Algebra 1 3.1

Identify linear equations, intercepts, and zeros

Graph linear equations

integer

linear equation

~~standard form~~

constant 5

variable x, t

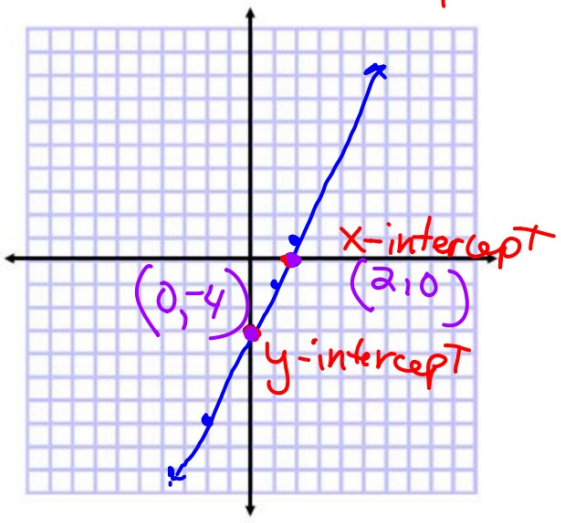
x-intercept

y-intercept

coefficient

whiteboards

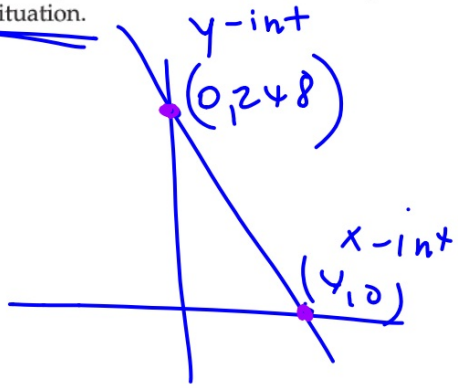
		$2x-3$	
pos.	2	$2\cdot2-3$	1
0	0	$2\cdot0-3$	-3
neg.	-2	$2\cdot-2-3$	-7
choice	1	$2\cdot1-3$	-1



Guided Practice

3. DRIVING The table shows the function relating the distance to an amusement park in miles and the time in hours the Torres family has driven. Find the x- and y-intercepts. Describe what the intercepts mean in this situation.

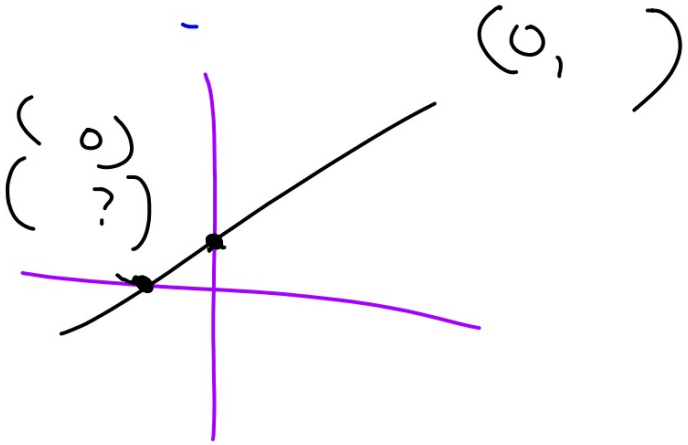
Time (h)	Distance (mi)
0	248
1	186
2	124
3	62
4	0



(, 0)

When @ x-intercept, what is the y-coordinate?

When @ y-intercept, what is the x-coordinate?



How can I use what I know about intercepts?

Example 4 Graph by Using Intercepts

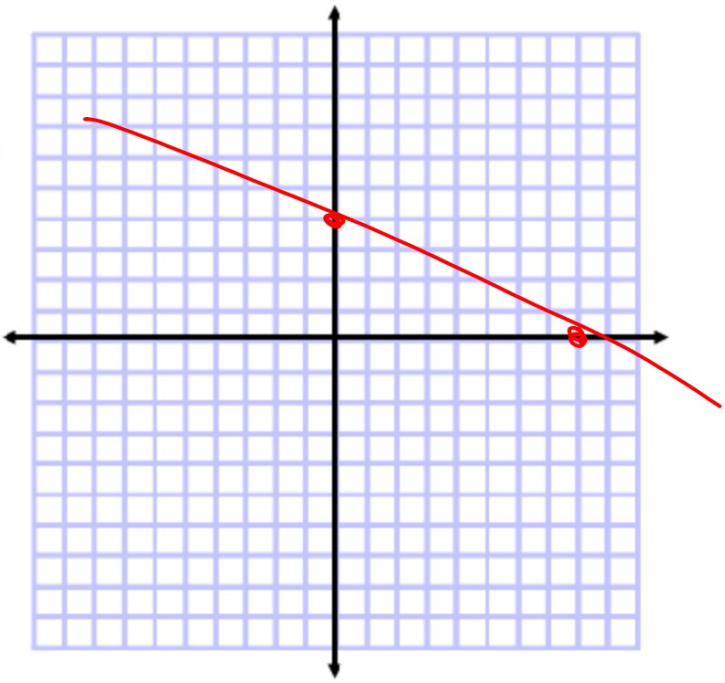
Graph $2x + 4y = 16$ by using the x- and y-intercepts.

