

Exploring Rate of Change (Slope)

Learning Goal:

By the end of today, I will be able to determine the slope of a linear relationship from (a) a table of values, (b) the graph of the relationship, (c) **by calculation when given two points on the line.**

The "**steepness**" of the line can also be referred to as the "**slope**" or as the "**rate of change**"(roc).

Positive slopes increase (go up) from left to right.

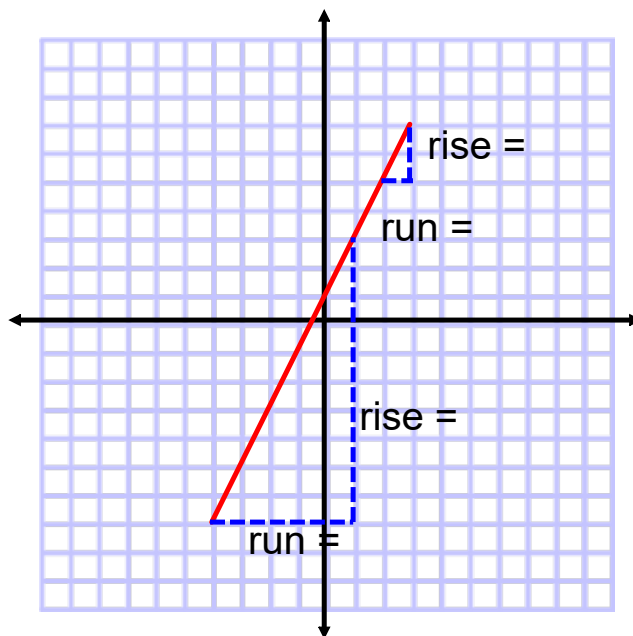
Negative slopes decrease (go down) from left to right.

The mathematical definition for the slope is as follows:

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

$$= \frac{\text{change in y values}}{\text{change in x values}}$$

$$= \frac{\Delta y}{\Delta x}$$

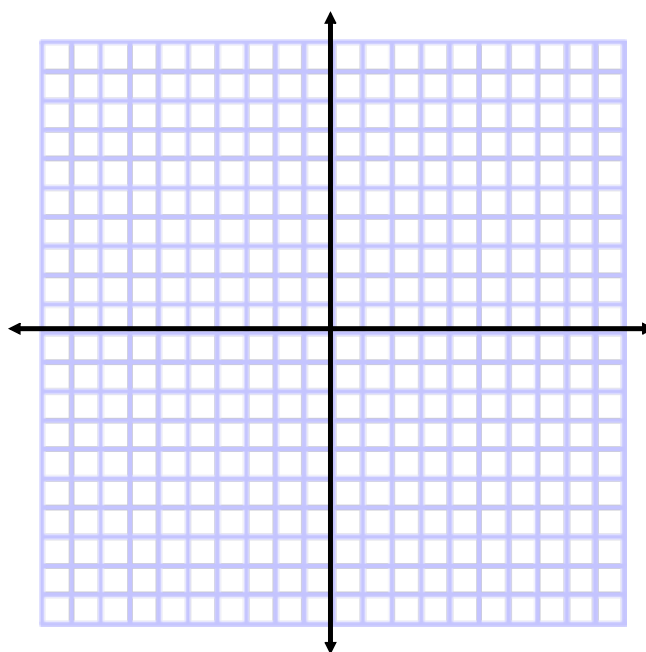


Complete the table of values for the linear relation below. Plot the graph and determine the slope and y intercept from the graph.

