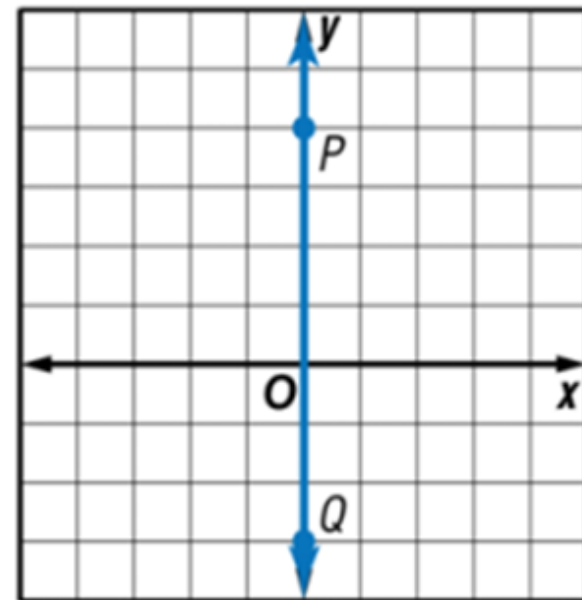
$$\frac{-8}{2} = -4$$

$$\frac{-1 - 7}{-1 - (-3)} = \frac{-8}{2} = -4$$



EXAMPLE 1**Find the Slope of a Line**

B. Find the slope of the line.



undefined

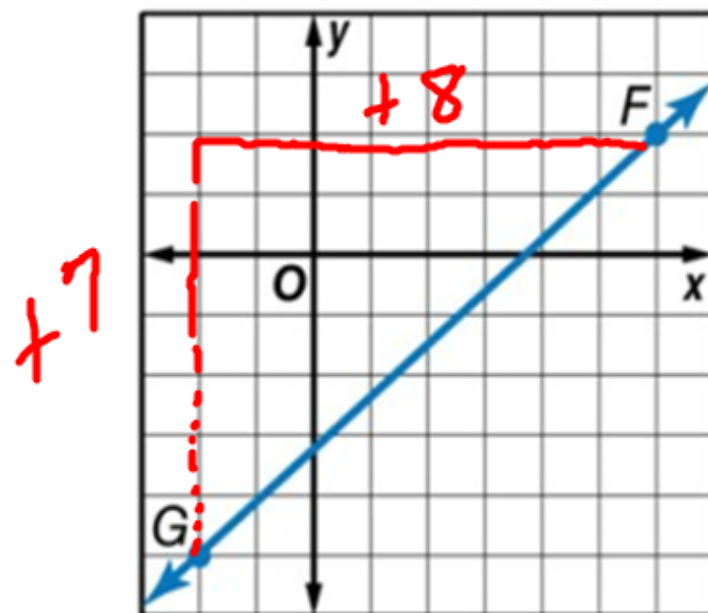
EXAMPLE 1**Find the Slope of a Line**

C. Find the slope of the line.

$$F(6, 2) \quad G(-2, -5)$$

Formula

$$\frac{-5 - 2}{-2 - 6} = \frac{-7}{-8} = \frac{7}{8}$$

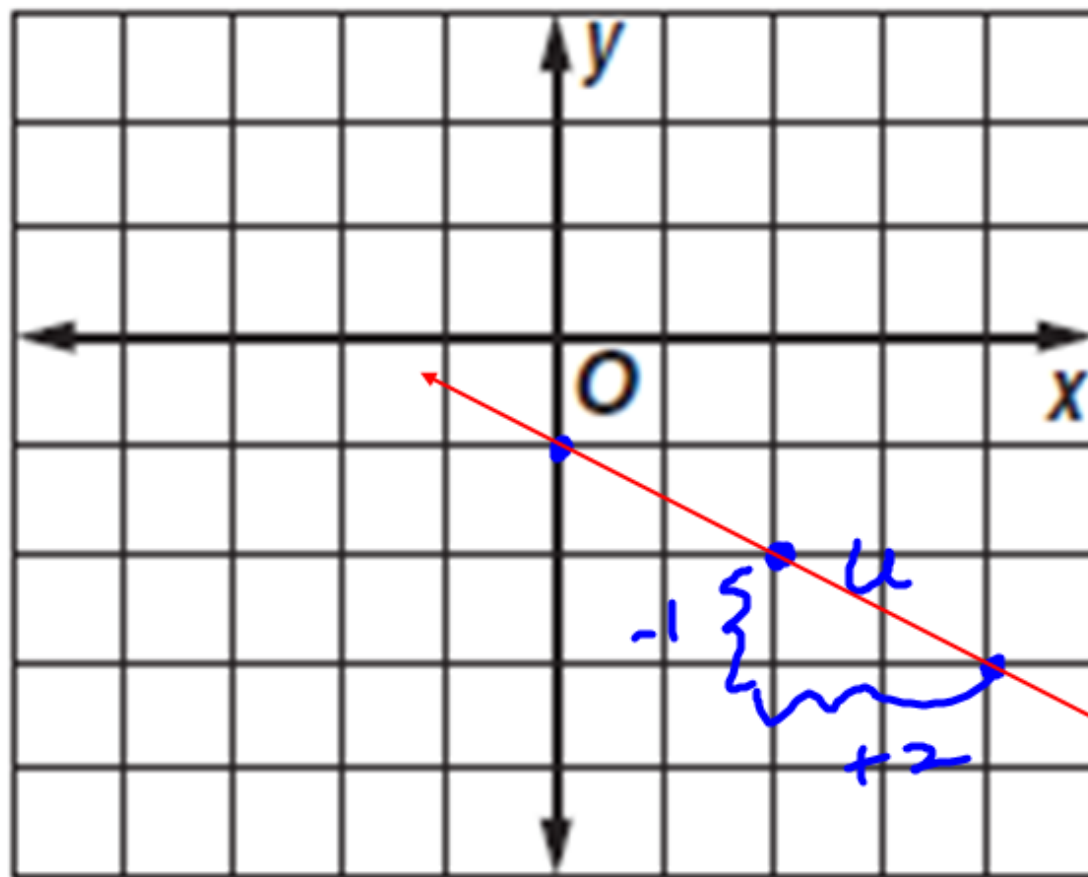


or

$$\frac{\text{Rise}}{\text{Run}} = \frac{7}{8}$$

Graph the line that satisfies each condition.

slope = $-\frac{1}{2}$, contains $U(2, -2)$

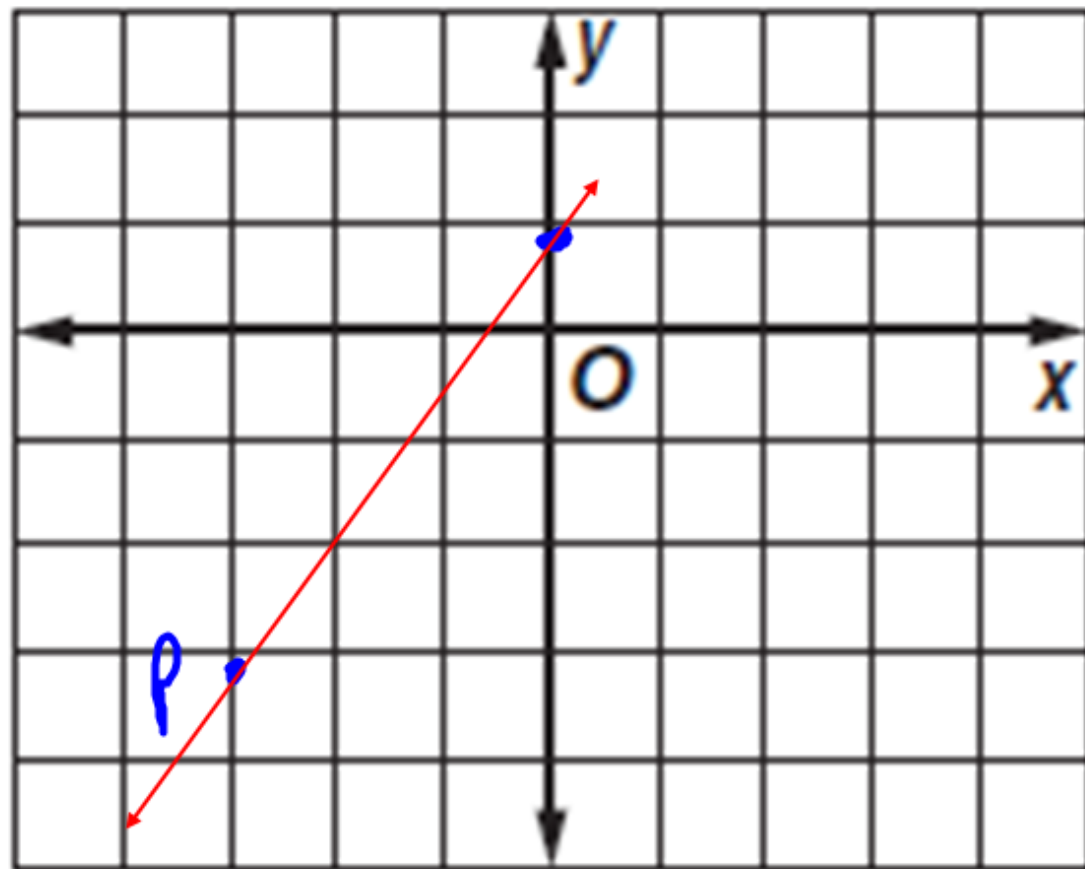


① Graph the point

② $\frac{\text{Rise}}{\text{Run}} = \frac{-1}{2}$ or $\frac{1}{-2}$

Graph the line that satisfies each condition.

slope = $\frac{4}{3}$, contains $P(-3, -3)$



1st

Parallel Lines \longleftrightarrow same slope

Perpendicular Lines \rightarrow opposite reciprocal slopes

$$\frac{2}{3} \quad -\frac{3}{2}$$

$$-\frac{4}{1} \quad \frac{1}{4}$$

Examples:

The slope of a line is -3 ...

What is slope of line parallel to it? -3
perpendicular? $\frac{1}{3}$

The slope of a line is $\frac{2}{7}$...

What is slope of line parallel to it? $\frac{2}{7}$
perpendicular? $-\frac{7}{2}$

EXAMPLE 3**Determine Line Relationships**

Determine whether \overline{FG} and \overline{HJ} are parallel, perpendicular, or neither for $F(1, -3)$, $G(-2, -1)$, $H(5, 0)$, and $J(6, 3)$. Graph each line to verify your answer.

$$\begin{array}{c} \overleftrightarrow{FG} \text{ slope} \\ F(1, -3) \quad G(-2, -1) \end{array}$$

$$\begin{array}{c} \overleftrightarrow{HJ} \text{ slope} \\ H(5, 0) \quad J(6, 3) \end{array}$$

$$\text{slope} = -\frac{2}{3}$$

$$\frac{3}{1}$$

Neither

