Algebra Slope Day 3

Putting it ALL together!!

1. What is slope?
   Steepness of line $= m = \dfrac{rise}{run} = \dfrac{y_2 - y_1}{x_2 - x_1} = \dfrac{\uparrow + \downarrow -}{\rightarrow + \leftarrow -}$

2. What variable represents slope? __M__

3. If you are given a point and the slope, how do you graph a line through the point with the given slope? Explain in words.
   plot the point. Then we use the slope to go up or down (top #) & then go left or right (bottom #)

4. If a line has a slope of 3, then for every __1__ unit(s) to the right, you need
   to move __3__ units (up)/down.

5. If a line has a slope of -4, then for every __1__ unit(s) to the right, you need
   to move __-4__ units up/(down).

6. If you are given a graph with a line plotted, how do you find the slope of that line? Explain in words.
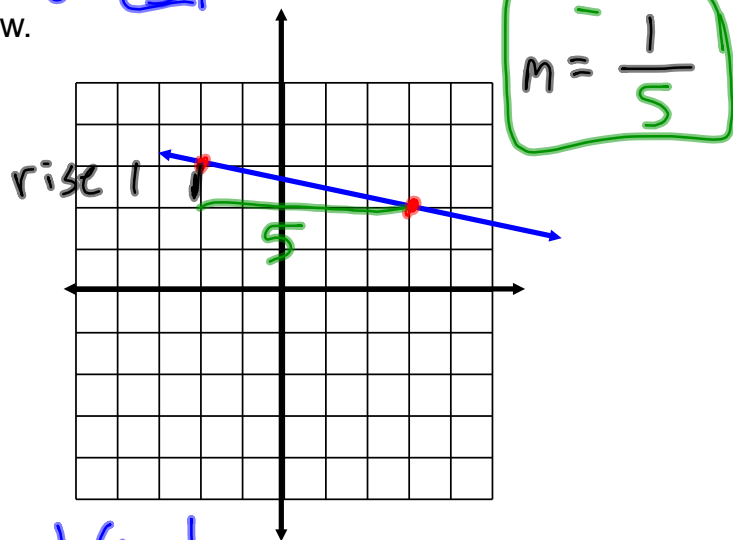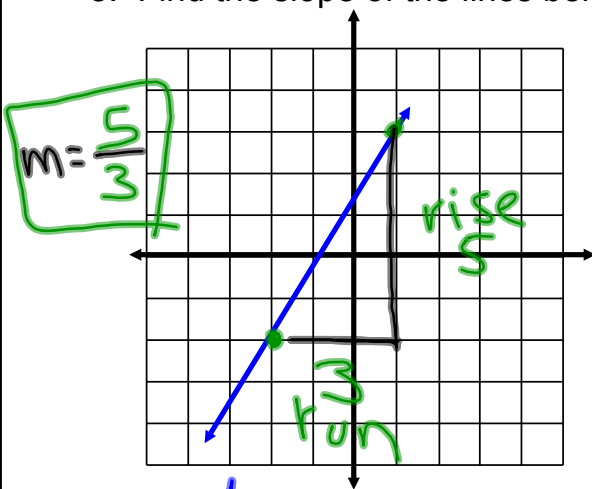   Find 2 points, make a triangle, & then Count the units of the rise and run, make a fraction of $\dfrac{rise}{run}$ & simplify and check if slope is positive or negative.

rise
run
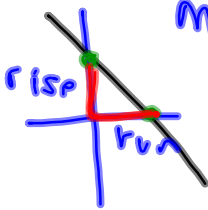
7. Find the slope of a line that contains (8, 2) and (-2, -2). $\dfrac{2}{5}$

$x_1 y_1 \qquad x_2 \ y_2$

$m = \dfrac{y_2 - y_1}{x_2 - x_1} = \dfrac{-2 - 2}{-2 - 8} = \dfrac{-4}{-10} = \boxed{\dfrac{2}{5}}$

8. Find the slope of the lines below.

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

rise
5

rise 1

$m = \dfrac{-1}{5}$

5

rise
5

run
3

9. A vertical line has a slope of __undefined__.

10. A horizontal line has a slope of __0__.

Find 2 points on each line. Then determine the slope.

11. 3x + y = 4

$(0, 4)$ x_1, y_1

$(1, 1)$ x_2, y_2

x	y
0	4
1	1

$3(0) + y = 4$
$y = 4$

$3(1) + y = 4$
$3 + y = 4$
$y = 1$

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

$m = \dfrac{1 - 4}{1 - 0} = \dfrac{-3}{1}$

$\boxed{m = -3}$

12. 3x + 2y = 4

x	y
0	2
3	-2.5

$3 \cdot 0 + 2y = 4$
$0 + 2y = 4$
$y = 2$

$3 \cdot 3 + 2y = 4$
$9 + 2y = 4$
$-9 \quad -9$
$\dfrac{2y}{2} = \dfrac{-5}{2}$
$y = -2.5$

$(0, 2)$ $(3, -2.5)$
$x_1 \ y_1$ $x_2 \ y_2$

$m = \dfrac{y_2 - y_1}{x_2 - x_1} = \dfrac{-2.5 - 2}{3 - 0}$

$\boxed{\dfrac{-4.5}{3} = -1.5}$

13. Are (-2, 1), (1, 1), and (3, 0) on the same line?

$(-2, 1)(1, 1)$
$x_1 \ y_1 \ x_2 \ y_2$

$m = \dfrac{1 - 1}{1 - 2} = \dfrac{0}{3} = \boxed{0}$

$(1, 1)(3, 0)$
$x_1 \ y_1 \ x_2 \ y_2$

$m = \dfrac{0 - 1}{3 - 1} = \dfrac{-1}{2}$

Not on the same line since we have different slopes

14. Why can't (-3, 3), (-2, 1) and (-1, 1) be on the same line? Explain **without** graphing.
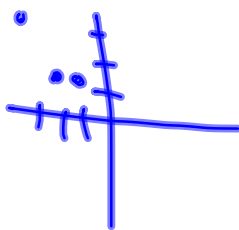
These 2 points are on a horizontal line. and the other point is not.

Assign Slope Day 3 wkst