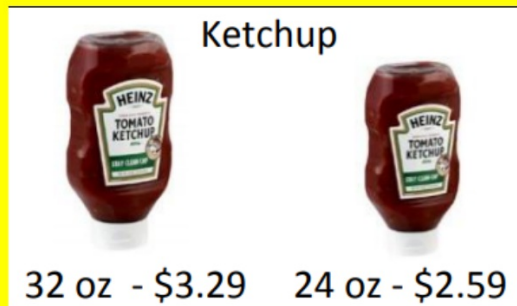


Warm Up

October 23, 2018

1.) Which deal is the better buy?



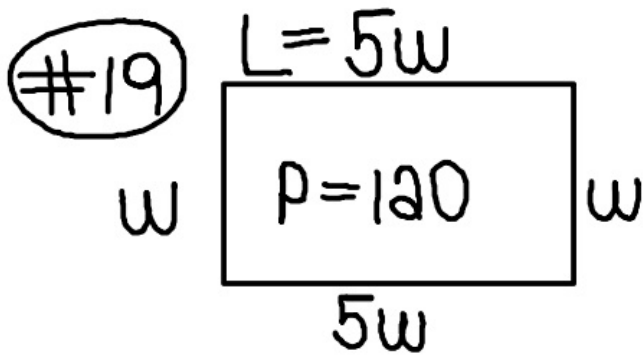
2.) If $f(x) = 3x + 2$, $g(x) = 3x^2 - 4x$, and $h(x) = 4^x$, evaluate:

A.) $f(-5)$

B.) $g(-2)$

C.) $h(-2)$

3.) Which is longer: 11 meters or 12 yards?



$$\frac{12w}{12} = \frac{120}{12}$$

$$w = 10$$

$$L = 5w = 5(10)$$

$$L = 50$$

#15 $x = \text{miles}$

$$.37x + 101.50 = 159.22$$

#30

$$\begin{array}{r} 25.75 \\ + 32.50 \\ \hline 58.25 \end{array}$$

$$\underbrace{58.75(.075)}_{\text{tax}}$$

$$58.75 + \text{tax}$$

Task

The Auto-Clean Buffing Machine polishes floors at a steady rate. Suppose it can finish the floor of a 330 square foot room in 5.5 minutes.

How large an area can it polish in 1 minute?

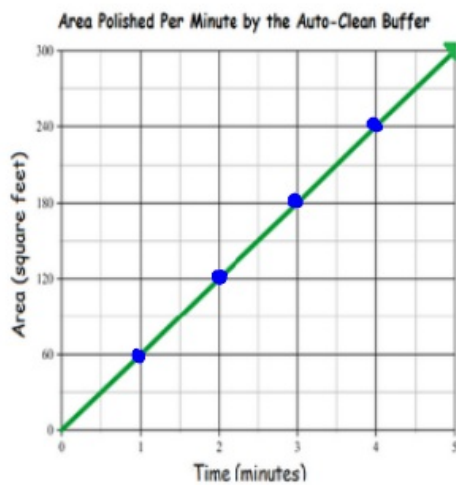
What is the slope of the line that shows the area the machine can polish over time?

Identify the variables, make a table of values, and use a graph to find your answer.



X = minutes

Y = square feet



min	ft ²
1	60
2	120
3	180
4	240
5	300

This graph results from our ordered pairs.

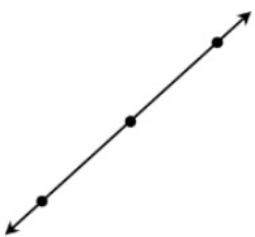
Its *slope* is the ratio of vertical change to horizontal change between any two points on the line.





up or down
left or right

WHAT IS SLOPE?

rise
run

- The constant _____ of _____ between points on a line.
- A _____ of the _____ to the _____ of a line.

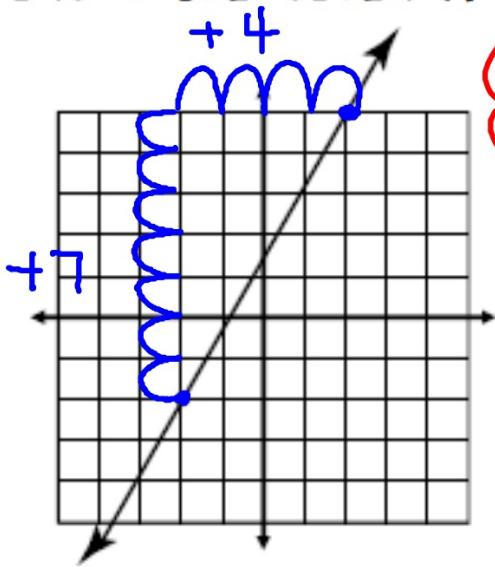
Main Ideas/Questions	Notes/Examples
Rate of Change	a ratio that shows how one variable changes with respect to another. On a linear graph, this is called the <u>slope</u> of the line!
Slope 	<ul style="list-style-type: none"> • Slope is written as a <u>ratio</u> of the vertical change (<u>rise, y</u>) to the horizontal change (<u>run, x</u>) between any two points on a line. • This remains <u>constant</u> for any two points on the same line. • Slope is written as a <u>fraction</u> in <u>simplest form</u>. • Variable for slope: <u>m</u>