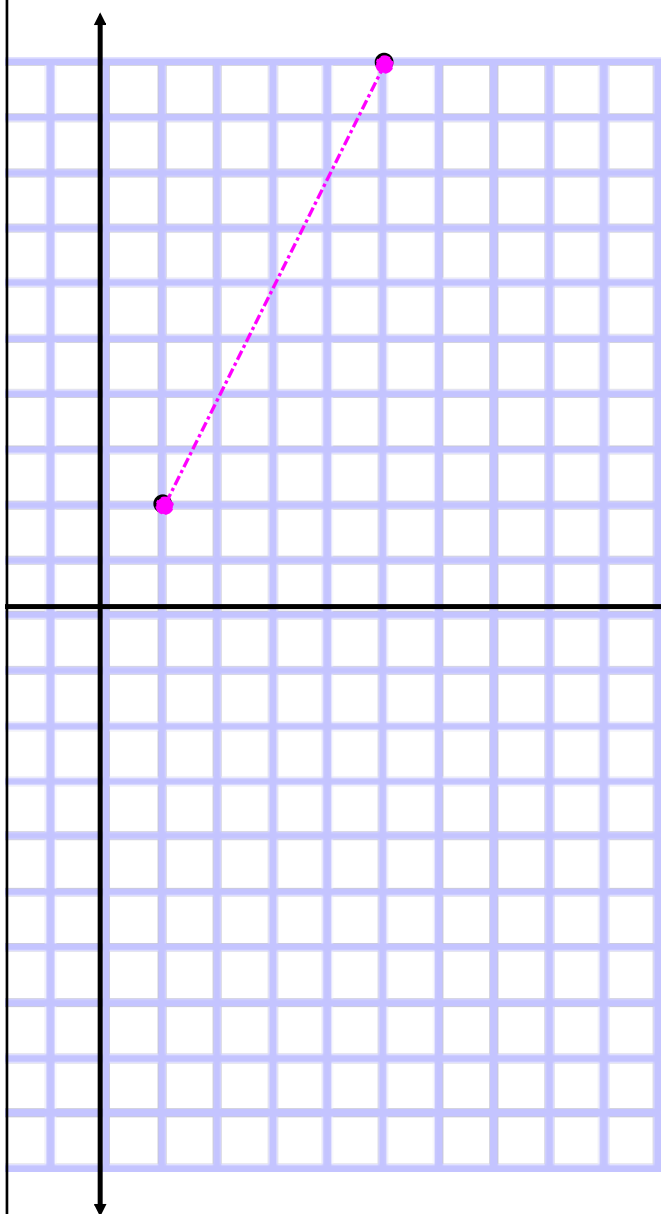
$$y = 3x - 4$$

x	y
0	
1	
2	
3	
4	

F.D.



Determine the slope of the line for the following graph:



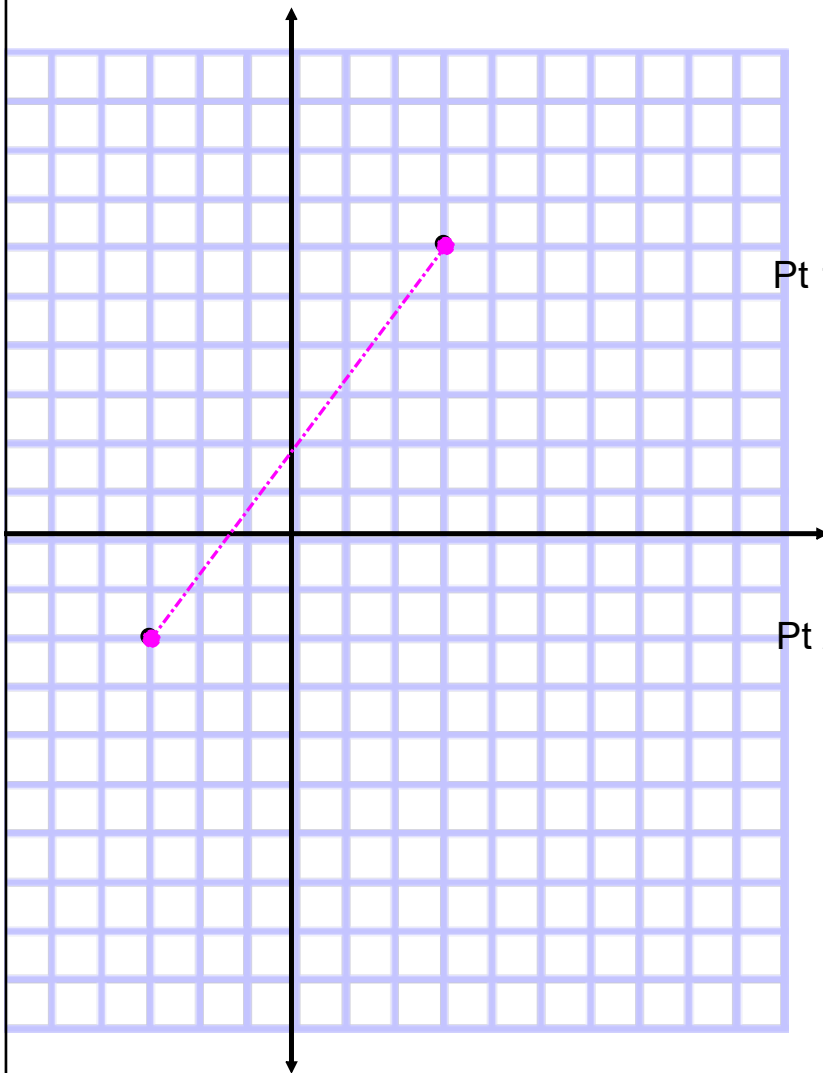
pt 1 and pt 2

A(1,2) and B(5,10)

Pt 1 values subtract Pt 2 values

Pt 2 values subtract Pt 1 values

Determine the slope of the line for the following graph:



pt 1 and pt 2
A(3,6) and B(-3,-2)

