Warm Up

Grab the X and Y Intercepts wkst

Clear your desk

Everything Except...

- Notes
- Calculator
- Pencil

When you Finish... CHECK YOUR WORK

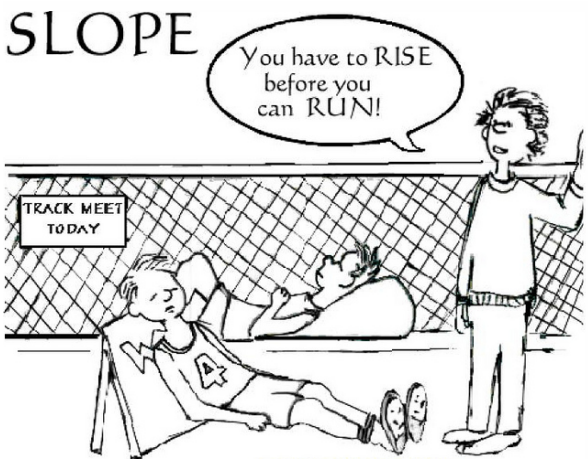
- Turn into the basket
- Work on something Quietly
  - > MISSING WORK
  - > Extra Credit Sheets
    - – Back Counter: Due Tomorrow
    - – Front Table: Due End of Trimester

4.5 The Slope of a Line

Goals:
- Find the slope of a line.

EQ:

What is the slope between (3, 1) and (-4, -8)?



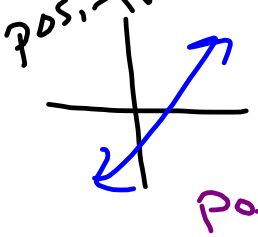
Vocabulary

Slope:

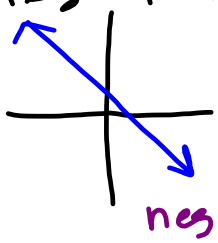
steepness of a line

$\frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$ $m = \frac{y - y}{x - x}$