Types of Slope				
		positive	negative	zero

FINDING SLOPE GIVEN A GRAPH

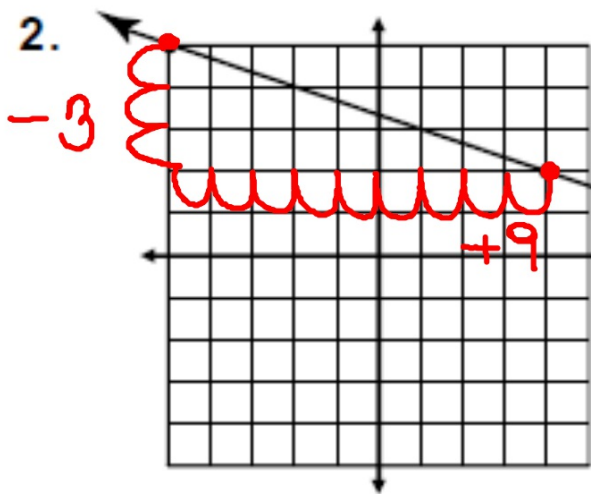
$$m = \frac{\text{rise (vertical change } \updownarrow \text{)}}{\text{run (horizontal change } \leftrightarrow \text{)}}$$

1.



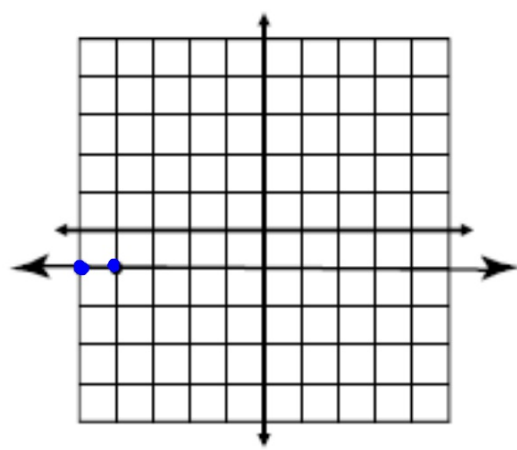
$$m = \frac{7}{4}$$

You always
move up or
down
first!



$$m = \frac{-3}{9} = \frac{-1}{3}$$

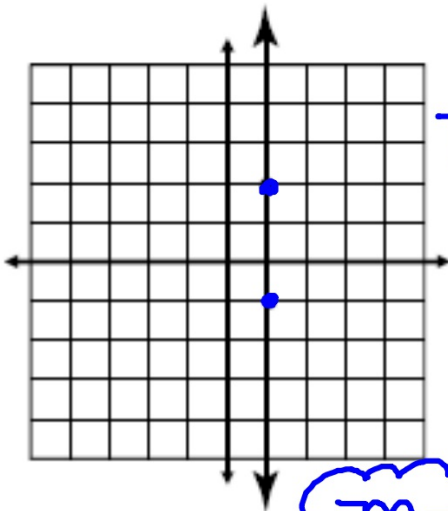
3.



$$m = \frac{0}{1}$$

$$m = 0$$

4.

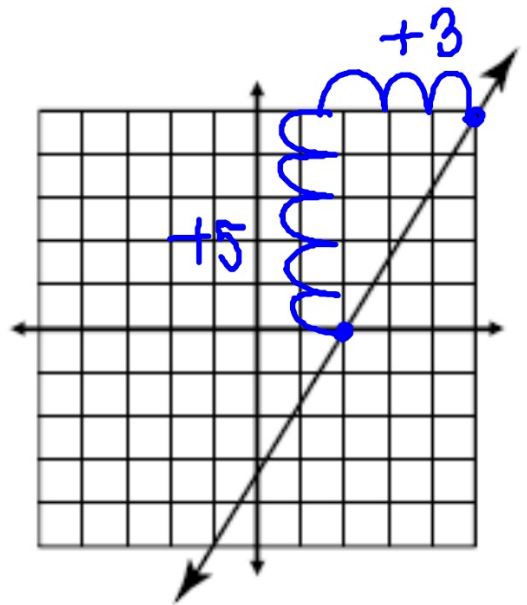


$$m = \frac{5}{0}$$

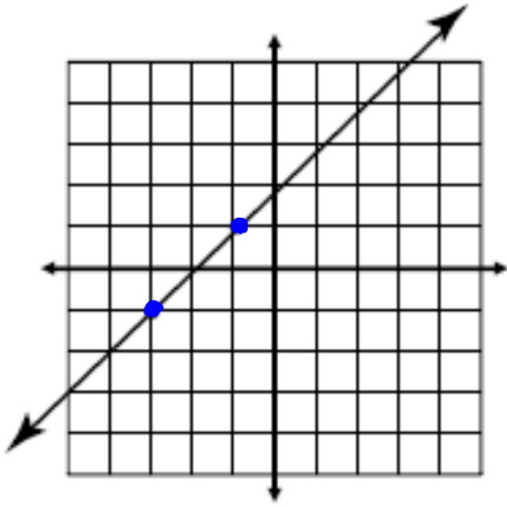
$m = \text{undefined}$

5.

