Bell Ringer

Find the slope of the line that passes through the points.

1. A (-2, 5) B (0 , -3)

2. M (3, -4) N (3, 1)

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1. A (-2, 5) B (0 , -3)

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

$$= \frac{8}{-2} = \frac{4}{-1}$$

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

2. M (3, -4) N (3, 1)

$$m = \frac{-4 - 1}{3 - 3}$$

$$\frac{-5}{0}$$

undefined

REVIEW

Slope (m)

In a linear function/equation, the rate of change is called slope (m).

Slope is a ratio of the $\frac{\text{vertical change}}{\text{horizontal change}}$ or $\frac{\text{rise (fall)}}{\text{run}}$

Slope (m) = $\frac{\text{change in y-coordinates}}{\text{change in x-coordinates}}$ ← how to calculate slope

4 Types of Slope

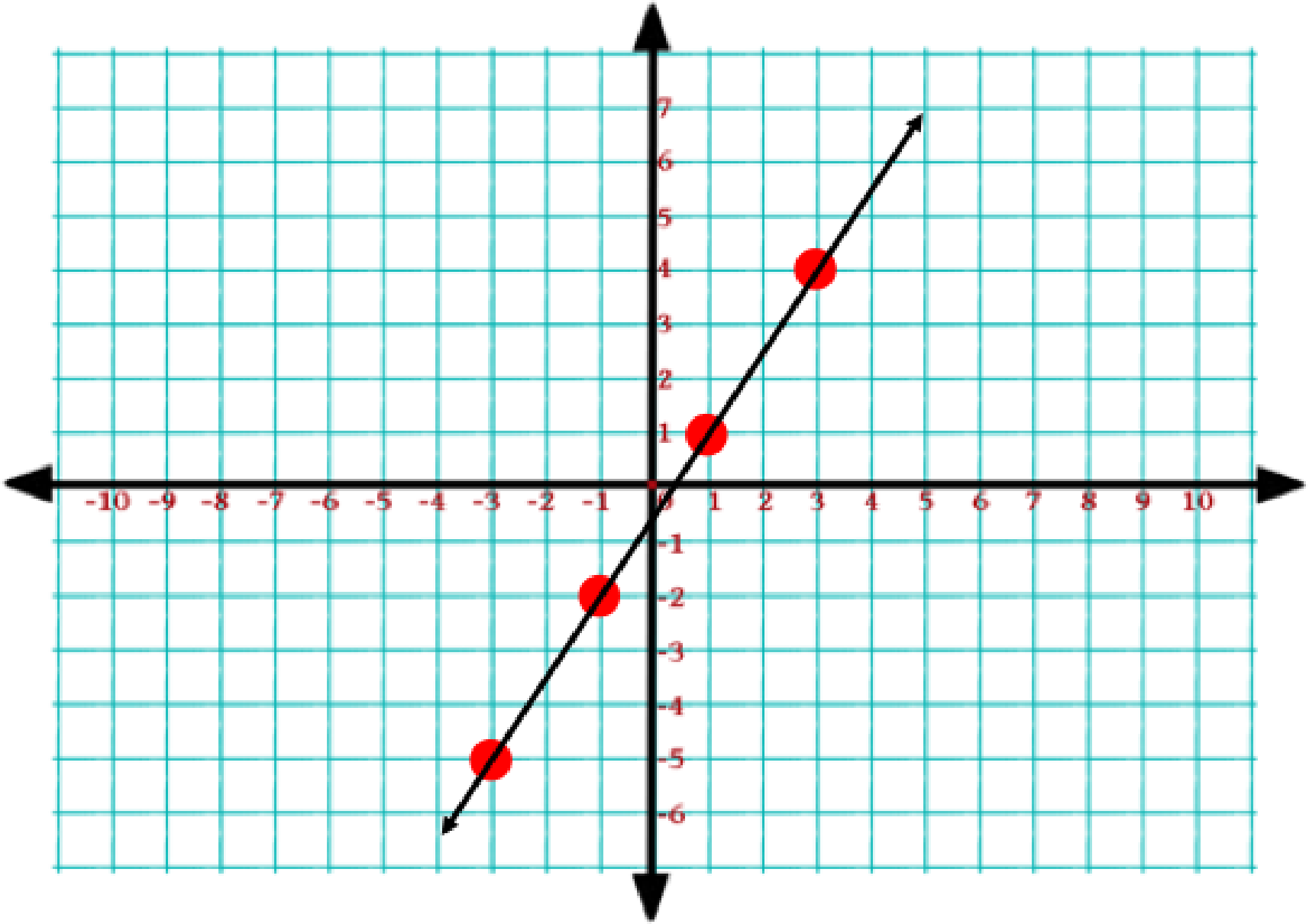
1) Positive - line rises

2) Negative - line falls

3) Zero - horizontal line

4) Undefined - vertical line

1. Find the slope of the line.



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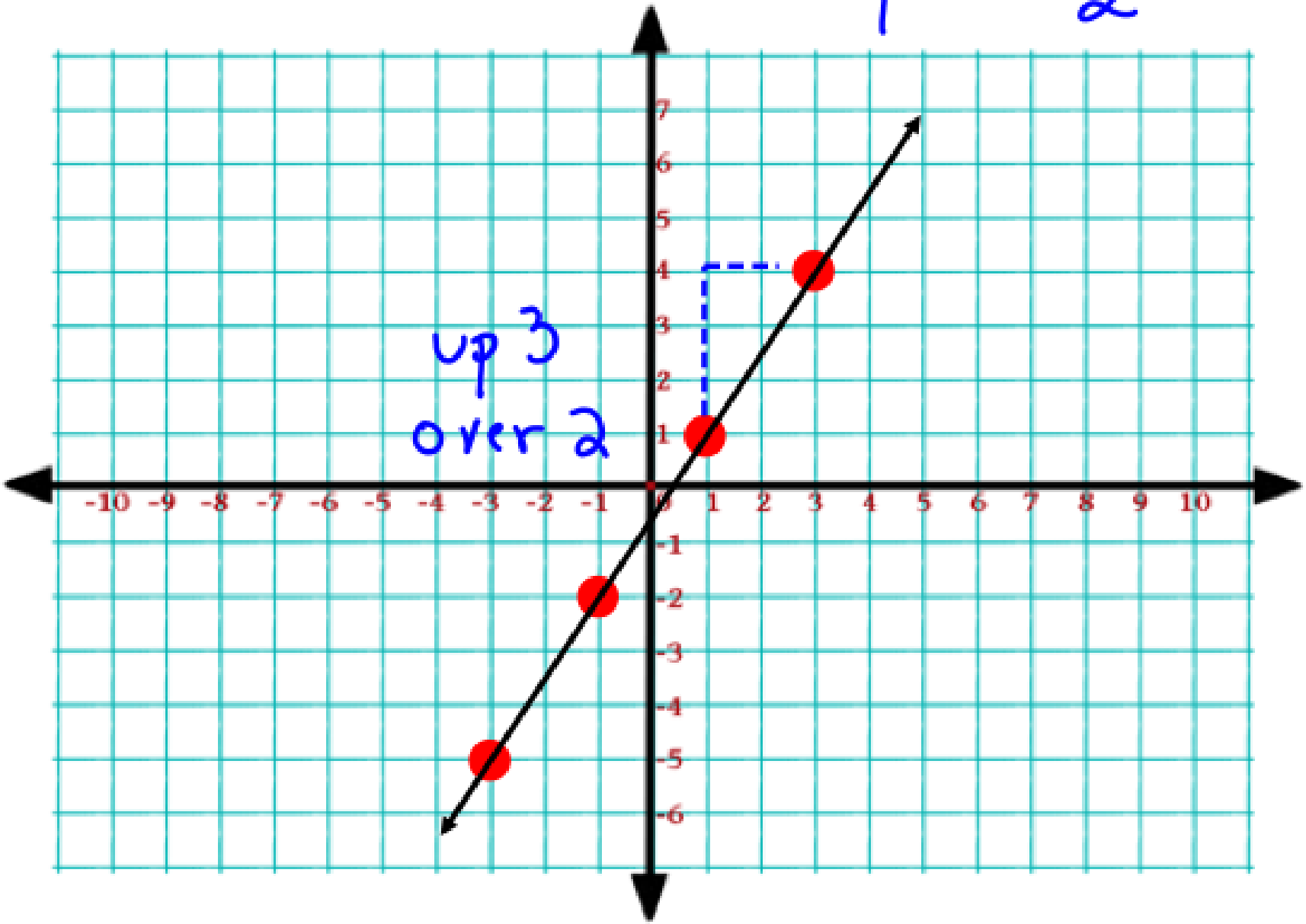
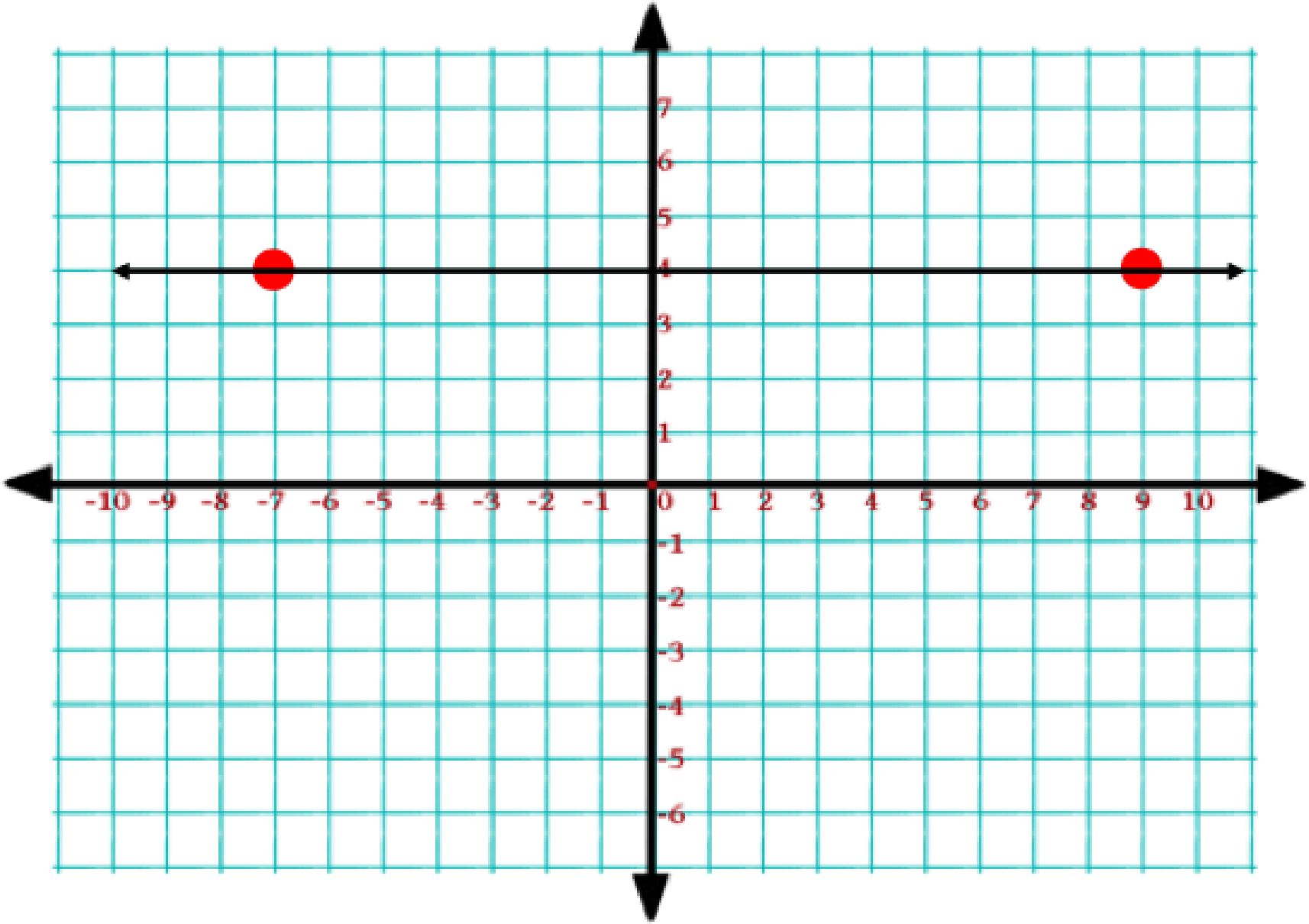
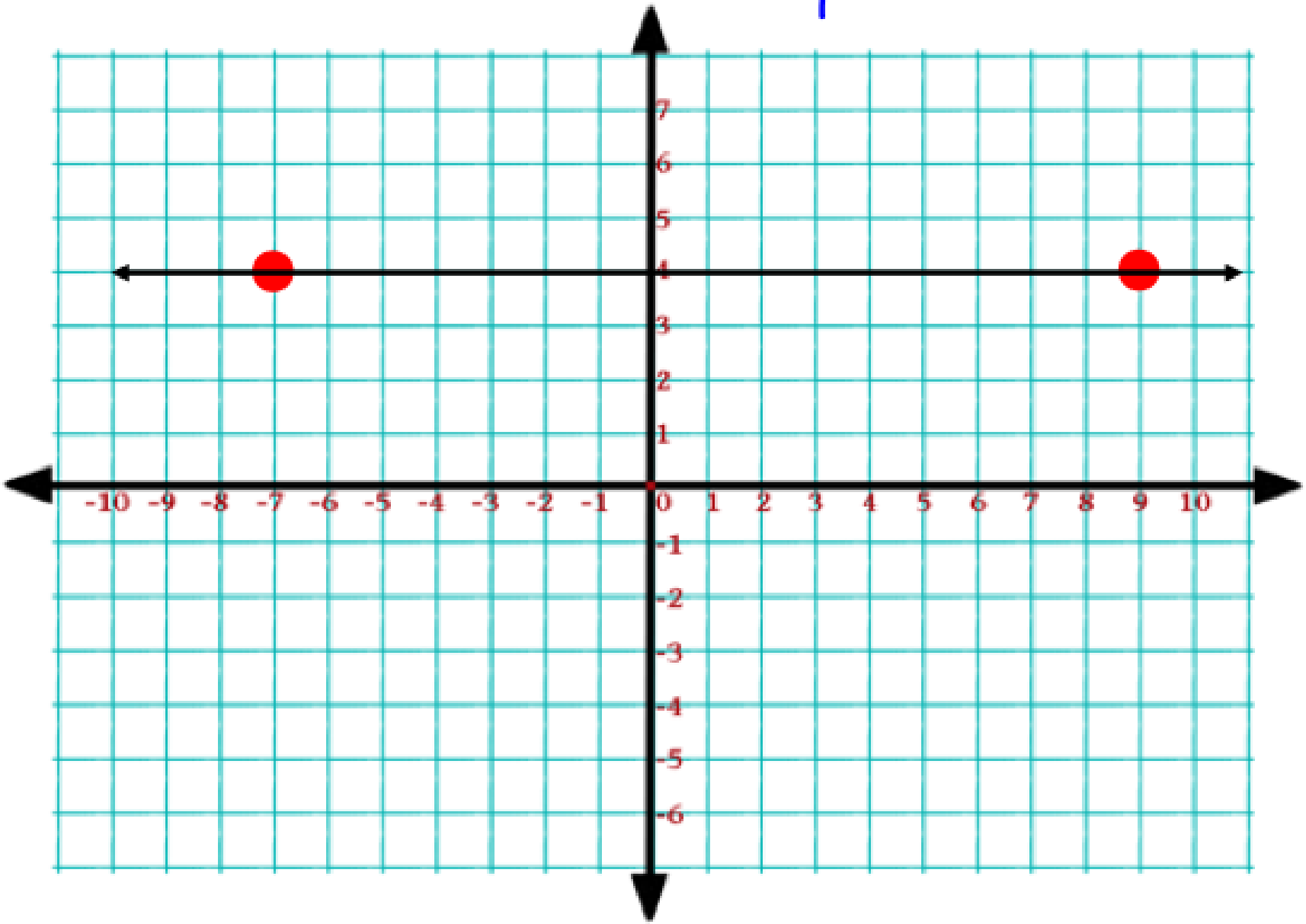


2. Find the slope of the line.



2. Find the slope of the line.

slope = 0



3. Applications of Slope in Real-Life Situations

The *grade* of a road is its **slope** written as a **percent**. A warning sign must be posted if a section of road has a grade of at least 8% and is more than 750 feet long.

a. A road rises 63 feet over a horizontal distance of 840 feet. Should a warning sign be posted? Explain your thinking.

b. The grade of a section of road that stretches over a horizontal distance of 1000 feet is 9%. How many feet does the road rise over that distance?

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$$\text{slope} = \frac{\text{rise}}{\text{run}}$$

$$\text{slope} = \frac{63}{840} = .075 \quad 7.5\%$$

A sign is not required. The percent is less than 8%.

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b. The grade of a section of road that stretches over a horizontal distance of 1000 feet is 9%. How many feet does the road rise over that distance?

Two Options

$$\text{slope} = \frac{\text{rise}}{\text{run}}$$

$$\frac{9}{100} = \frac{x}{1000}$$

$$100x = 9000$$

$$x = 90\text{ ft}$$

$$.09 = \frac{x}{1000}$$

$$1000 \cdot .09 = x$$

$$90\text{ ft} = x$$