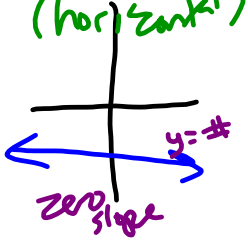
positive



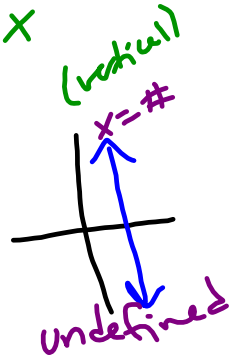
negative

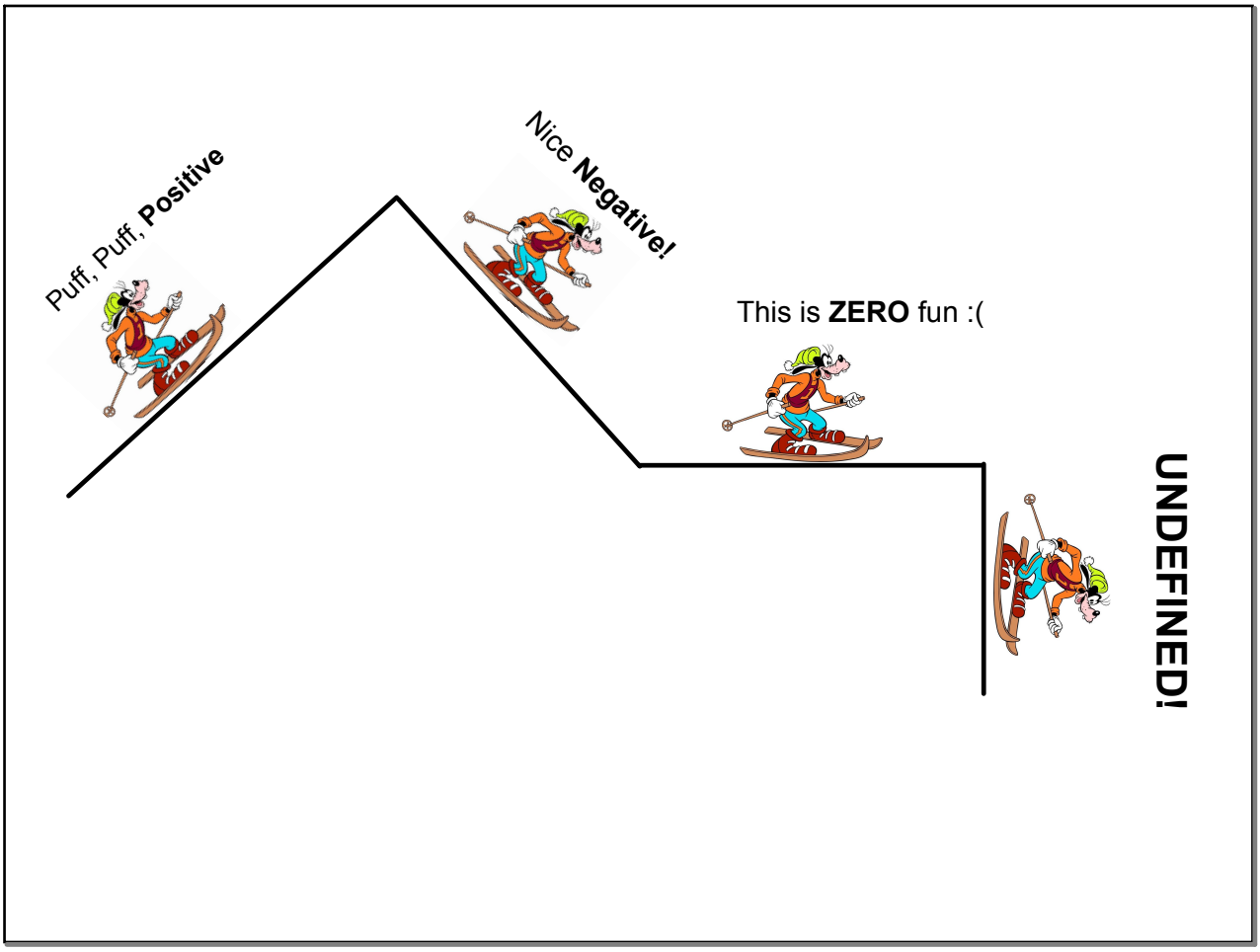


(horizontal)



(vertical)





Example 1: The Slope Ratio

Find the slope of a ramp that has vertical rise of 3 feet and a horizontal run of 18 feet. Let *m* represent the slope.

$$m = \frac{\text{rise}}{\text{run}} = \frac{3}{18}$$

$$\boxed{m = \frac{1}{6}}$$

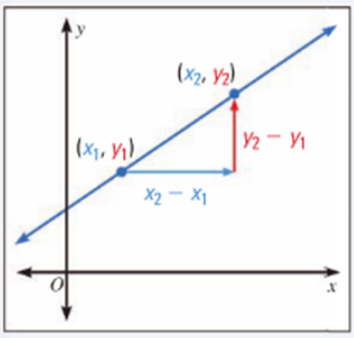
Student Help

READING ALGEBRA
In the slope formula, x_1 is read as "x sub one" and y_1 is read as "y sub one."

THE SLOPE OF A LINE

The slope m of a line that passes through the points (x_1, y_1) and (x_2, y_2) is

$$m = \frac{\text{rise}}{\text{run}} = \frac{\text{change in } y}{\text{change in } x} = \frac{y_2 - y_1}{x_2 - x_1}$$



Example 2: Positive Slope

Find the slope of the line that passes through the points (1, 2) and (-2, -3).

