Warm-up 9-19

Tell whether each set of ordered pairs satisfies a linear function. Explain.

1. {(−3, 10), (−1, 9), (1, 7), (3, 4), (5, 0)}

2. {(3, 4), (5, 7), (7, 10), (9, 13), (11, 16)}

Tell whether each function is linear.

3. $y = 3 - 2^x$

4. $3y = 12$

5. The cost of a can of iced-tea mix at Save More Grocery is $4.75. The function ***f*(*x*) = 4.75*x* gives the cost** of ***x* cans of iced-tea mix**. Graph this function.

Warm-up 9-19

Tell whether each set of ordered pairs satisfies a linear function. Explain.

1. {(−3, 10), (−1, 9), (1, 7), (3, 4), (5, 0)} NO

x	y
-3	10
-1	9
1	7
3	4
5	0

2. {(3, 4), (5, 7), (7, 10), (9, 13), (11, 16)}

x	y
3	4
5	7
7	10
9	13
11	16

yes

Tell whether each function is linear.

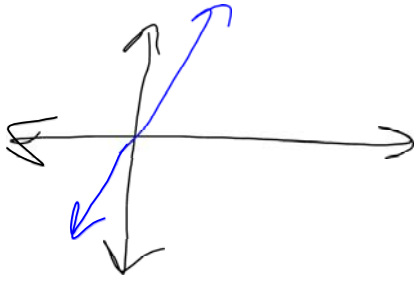
3. $y = 3 - 2^x$ NO

4. $3y = 12$ yes

$0x + 3y = 12$

5. The cost of a can of iced-tea mix at Save More Grocery is $4.75. The function ***f*(*x*) = 4.75*x* gives the cost** of ***x* cans of iced-tea mix**. Graph this function.

$y = 4.75x$



Today's Goals

I can...

- Find *x*- and *y*-intercepts and interpret their meanings in real-world situations.
- Use *x*- and *y*-intercepts to graph lines.

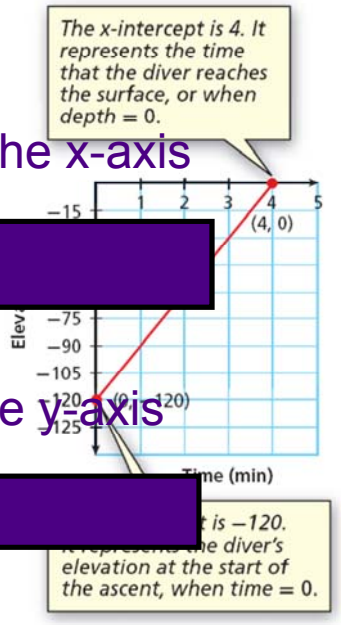
Section 4.2: Using Intercepts

x - intercept: where the graph crosses the x-axis

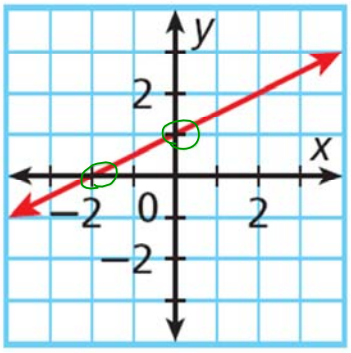
[redacted]

y-intercept: where the graph crosses the y-axis

[redacted]

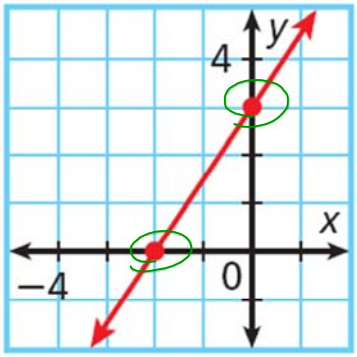


Finding x and y Intercepts from a Graph



y: (0, 1)

x: (−2, 0)