x int. (8, 0)

$2x + 4y = 16$ $\quad 2x + 0 = 16$

y int (0, 4)

$2x + 4y = 16$ $\quad 0 + 4y = 16$



Graph ~~each equation~~ by using the x- and y-intercepts.

4A. $-x + 2y = 4$

4B. $y = -x - 5$

whiteboards

$-x + 2y = 4$

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

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

$(0, 2)$ $\quad y = 2$

$y = -x - 5$

$(0, -5)$

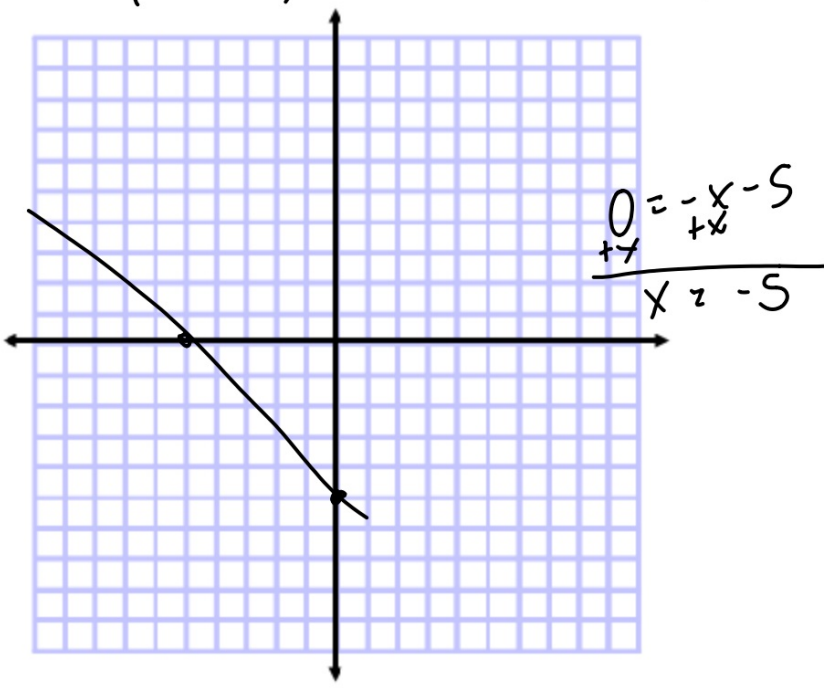
$y = -x - 5$

$(-5, 0)$

$0 = -x - 5$

$+x \quad +x$

$x = -5$



x & y int

~~Graph by making a table of values~~

$y = 2x + 1$

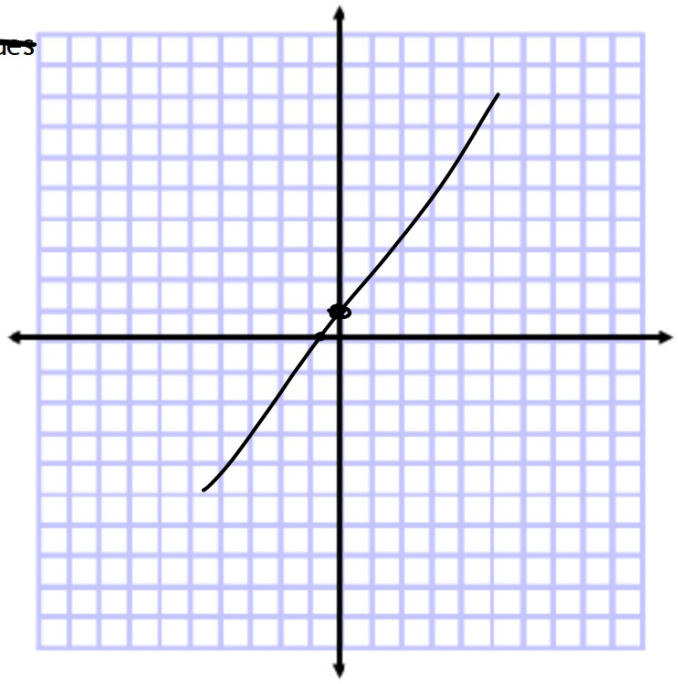
$(0, 1)$ $y = 0 + 1$

$0 = 2x + 1$

$-1 \quad -1$

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

$\left(\frac{-1}{2}, 0\right)$



Example 5 Graph by Making a Table

Graph $y = \frac{1}{3}x + 2$.

