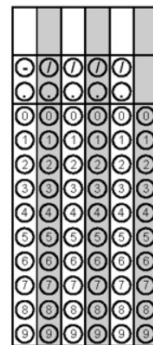


## Warm UP.

4) Divide and write your answer in standard form.

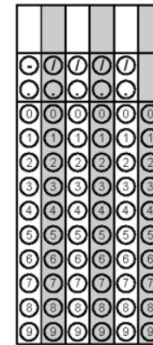
$$\frac{7.2 \times 10^{-2}}{3.6 \times 10^{-5}}$$

4)



5) Kim made soup which contains 75 total ounces of beans. The soup contains only black and red beans. There are 4 times as many ounces of black beans as red beans. How many ounces of black beans are in the soup?

5)



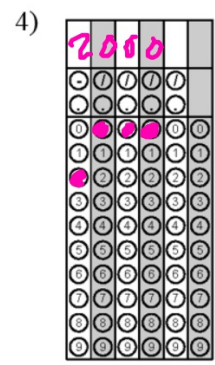
Warm UP.

4) Divide and write your answer in standard form.

$$\frac{7.2 \times 10^{-2}}{3.6 \times 10^{-5}}$$

$$\frac{7.2}{3.6} \times \frac{10^{-2}}{10^{-5}} \quad 2 \times 10^3 \quad 2,000$$

$$2 \times 10^{-2 - (-5)}$$



5) Kim made soup which contains 75 total ounces of beans. The soup contains only black and red beans. There are 4 times as many ounces of black beans as red beans. How many ounces of black beans are in the soup?

$$\begin{cases} b+r=75 \\ b=4r \end{cases}$$

$$4r+r=75$$

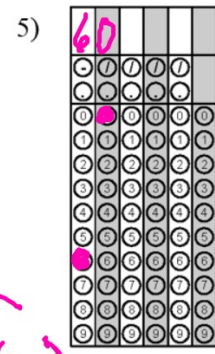
$$5r=75$$

$$r=15$$

$$b=4r$$

$$b=4(15)$$

$$b=60$$



## EOG Review

- 31 The table shows the air temperatures at different elevations.

Elevation (feet)	Temperature (°F)
0	75°
100	70°
200	67°
300	64°
400	59°
500	55°
600	50°

Which line **best** fits this set of data?

- A  $y = -\frac{1}{25}x + 75$
- B  $y = \frac{1}{25}x - 75$
- C  $y = \frac{1}{25}x + 75$
- D  $y = -\frac{1}{25}x - 75$

## EOG Review

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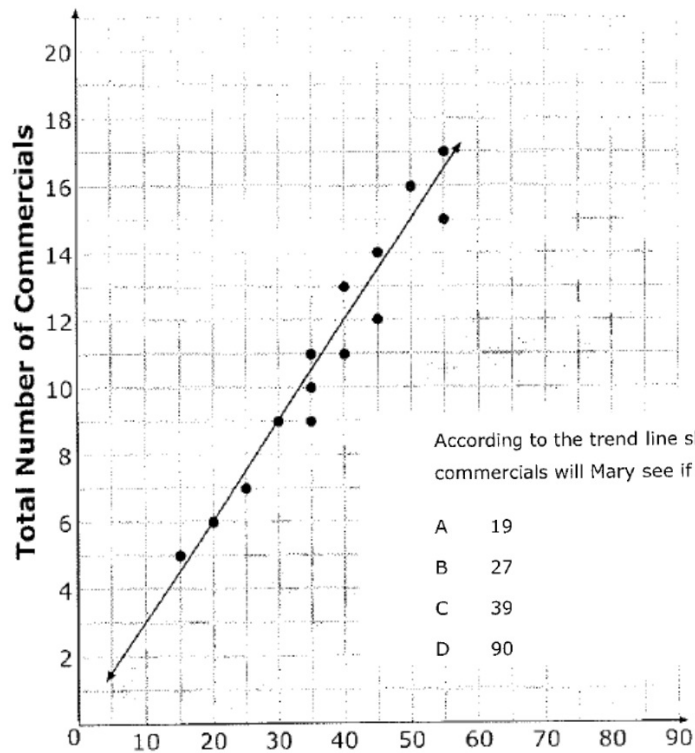
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B  $y = \frac{1}{25}x - 75$