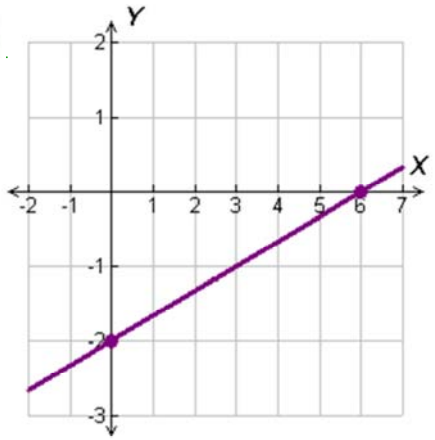
y: (0, 3)

x: (−2, 0)

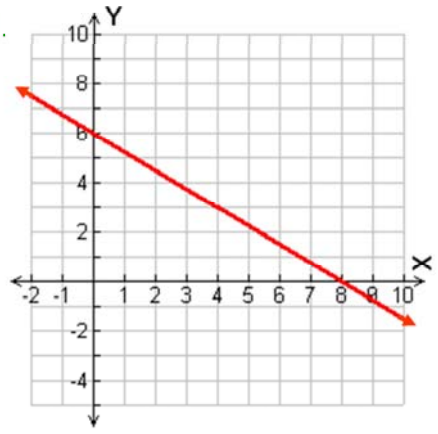
Try These!

Determine the x and y intercepts for the lines graphed below.

1.

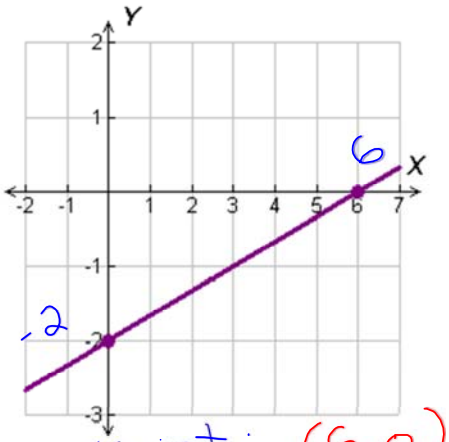


2. (x, y)

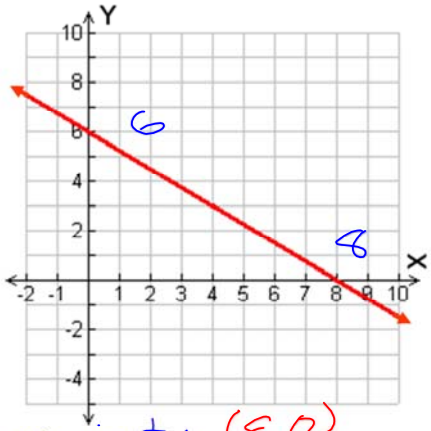


Try These!

Determine the x and y intercepts for the lines graphed below.



x-int: (6,0)
y-int: (0,-2)



x-int: (8,0)
y-int: (0,6)

