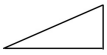
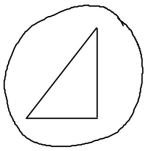
DO NOW

Which hill is steeper?

3.3 The Slope of a Line

Which hill is steeper?



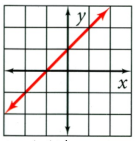


slope - is like steepness of a hill

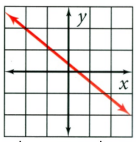
slope = $\frac{\text{rise}}{\text{run}}$ ← vertical change / ← horizontal change

m - is used to represent slope

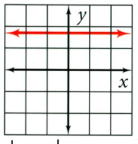
Types of Slopes: Look L → R



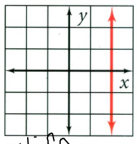
uphill
positive slope



downhill
negative slope



level ground
horizontal
zero slope



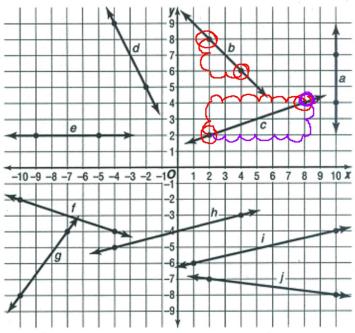
cliff
vertical
no slope or undefined

Slope from pictures: count boxes from point to point

positive is: up and right $m = \frac{\text{rise}}{\text{run}}$

negative is: down and left

1. a no slope
2. b $\frac{-2}{2} = -1$
3. c $\frac{2}{6} = \frac{1}{3}$
4. d $\frac{-4}{2} = -2$
5. e 0
6. f $-\frac{1}{3}$
7. g $\frac{4}{3}$
8. h $\frac{1}{4}$
9. i $\frac{2}{9}$
10. j $-\frac{1}{8}$



Slope from points:

$m = \frac{y_2 - y_1}{x_2 - x_1}$ where (x_1, y_1) is point 1 and (x_2, y_2) is point 2

Examples: Find the slope.

11. (2, 5), (3, 6)
Pt 1 Pt 2
$x_1\ y_1\ x_2\ y_2$
$m = \frac{y_2 - y_1}{x_2 - x_1}$
$m = \frac{6-5}{3-2}$
$m = \frac{1}{1}$
$m = 1$

12. (4, 1), (-4, 1)
Pt 1 Pt 2
$x_1\ y_1\ x_2\ y_2$
$m = \frac{y_2 - y_1}{x_2 - x_1}$
$m = \frac{1-1}{-4-4}$
$m = \frac{0}{-8}$
$m = 0$

13. (4, 1), (-6, -4)
$x_2\ y_2\ x_1\ y_1$
$m = \frac{y_2 - y_1}{x_2 - x_1}$
$m = \frac{1 - -4}{4 - -6}$
$m = \frac{1+4}{4+6}$
$m = \frac{5}{10}$
$m = \frac{1}{2}$

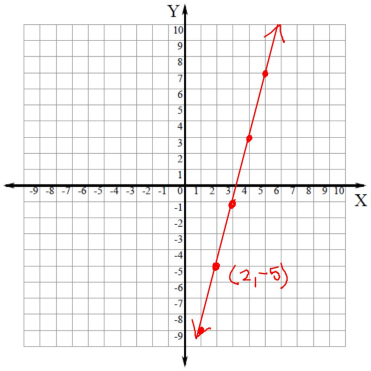
14. (3, 2), (3, -2)
$x_1\ y_1\ x_2\ y_2$
$m = \frac{y_2 - y_1}{x_2 - x_1}$
$m = \frac{-2-2}{3-3}$
$m = \frac{-4}{0}$
NO SLOPE

Graph the given point and use the given slope, m, to draw a line.

15. (2, -5); $m = 4$

★ plot point 1st

$m = 4 = \frac{4\uparrow}{1\rightarrow} = \frac{-4\downarrow}{-1\leftarrow}$



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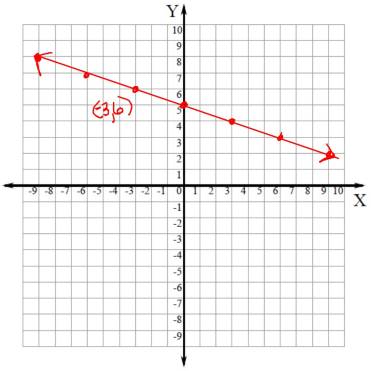
Graph the given point and use the given slope, m, to draw a line.

16. (-3, 6); $m = -\frac{1}{3}$

$m = -\frac{1}{3} = \frac{-1\downarrow}{3\rightarrow} = \frac{1\uparrow}{-3\leftarrow}$

NOT $\frac{-1}{-3}$



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HOMEWORK

Worksheet - HW 3.3 Slope of a Line

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