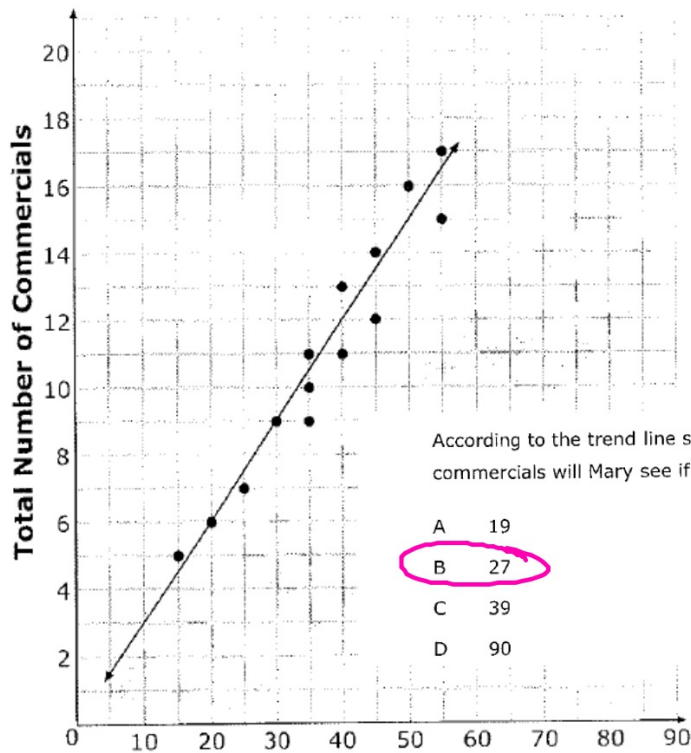
C  $y = \frac{1}{25}x + 75$

D  $y = -\frac{1}{25}x - 75$

- 32 Mary collected data each day on how many commercials she saw and how long she watched TV. She displayed her data in a scatterplot.



- 32 Mary collected data each day on how many commercials she saw and how long she watched TV. She displayed her data in a scatterplot.



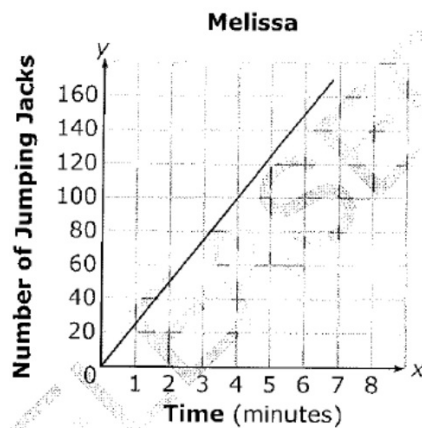
According to the trend line shown in the scatterplot, **about** how many commercials will Mary see if she watches TV for  $1\frac{1}{2}$  hours?

- A 19
- B 27**
- C 39
- D 90

- 33 Alicia and Melissa did jumping jacks. The table below shows the number of jumping jacks that Alicia had done in different amounts of time.

Alicia	Time (minutes)	1	2	3	4	5	6	7	8
	Jumping Jacks	30	60	90	120	150	180	210	240

The graph below shows the number of jumping jacks Melissa had done in different amounts of time.



Which choice **best** describes the difference between the rates at which the girls did jumping jacks?

- A Melissa did 6 more jumping jacks per minute than Alicia.
- B Alicia did 6 more jumping jacks per minute than Melissa.
- C Melissa did 5 more jumping jacks per minute than Alicia.
- D Alicia did 5 more jumping jacks per minute than Melissa.

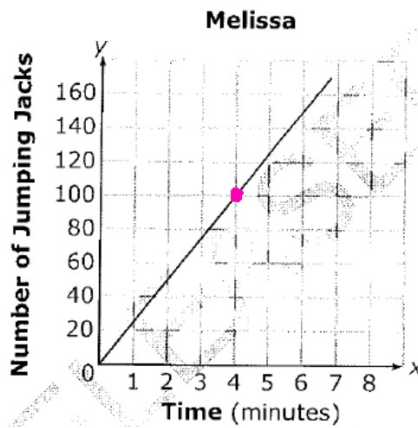
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Alicia	Time (minutes)	1	2	3	4	5	6	7	8
	Jumping Jacks	30	60	90	120	150	180	210	240

$$\frac{\Delta y}{\Delta x} = \frac{30}{1} = 30$$

$$y = 30x$$

The graph below shows the number of jumping jacks Melissa had done in different amounts of time.



$$\frac{\Delta y}{\Delta x} = \frac{100}{4} = 25$$

$$y = 25x$$

30 - 25

Which choice **best** describes the difference between the rates at which the girls did jumping jacks?