Finding x and y Intercepts from an Equation

Find the x and y-intercepts of 5x - 2y = 10

x-intercept $y = 0$

$5x - 2(0) = 10$

$5x = 10$

$\frac{5x}{5} = \frac{10}{5}$

$x = 2$

$(2, 0)$

y-intercept $x = 0$

$5(0) - 2y = 10$

$-2y = 10$

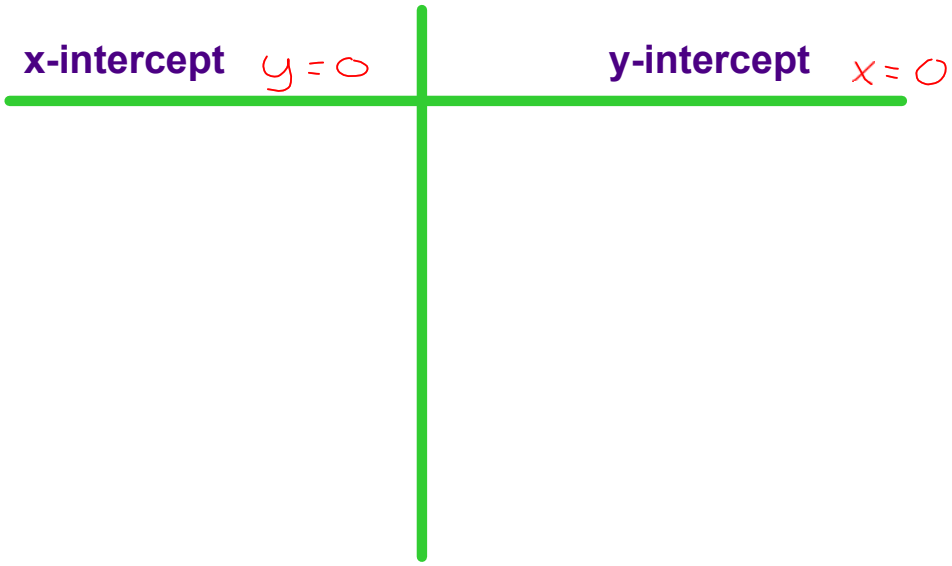
$\frac{-2y}{-2} = \frac{10}{-2}$

$y = -5$

$(0, -5)$

Finding x and y Intercepts from an Equation

Find the x and the y-intercepts of 3x + 7y = -21



Finding x and y Intercepts from an Equation

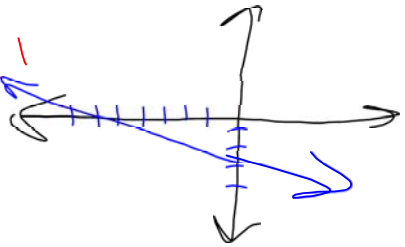
Find the x and the y-intercepts of 3x + 7y = -21

x-intercept	y-intercept
$3x+7(0)=-21$	$3(0)+7y=-21$
$\frac{3x}{3}=\frac{-21}{3}$	$\frac{7y}{7}=\frac{-21}{7}$
$x=-7$	$y=-3$
$(-7,0)$	$(0,-3)$

$-3x \quad -3x$

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

$y=-\frac{3x}{7}-3$



$y = 3x + 6$

x-int	y-int
$0=3x+6$	$y=3(0)+6$
$-6 \quad -6$	$y=6$
$\frac{-6}{3}=\frac{3x}{3}$	$(0,6)$
$-2=x$	
$x=-2$	
$(-2,0)$	

