Warm Up

Find the slope, x-intercept, and y-intercept for the following equation:

$$7x + 3y = 21$$

$7x + 3(0) = 21$ Find x-int

$\frac{7x}{7} = \frac{21}{7}$

$x = 3$ $(3, 0)$

$7x + 3y = 21$ Change to $y = mx + b$ form

$-7x \quad -7x$

$\frac{3y}{3} = \frac{-7x}{3} + \frac{21}{3}$ slope: $-\frac{7}{3}$

$y = -\frac{7}{3}x + 7$ y-int: $(0, 7)$

Another way:

$7x + 3y = 21$ can get x & y ints from here

$7(0) + 3y = 21$

$\frac{3y}{3} = \frac{21}{3}$ $(0, 7)$

$y = 7$

$7x + 3(0) = 21$ $(3, 0)$

$\frac{7x}{7} = \frac{21}{7}$

$x = 3$

slope: $\frac{\Delta y}{\Delta x}$

Δx (x, y) Δy

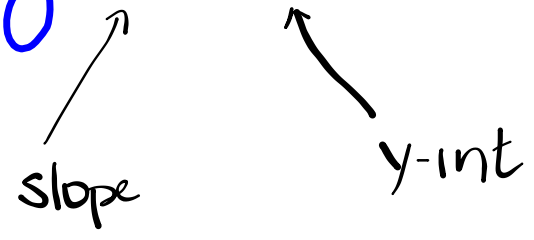
$+3$ $\langle 0, 7 \rangle$ -7

$3, 0$

slope: $-\frac{7}{3}$

Two Types of Linear Equations

Slope-Intercept: $y = mx + b$



Standard Form: $Ax + By = C$

- Makes it easy to find x and y-intercepts
- Certain word problems are easier to write equations in this form.

$5s + 10t = 600$

How to graph a linear equation?

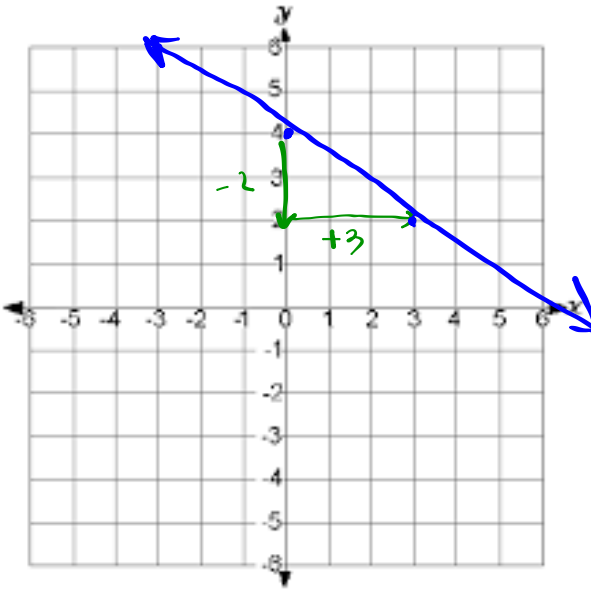
How many points do we need to make a line?

How to Graph an Equation in Slope-Intercept Form

Example: $y = -\frac{2}{3}x + 4$

Step 1: Plot the y-intercept

(0, 4)



Step 2: Use the slope to find the next point on the line from the y-intercept. Remember slope = $\frac{\Delta y}{\Delta x} = \frac{-2}{3} = \frac{-2}{3} = \frac{2}{-3}$

$y = -\frac{2}{3}x + 4$

$-\frac{2}{3}$ this means we have a negative $\frac{2}{3}$

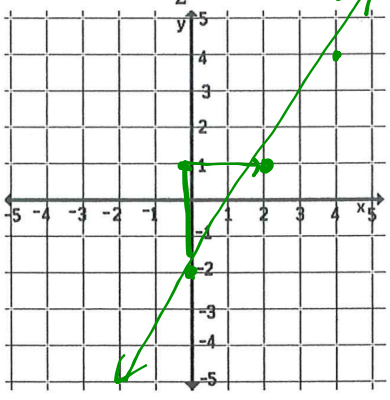
$$-\frac{2}{3} = \frac{-2}{3} = \frac{2}{-3}$$

All the same, just written differently

Step 3: Draw a line **through** both points with a ruler. Don't forget arrows!