$(0, 2)$ $y = \frac{1}{3} \cdot 0 + 2$

$y = 0 + 2$

$y = 2$

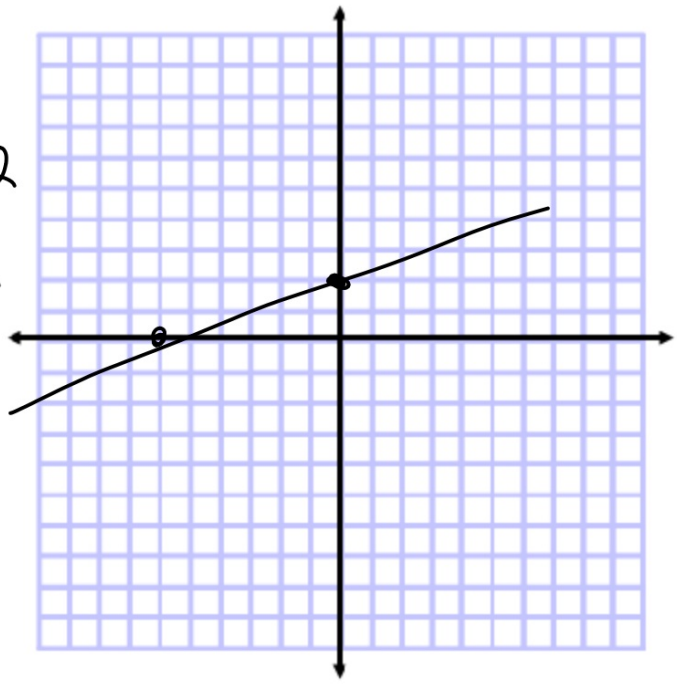
$(-6, 0)$

$0 = \frac{1}{3} \cdot x + 2$

$-2 \quad -2$

$\frac{3}{1} \cdot -2 = \frac{1}{3} x \cdot \frac{3}{1}$

-6



Solve for y

GuidedPractice

Graph each equation

5A. $2x - y = 2$

$(0, -2)$

$0 - y = 2$

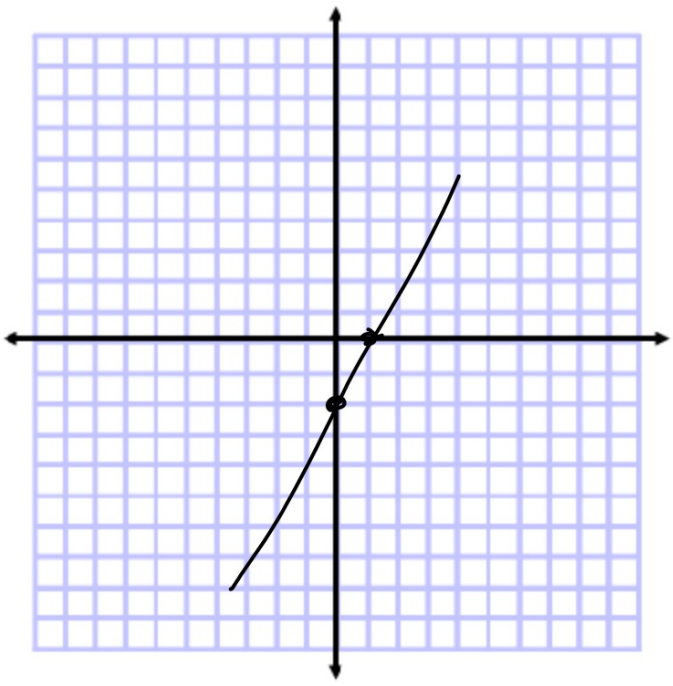
$+y \quad = \frac{2}{-1}$

-1

$2x - 0 = 2$

$\frac{2x}{2} = \frac{2}{2}$