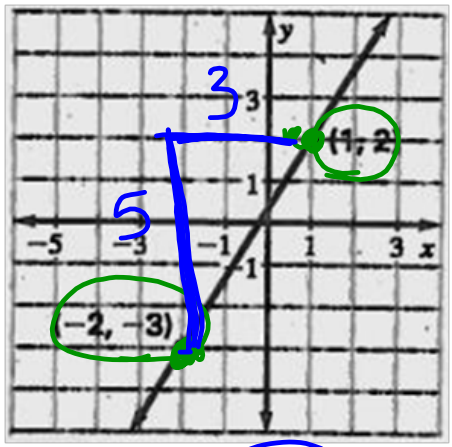
(1, 2)

$$m = \frac{y - y}{x - x}$$

$$m = \frac{-3 - 2}{-2 - 1} = \frac{-5}{-3}$$

$$m = \frac{5}{3}$$

pos.



$$\frac{-1 \cdot 5}{-1 \cdot 3}$$

$$m = \frac{5}{3}$$

Example 3: Zero Slope

Find the slope of the line passing through the points (-2, -3) and (4, -3).

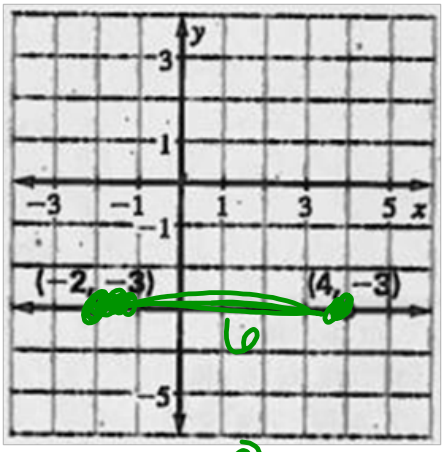
$(-2, -3)$

$$m = \frac{y - y}{x - x}$$

$$= \frac{-3 + 3}{4 + 2} = \frac{0}{6}$$

$m = 0$

zero slope



$m = \frac{0}{6}$

$m = 0$

Example 4: Undefined Slope

Find the slope of the line passing through the points (-1, -4) and (-1, -2).

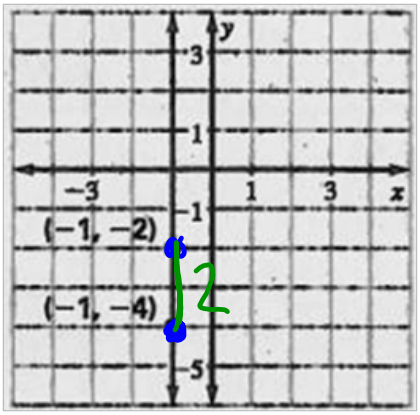
$(-1, -4)$

$(-1, -4)$
$(-1, -2)$

$$m = \frac{-4 - 12}{-1 + 1}$$

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

Undefined



$m = \frac{2}{0}$

undefined

4.5 Day 1 Homework

The Rise and the Run wkst

4.5 Day 2 Warm Ups

Find the slope between the two points.

1) (3, -8), (-2, 5)

(-2, 5)

$m = \frac{-8-5}{3-12} = \frac{-13}{5}$

$m = \frac{-13}{5}$

2) (11, 4), (11, -9)

(11, 4)

$m = \frac{-9-4}{11-11}$

$m = \frac{-13}{0}$

m = undefined

Homework Questions?

Try It

Find the slope of the line passing through the points. Then state whether the slope of the line is *positive, negative, zero,* or *undefined*.

1. (-5, 2), (7, -2)

$m = \frac{2-(-2)}{-5-7} = \frac{4}{-12}$

$m = -\frac{1}{3}$ pos.

2. (0, 0), (-9, 0)

$m = \frac{0-0}{-9-0} = \frac{0}{-9} = 0$

$m = 0$ zero slope horizontal

3. (-7, -8), (-7, 8)

$m = \frac{8-(-8)}{-7-(-7)} = \frac{16}{0}$

undefined vertical

4. (2, -4), (8, 6)

$m = \frac{-4-6}{2-8} = \frac{-10}{-6} = \frac{5}{3}$

$m = \frac{5}{3}$ pos.

Summary

EQ:

What is the slope between (3, 1) and (-4, -8)?

4.5 Homework Day 2

Kuta & More slope (wkst p.100)

(SHOW WORK on Separate Sheet)