Using Intercepts to Graph a Linear Equation

$2x - 4y = 8$

Step 1: Make sure equation is in Standard Form

Step 2: Find the intercepts

$2(0) - 4y = 8$

$\frac{-4y}{-4} = \frac{8}{-4}$

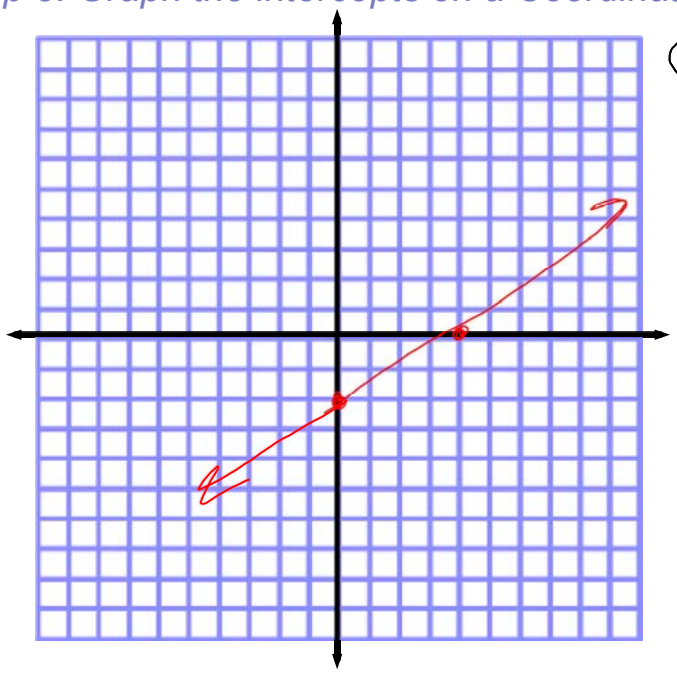
$y = -2$

$2x - 4(0) = 8$

$\frac{2x}{2} = \frac{8}{2}$

$x = 4$

Step 3: Graph the intercepts on a Coordinate Plane



$(0, -2)$

$(4, 0)$

Try This!

The school sells pens for $1.00 and notebooks for $3.00. The equation $x + 3y = 60$ describes the number of pens x and notebooks y that you can buy for $60.

Graph the function and find its intercepts.

$x + 3(0) = 60$

$x = 60$

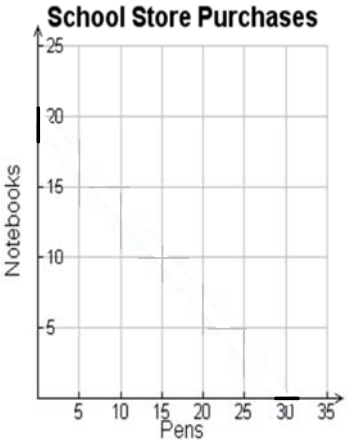
$(60, 0)$

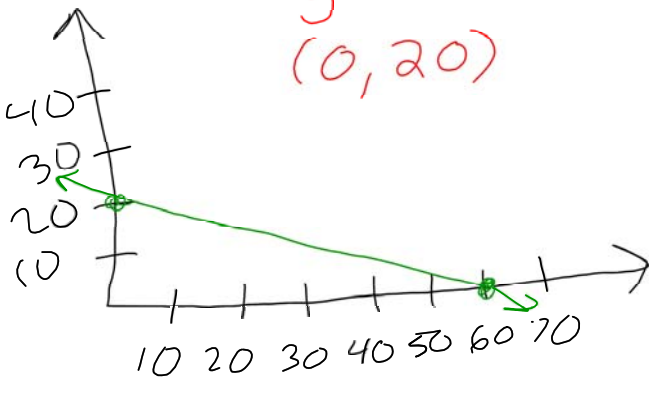
$0 + 3y = 60$

$\frac{3y}{3} = \frac{60}{3}$

$y = 20$

$(0, 20)$





Try This!

The school sells pens for $1.00 and notebooks for $3.00. The equation $x + 3y = 60$ describes the number of pens x and notebooks y that you can buy for $60.

Graph the function and find its intercepts.

$x + 3y = 60$

$-x \quad -x$

$3y = 60 - x$

(0, 20) (60, 0)