- ~~A~~ Melissa did 6 more jumping jacks per minute than Alicia.
- ~~B~~ Alicia did 6 more jumping jacks per minute than Melissa.
- C Melissa did 5 more jumping jacks per minute than Alicia.
- D Alicia did 5 more jumping jacks per minute than Melissa.

5



## Ratios

Ratios show the relationship between two quantities.

Rates are ratios that compares quantities measured in different units.

Unit rates are rates with a denominator of 1 unit.

# Slope Introduction

Definition: Slope is the ratio of vertical change to horizontal change.

Characteristics:

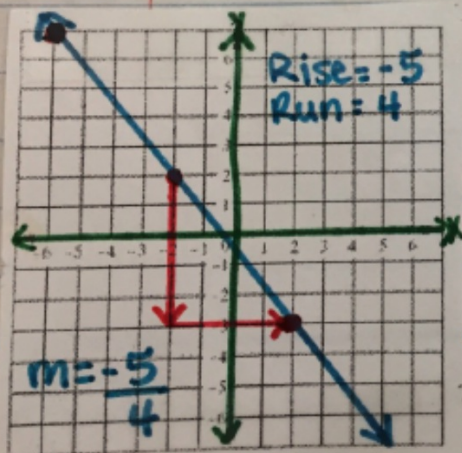
$$\text{Slope} = \frac{\text{rise}}{\text{run}}$$

$$m = \text{slope}$$

\*rate of change

Slope

\* Only use this method for straight lines!