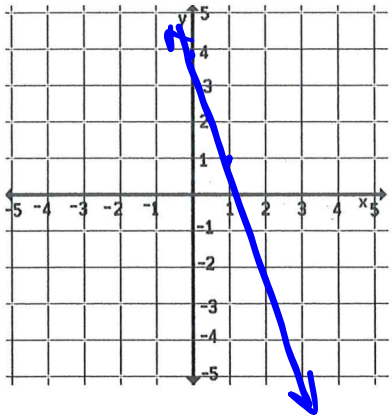
Practice Graphing:

$y = \frac{3}{2}x - 2$



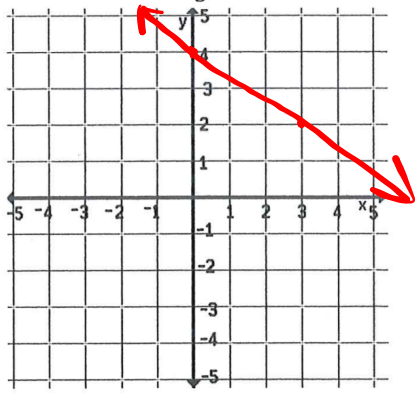
$\frac{\Delta y}{\Delta x} = \frac{3}{2}$

$y = -3x + 4$

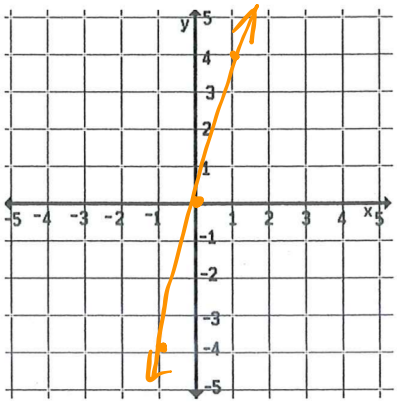


$\frac{\Delta y}{\Delta x} = -3 = \frac{-3}{1}$

$y = -\frac{2}{3}x + 4$

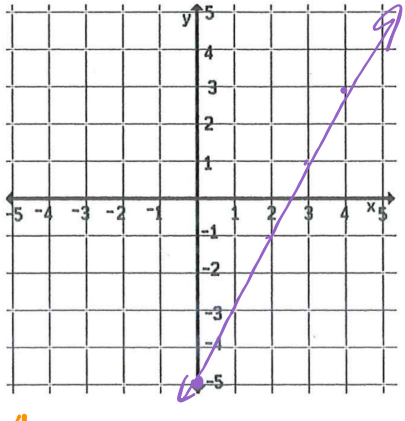


$y = 4x + 0$

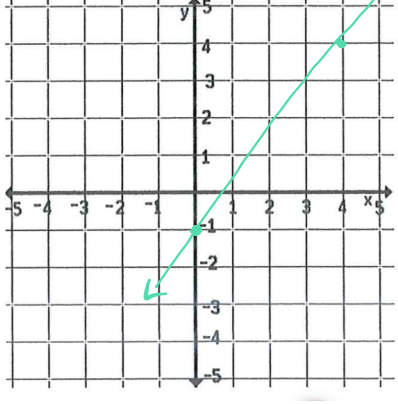


$\frac{\Delta y}{\Delta x} = 4 = \frac{4}{1} = \frac{-4}{-1}$

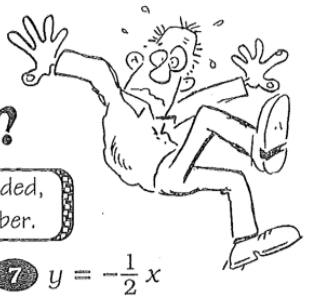
$y = 2x - 5$



$y = \frac{5}{4}x - 1$



What Happened to the Guy Who Fell Into an Upholstery Machine?

