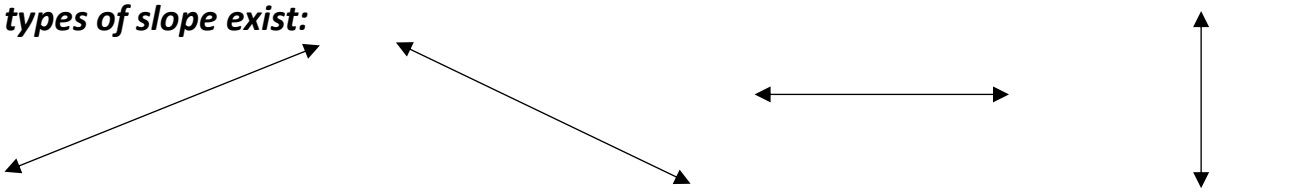
Slope

4 types of slope exist:

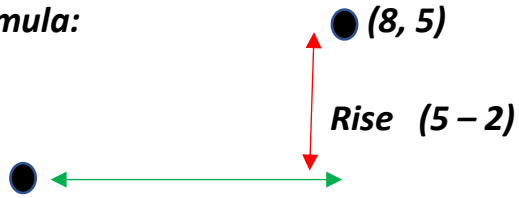


Positive ***Negative*** ***zero*** ***undefined***

Slope is also called "rate of change"

Slope is calculated by measuring the rise over run $slope = \frac{rise}{run}$

Making a formula:



$slope = \frac{5-2}{8-1}$ *or* $\frac{3}{7}$

To get the rise we subtracted the y's, to get the run we subtracted the x's *(but in same order)*

Our formula: $m = \frac{y_2 - y_1}{x_2 - x_1}$ ← *these are subscripts NOT exponents*

They represent 2nd y minus 1st y

Some examples:

1) Find the slope between

a) M(5, 3) and Y(8, 2)

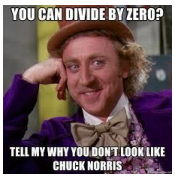
$m = \frac{2-3}{8-5}$ *or* $m = \frac{-1}{3}$ ***Notice order:*** $m = \frac{3-2}{5-8}$ *or* $m = \frac{1}{-3}$

b) O(-7, 4) and H(3, 10)

$m = \frac{10-4}{3--7}$ *or* $m = \frac{6}{10}$ *or* $\frac{3}{5}$

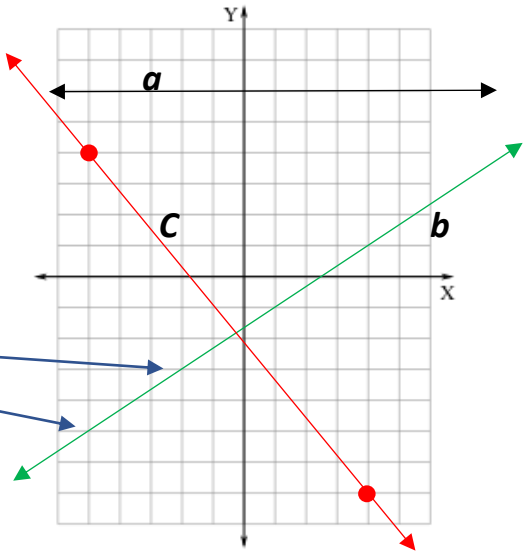
c) Y(8, 2) and E(8, -7)

$m = \frac{-7-2}{8-8}$ *or* $m = \frac{-9}{0}$ ***this is an undefined slope (can't divide by 0)***



d) ***A(-7, -3) and H(-6, -20)***

$m = \frac{-20--3}{-6--7}$ *or* $m = \frac{-17}{1}$ *or* -17



2) ***State the slope of lines shown***

a) ***flat line m = 0***

b) ***Find 2 good points***

rise = 2, run = 3 $m = \frac{2}{3}$

c) ***For this line only 2 good points exist***

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

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3) ***Point R(4, -2) lines on a line with a slope of ¼ , state 2 other points on this line***

Rise = 1 run = 4 so add 1 to y and add 4 to x and you can generate as many points as needed