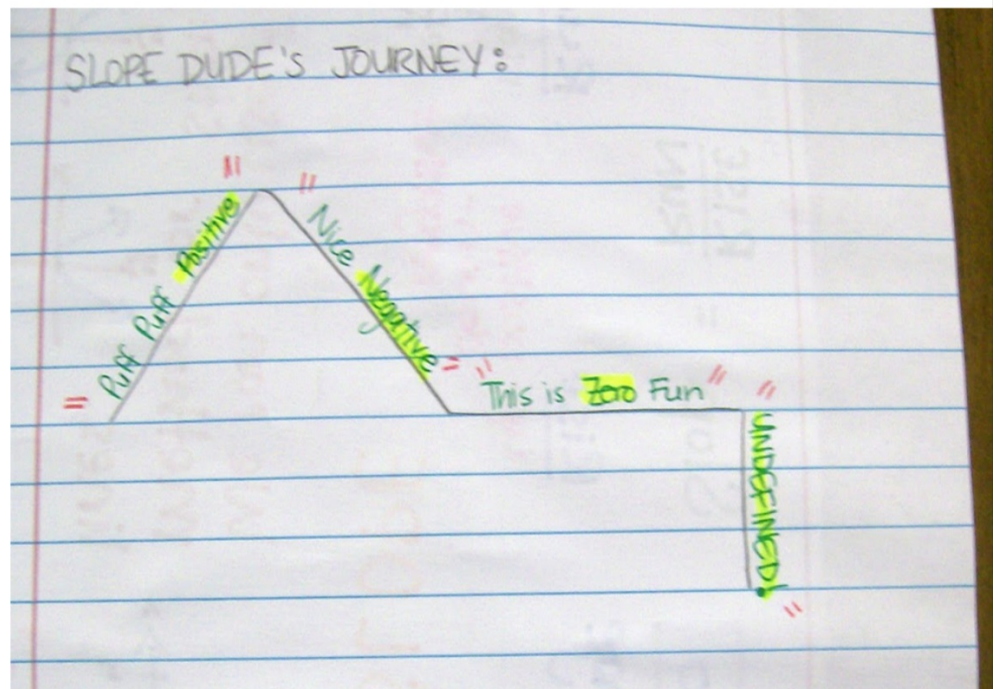
## 4 types of Slope

Positive

Negative

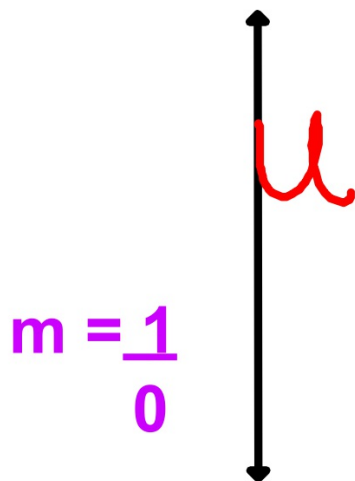
Zero

Undefined

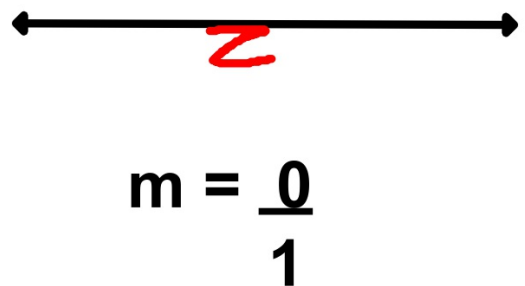


**\*\*Another way to remember undefined vs. zero slope.\*\***

**Undefined- makes "U"**



**Zero- makes "Z"**



**\*Zero underneath, it's UNDEFINED!!**

SLOPE measures the  
steepness of a line.

It is also called  
Rate of change.

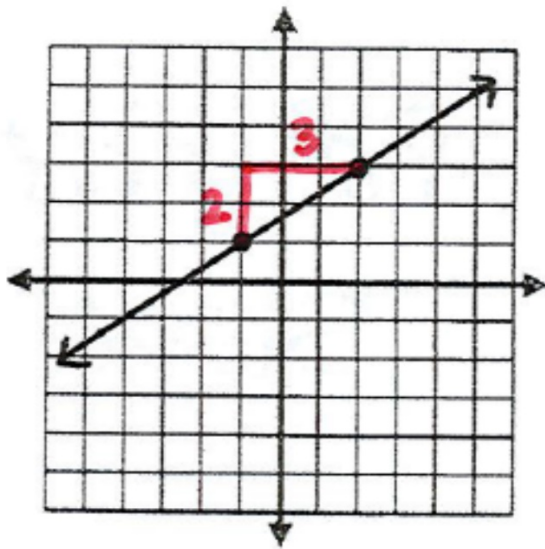
Characteristics:

Slope: "m" is the  
variable  
used

$$m = \frac{\Delta y}{\Delta x} \begin{array}{l} \text{(change in } y\text{)} \\ \text{(change in } x\text{)} \end{array}$$

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

## "Positive Slope"



\* goes up from left to right.

\*  $\frac{\Delta y}{\Delta x}$  is positive

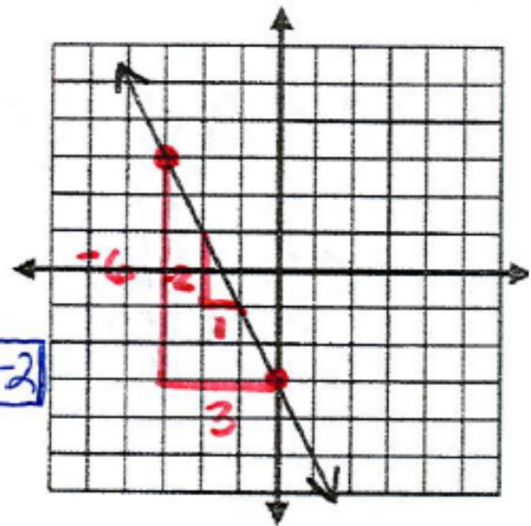
\*  $\frac{\Delta y}{\Delta x} = \boxed{\frac{2}{3}}$

## Negative Slope

\* goes down  
from left to  
right.

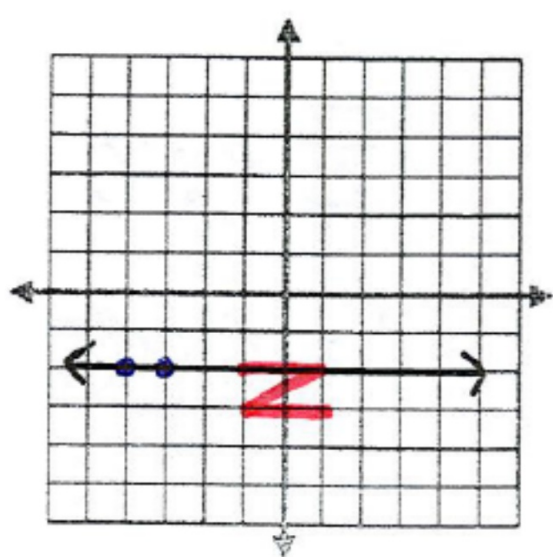
\*  $\frac{\Delta y}{\Delta x}$  is negative

$$* \frac{\Delta y}{\Delta x} = -\frac{6 \div 3}{3 \div 3} = -\frac{2}{1} = \boxed{-2}$$