Pt 1 values subtract Pt 2 values

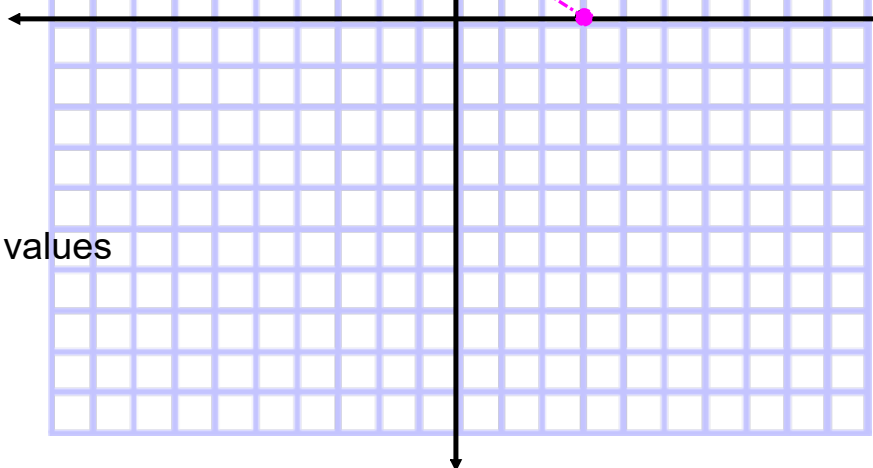
Pt 2 values subtract Pt 1 values

Determine the slope of the line for the following graph:

pt 1 and pt 2

A(3,0) and B(-6,6)

Pt 1 values subtract Pt 2 values



Pt 2 values subtract Pt 1 values

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

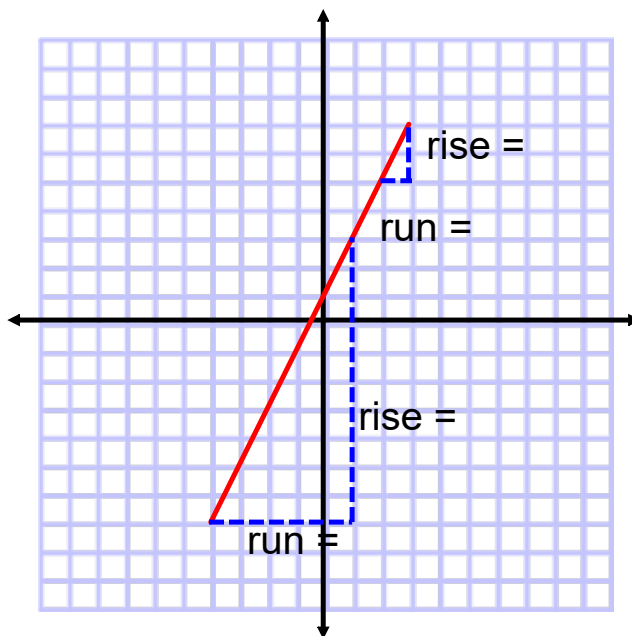
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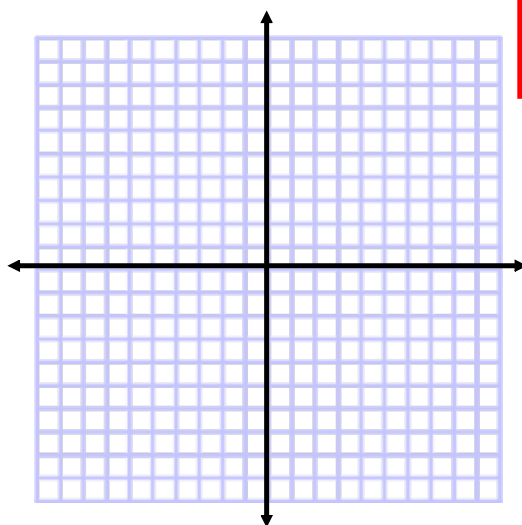
$$m = \frac{y_2 - y_1}{x_2 - x_1}$$



Determine the slopes of the line segments on the following graph:

A(-5,1) and B(3,5)

A(6,1) and B(6,-7)



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

Horizontal line has a slope of ZERO.

Vertical line has a slope that is undefined.

Find the slope between the following two points:

(a) A(1,2) and B(5,10)

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

(b) Z(-3,9) and Y(7,4)

(c) Q(-7,-1) and P(1,1)

John went for a bike ride and collected the following information from the odometer on his road bike.

Time (hr)	Dis (km)
0	0
1	10
2	20
3	30

Is this a linear relation?

What is the fastest rate that John travelled?

Consolidation Questions:

pg 278-9 #3, 12, 14

Handout