

8th grade - sample handwritten

1) Get slope from two points.

$(3, 4)$ and $(-3, 7)$

$$\frac{\text{change in } y}{\text{change in } x} = \frac{4 \rightarrow 7}{3 \rightarrow -3} = \frac{+3}{-6} = \boxed{-\frac{1}{2}}$$

2) Get slope intercept from two points.

What is the equation of the line that goes through $(2, 3)$ and $(-3, 6)$ in slope intercept form?

A get slope

$$\frac{\Delta y}{\text{change in } x} = \frac{3 \rightarrow 6}{2 \rightarrow -3} = \frac{+3}{-5} = -\frac{3}{5}$$

$$y = -\frac{3}{5}x + b$$

Now solve for b.

$$(2, 3) \rightarrow 3 = -\frac{3}{5}(2) + b$$

$$3 = -\frac{6}{5} + b$$

$$3 = \frac{15}{5}$$

$$\frac{15}{5} = -\frac{6}{5} + b$$

$$+\frac{6}{5} \quad +\frac{6}{5}$$

$$\frac{21}{5} = b$$

$$\boxed{y = -\frac{3}{5}x + \frac{21}{5}}$$

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3) get equation from slope and point

What is the equation of the line with slope -3 that goes through the point $(-3, -5)$.

What we know $y = -3x + b$

Plug in point to solve for b .

$$\begin{aligned} -5 &= -3(-3) + b \\ -5 &= 9 + b \\ \underline{-9} \quad \underline{-9} \end{aligned}$$

$$-14 = b$$

$$y = -3x - 14$$

check $-5 \stackrel{?}{=} -3(-3) - 14$

$$\begin{aligned} -5 &= +9 - 14 \\ \underline{\underline{-5}} \end{aligned}$$

4) equation of horizontal line.

What is the equation of the line that passes through $(1, 3)$ and $(3, 3)$?

get slope $\frac{\text{change in } y}{\text{change in } x} = \frac{3-3}{1-3} = \frac{0}{2} = 0$

$$y = 0x + b$$

plug in point

$$3 = 0(1) + b$$

$$3 = 0 + b$$

$$3 = b$$

$$y = 0x + 3$$

usually written

$$y = 3$$

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5) equation of vertical line

What is equation of line that passes through

$(1, 3)$ and $(1, -2)$

$$\begin{aligned} \text{change in } y &= 3 \rightarrow -2 = -5 \\ \text{change in } x &= 1 \rightarrow 1 = 0 \end{aligned} \quad \frac{-5}{0} =$$

undefined because division by zero is undefined.

equation $x = 1$

6) What are the x-intercept and y-intercept of the equation

$$3x + 4y = 12$$

If $x = 0$ then $3(0) + 4y = 12$

$$0 + 4y = 12$$

$$4y = 12$$

$$y = 3$$

y-intercept - what is y when x is 0 = $(0, 3)$

If $y = 0$ then $3x + 4(0) = 12$

$$3x + 0 = 12$$

$$3x = 12$$

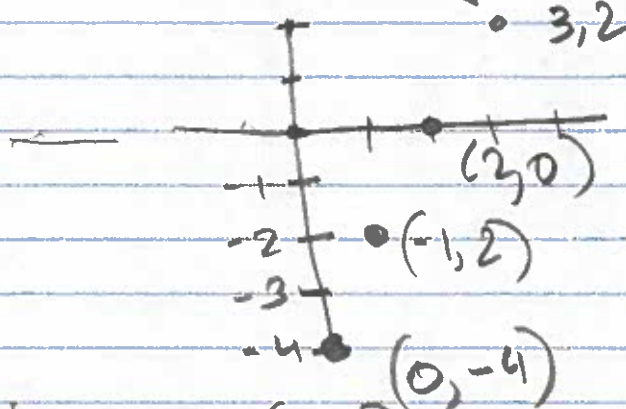
$$x = 4$$

x-intercept what is x when y is zero

$(4, 0)$

7) Graph $y = 2x - 4$. What

are the x - and y -intercepts?



x -intercept $(2, 0)$
 y -intercept $(0, -4)$

8) Last week, the amount in my lunch account could be shown by the equation

$$y = -4x + 20.$$

What does the 20 stand for?

20 is the amount in the account to start the week.

9) In the previous problem, what does the -4 stand for.

Lunch costs four dollars.

10) In the lunch example, how many lunches can be eaten before the account is at zero?

Solve for 0. $0 = -4x + 20$ Lunches
 $4x = 20$ $x = 5$