(4, -2) → *(8, -1)* → *(12, 0)* *(or subtract … (0, -3)*

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4) ***The slope containing (-8, 3) and (k, 2) is*** $\frac{3}{5}$ ***Find k***

$\frac{3}{5} = \frac{2-3}{k--8}$ → $\frac{3}{5} = \frac{-1}{k+8}$ → *3k + 24 = -5* *solve for k* $k = \frac{-29}{3}$

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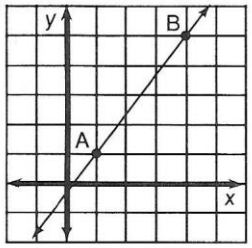
5) ***Suppose a trench needs to have a slope of 0.35 over a horizontal distance of 6.4 m. How many cm will the trench drop in this span?***

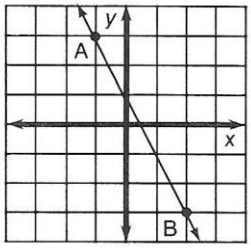
6.4 m = 640 cm $0.35 = \frac{rise}{640}$ *rise = 224 cm*

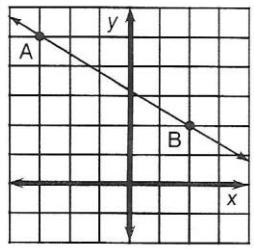
Assignment = worksheet

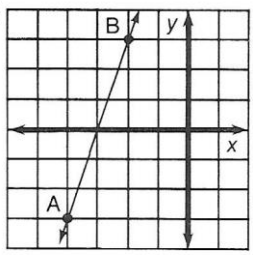
Slope Worksheet: ***What do you call a duck that steals?***

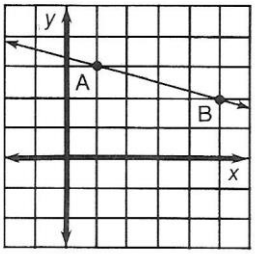
Cross off answers as you find them

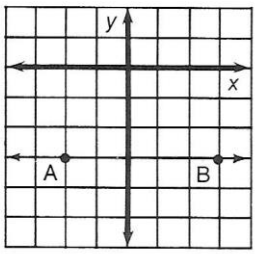
1) 

2) 

3) 

4) 

5) 

6) 

7) (2, 1); (5, 3)

8) (8, 3); (2, 5)

9) (1, -4); (6, -2)

10) (-3, 1); (-7, 4)

11) (9, 2); (3, -1)

12) (-5, 8); (-4, 2)

13) (0, -1) ; (4, -7)

14) (1, -1) ; (-2, -6)

15) (-4, -8) ; (-2, 0)

16) (-3, -3);(0, 0)

17) (2, 5) ; (9, 1)

18) (0, 0) ; (-2, 7)

DU 0	AB -6	CK $-\frac{3}{5}$	ST $-\frac{4}{7}$	AR 9	IG $\frac{1}{2}$	AT $-\frac{7}{2}$	OB $-\frac{7}{6}$	IG $\frac{4}{3}$	ET $\frac{2}{3}$	BE $-\frac{5}{4}$	ST $\frac{5}{3}$
CA $\frac{2}{5}$	RD $\frac{1}{6}$	RI $-\frac{1}{4}$	CH -2	UC -8	RI $-\frac{3}{2}$	ME 1	AQ $-\frac{1}{3}$	UA $-\frac{3}{4}$	KY $\frac{8}{5}$	ET 4	CK 3

What you might have if you don't feel well?

$-\frac{4}{3}$	$-\frac{1}{2}$	$\frac{3}{7}$	1	-2	$\frac{2}{3}$	-3	$\frac{7}{3}$	4	$-\frac{5}{2}$	0

E) (1, 2) and (4, 4) G) (-4, -2) and (2, -5) L) (5, -1) and (-2, -4)

O) (3, -3) and (4, 1) S) (-2, 4) and (0, -2) N) (-5, 2) and (-3, -3)

O) (0, -1) and (4, 3) V) (-1, 0) and (-3, 4)

Now complete Page 340

6a) rise = b) rise = c) rise = d) rise =
m= m= m= m=
Run = run = run = run =

7a) b) c) d)

8a) b) c) d)

11a) b)

15a) b)

17a) b) c) d)

20a) 20)