x	0	9	18	27	36
f(x)= $-\frac{1}{3}x + 20$	20	17	14	11	8

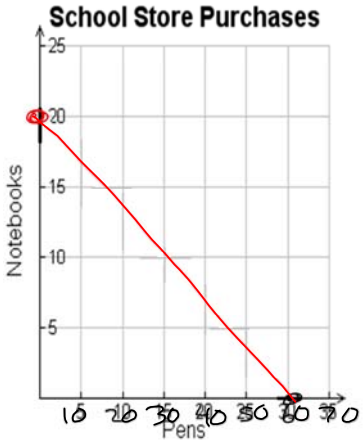
x: $x + 3(0) = 60$

$x = 60$

y: $0 + 3y = 60$

$\frac{3y}{3} = \frac{60}{3}$

$y = 20$

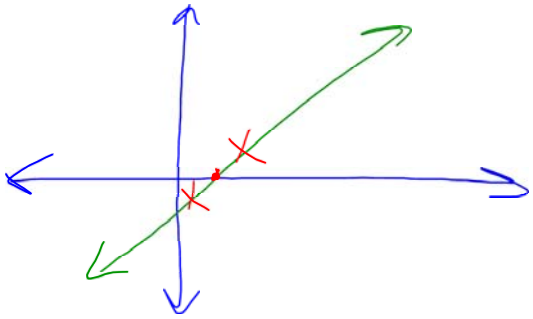


$y = 2x - 3$

$(0, -3)$

$y = mx + b$ $(1.5, 0)$

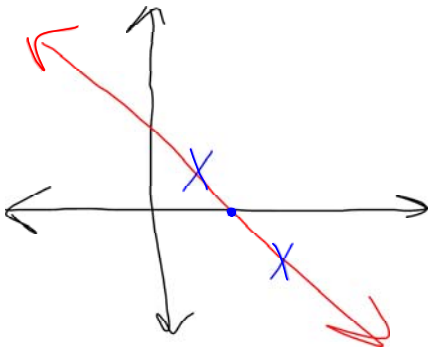
y-intercept



$y = -2x + 4$

$(0, 4)$

$(2, 0)$



$y = 2x - 3$

$0 = 2x - 3$

$+3 \quad +3$

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

$1.5 = x$

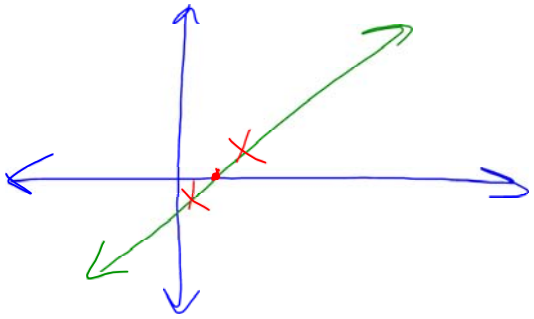
$y = 3x - 4$

$(0, -4)$

$y = 2x - 3$

$(0, -3)$

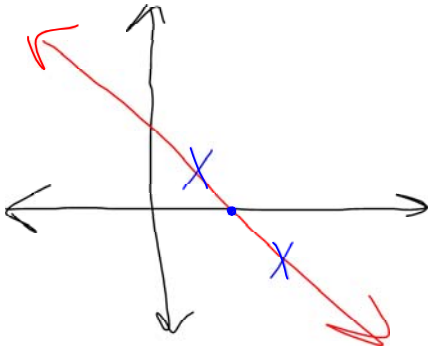
$(1.5, 0)$



$y = -2x + 4$

$(0, 4)$

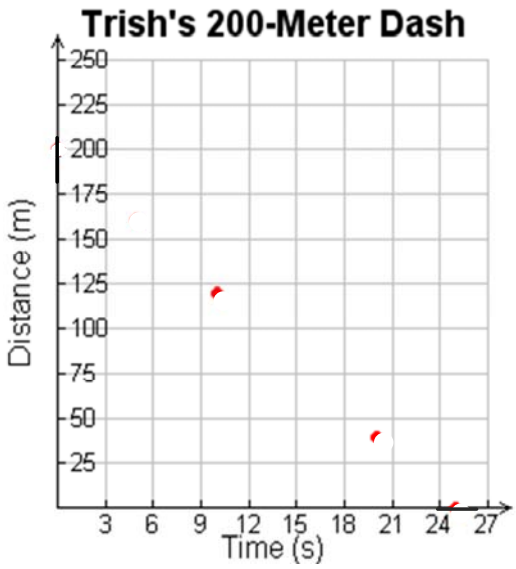
$(2, 0)$



Application of Intercepts (Using Intercepts)

Trish can run the 200 m dash in 25 s. The function $f(x) = 200 - 8x$ gives the distance remaining to be run after x seconds. Graph this function and find the intercepts. What does each intercept represent?

x					
f(x)=200-8x					



Homework

pg. 72-73 #1, 4-14