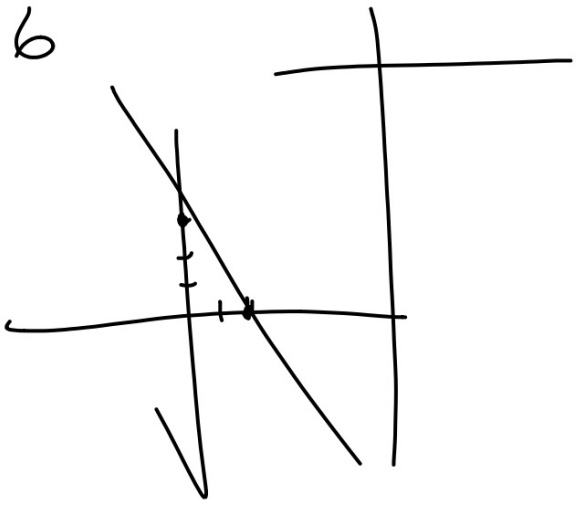
$(1, 0)$



$3x + 2y = 6$

$(0, 3)$

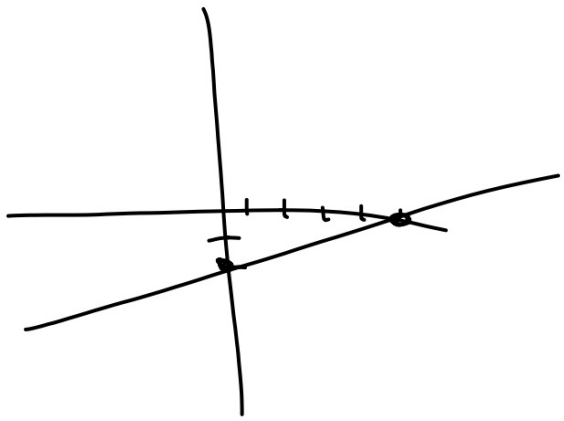
$(2, 0)$



$2x - 5y = 10$

$(0, -2)$

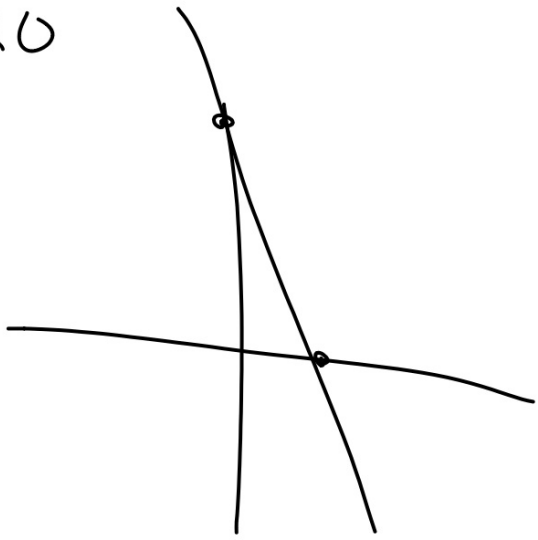
$(5, 0)$



$5x + 2y = 20$

$(0, 10)$

$(4, 0)$



You can only choose 3 for x

5B. $x = 3$

$y = 2$

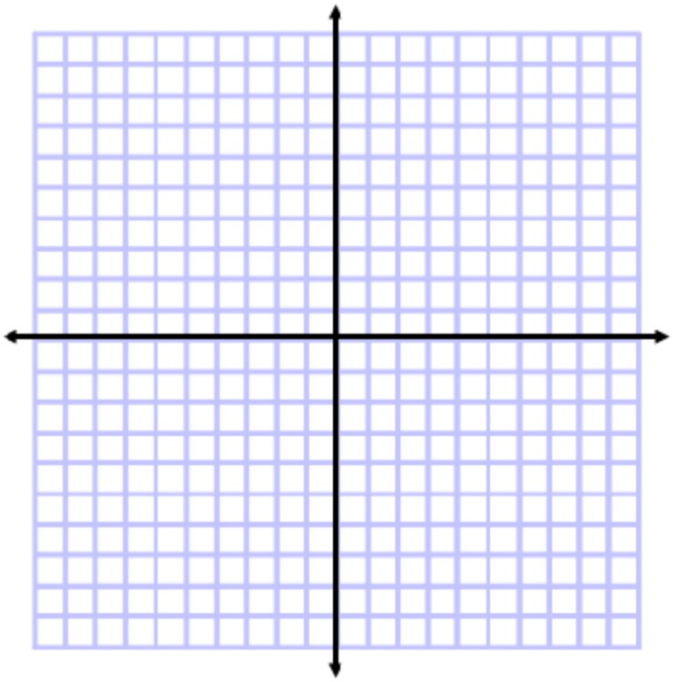
$y = 6$

$x = 5$

$x = 1$

$x =$ constant

$y =$ constant



You will get -2 for y, no matter what.

5C. $y = -2$