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



6.



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

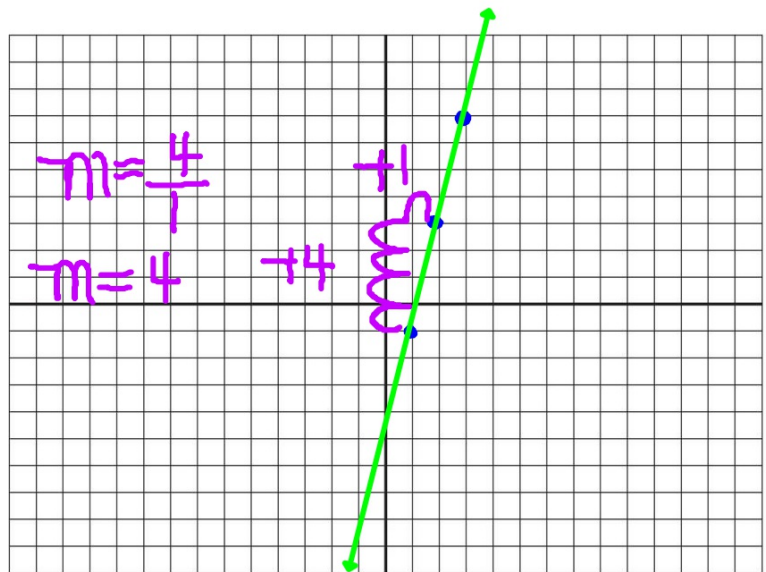
Slope from a Table



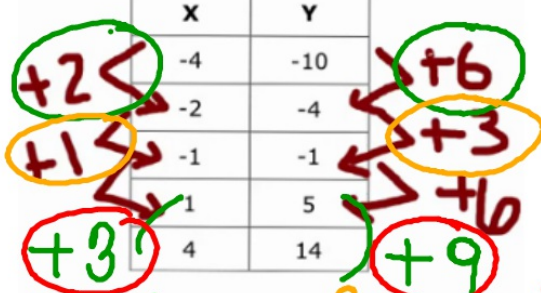
CHANGE IN Y
CHANGE IN X

X (run)	Y (rise)
1	-1
2	3
3	7
4	11

$m = 4$

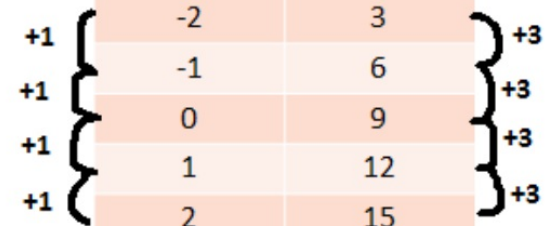


X	Y
-4	-10
-2	-4
-1	-1
1	5
4	14



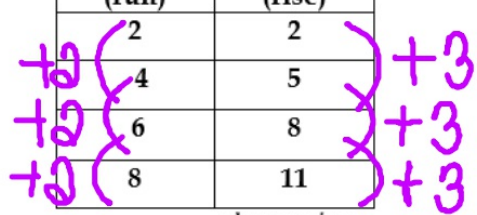
$$\frac{6}{2} = 3 \quad \frac{3}{1} = 3 \quad \frac{9}{3} = 3$$

X	Y
-2	3
-1	6
0	9
1	12
2	15



For each graph, identify the change in y and the change in x.

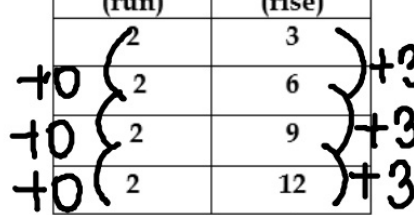
X (run)	Y (rise)
2	2
4	5
6	8
8	11



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

$$m = \frac{3}{2}$$

X (run)	Y (rise)
2	3
2	6
2	9
2	12

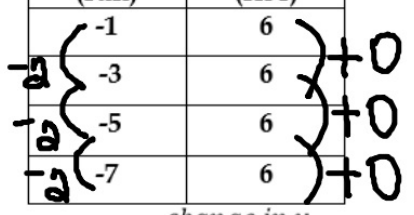


$$\text{slope} = \frac{\text{change in } y}{\text{change in } x}$$

$$m = \frac{3}{0}$$

$$m = \text{undef.}$$

X (run)	Y (rise)
-1	6
-3	6
-5	6
-7	6



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

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

$$m = 0$$

Practice Problems

Ex. 1)

x	y
0	5
1	10
2	15
3	20
4	25
5	30

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

Ex. 2)

x	y
-2	10
-4	4
-6	-2
-8	-8
-10	-14
-12	-20

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

Ex. 3)

x	y
2	14
5	35
7	49
10	70

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