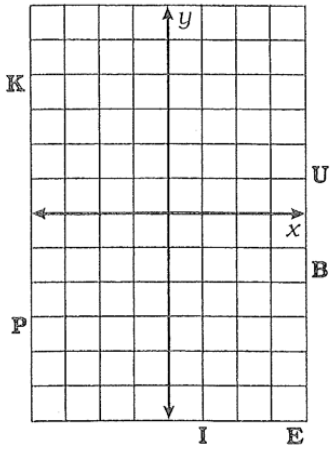


Use the slope and y-intercept to graph each equation. The graph, if extended, will cross a letter. Write this letter in the box containing the exercise number.

1 $y = \frac{3}{4}x - 2$

2 $y = -2x + 1$

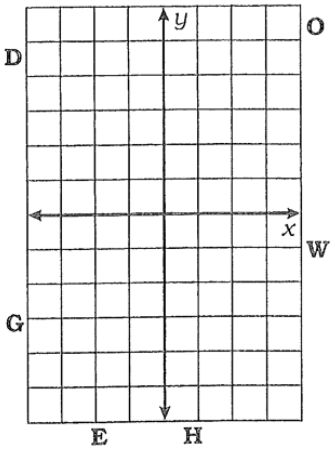
3 $y = -\frac{5}{2}x - 4$



4 $y = \frac{1}{3}x + 4$

5 $y = 3x - 1$

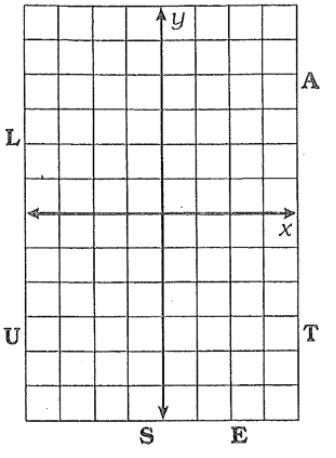
6 $y = -\frac{7}{4}x - 5$



7 $y = -\frac{1}{2}x$

8 $y = -4x + 3$

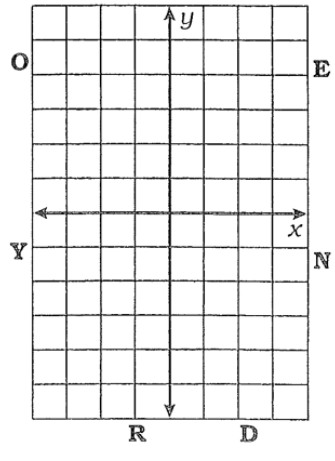
9 $y = \frac{8}{3}x - 5$



10 $y = x + 3$

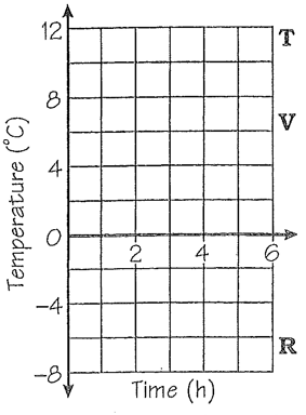
11 $y = -x - 4$

12 $y = x$



13 The temperature is −6°C and rising at a rate of 2° per hour.

14 The temperature is 12°C and dropping at a rate of 3° per hour.

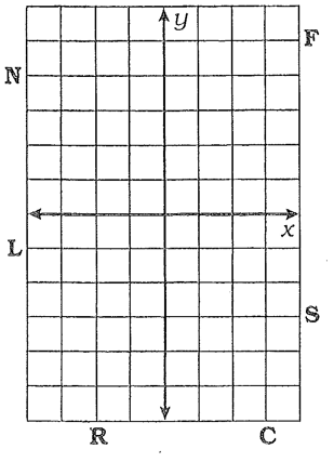


15 $y = 5$

16 $x = -2$

17 $y = -1$

18 $x = 3$



6	12	3	9	15	1	17	7	10	14	8	18	4	13	2	16	5	11

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Homework

Finish classwork