## Zero Slope



\* no steepness  
\* horizontal line

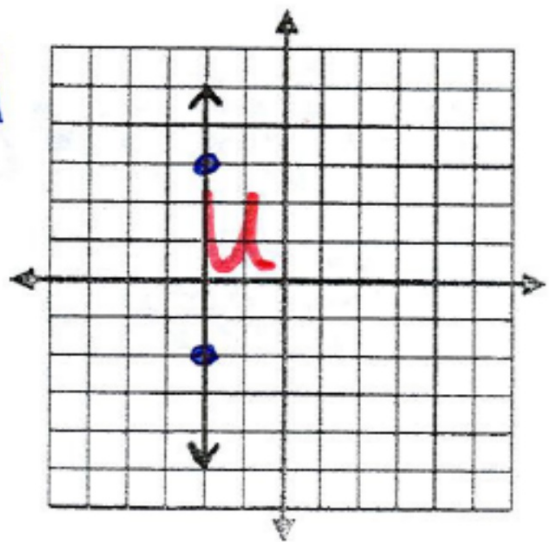
$$\frac{\Delta y}{\Delta x} = \frac{0}{1} = \boxed{0}$$

## Undefined Slope

\* vertical line

$$* \frac{\Delta y}{\Delta x} = \frac{-5}{0} = \boxed{\text{undefined}}$$

\* Zero is underneath, so it's undefined!



## Slope Between 2 points

When you are given  
2 points:

$(x_1, y_1)$   $(x_2, y_2)$

the formula for  
slope is:

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

\*  $\frac{\text{change in } y}{\text{change in } x}$

### Other methods:

① Graph and Count (rise over run)

② Stack, Subtract, back

Example:  $(2, -3)(4, 5)$

Stack, Subtract

Back

$$\begin{array}{r} \overset{x}{2}, \overset{y}{-3} \\ -(4, 5) \\ \hline -2, -8 \end{array}$$

$$m = \frac{\Delta y}{\Delta x} = \frac{-8}{-2} = \boxed{4}$$

### Reminders:

\* Zero in the (underneath) denominator means undefined slope.

\* Zero in the numerator means zero slope.

## Practice

---

**Find the slope of the line through each pair of points.**

1)  $(-19, -17), (-2, -7)$

3)  $(-19, 19), (-6, -13)$

5)  $(-17, -15), (-5, -11)$

7)  $(-2, -6), (18, -13)$

9)  $(-5, 6), (5, 7)$

11)  $(-8, -18), (11, 11)$

$$1) \begin{matrix} (-19, -17), & (-2, -7) \\ x_1 & y_1 & x_2 & y_2 \end{matrix}$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-7 - (-17)}{-2 - (-19)} = \frac{-7 + 17}{-2 + 19} = \boxed{\frac{10}{17}}$$

$$3) \begin{matrix} (-19, 19), & (-6, -13) \\ x_1 & y_1 & x_2 & y_2 \end{matrix}$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-13 - 19}{-6 - (-19)} = \frac{-32}{-6 + 19} = \boxed{\frac{32}{13}}$$

$$5) \begin{matrix} (-17, -15), & (-5, -11) \\ x_1 & y_1 & x_2 & y_2 \end{matrix}$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-11 - (-15)}{-5 - (-17)} = \frac{-11 + 15}{-5 + 17} = \frac{4}{12} = \boxed{\frac{1}{3}}$$

$$7) \begin{matrix} (-2, -6), & (18, -13) \\ x_1 & y_1 & x_2 & y_2 \end{matrix}$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-13 - (-6)}{18 - (-2)} = \frac{-13 + 6}{18 + 2} = \frac{-7}{20} = \boxed{-\frac{7}{20}}$$

$$9) \begin{matrix} (-5, 6), & (5, 7) \\ x_1 & y_1 & x_2 & y_2 \end{matrix}$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{7 - 6}{5 - (-5)} = \frac{1}{5 + 5} = \boxed{\frac{1}{10}}$$

$$11) \begin{matrix} (-8, -18), & (11, 11) \\ x_1 & y_1 & x_2 & y_2 \end{matrix}$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{11 - (-18)}{11 - (-8)} = \frac{11 + 18}{11 + 8} = \boxed{\frac{29}{19}}$$

Homework:

Day 1 Function review worksheet

**Practice:**

**[tinyurl.com/SCMSSlopePractice](https://tinyurl.com/SCMSSlopePractice)**