Warm-up 10-23

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 and give its domain and range.

Warm-up 10-23

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

1. {(–3, 10), (–1, 9), (1, 7), (3, 4), (5, 0)} NO bc y isn't changing by a constant

x	y	
-3	10	-1
-1	9	-2
1	7	-3
3	4	-2
5	0	

2. {(3, 4), (5, 7), (7, 10), (9, 13), (11, 16)} Yes, x and y change by a constant

Tell whether each function is linear.

3. $y = 3 - 2x$ NO

4. $3y = 12$ yes

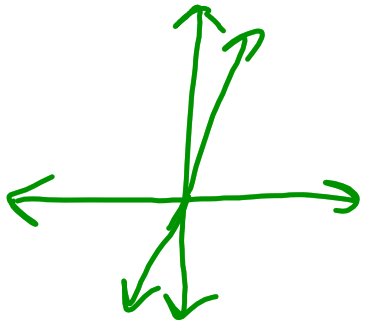
$\frac{3y}{3} = \frac{12}{3}$

$y = 4$

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 and give its domain and range.

D: {0, 1, 2, 3...}

R: {0, 4.75, 9.5, 14.25...}



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.
- Find the rate of change of a line.

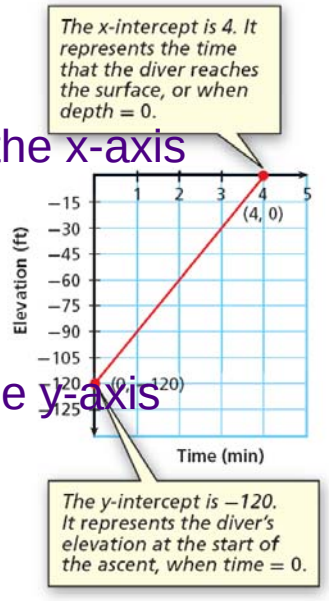
Section 4.2: Using Intercepts (x,y)

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

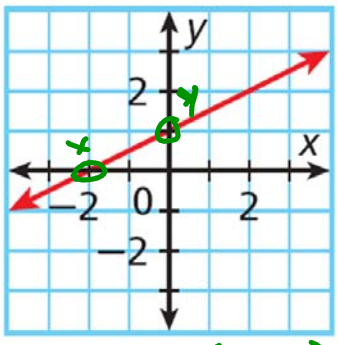
(x,0)

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

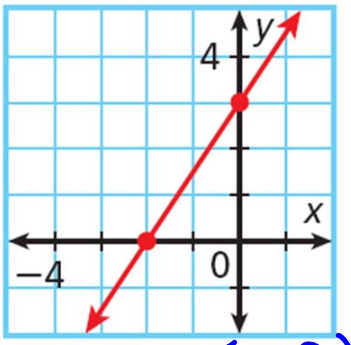
(0,y)



Finding x and y Intercepts from a Graph



y-int: (0, 1)
x-int: (−2, 0)

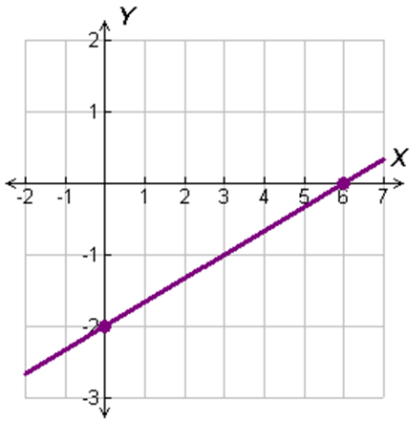


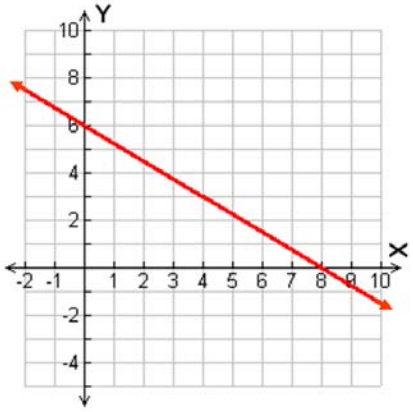
y-int: (0, 3)
x-int: (−2, 0)

Try These!

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

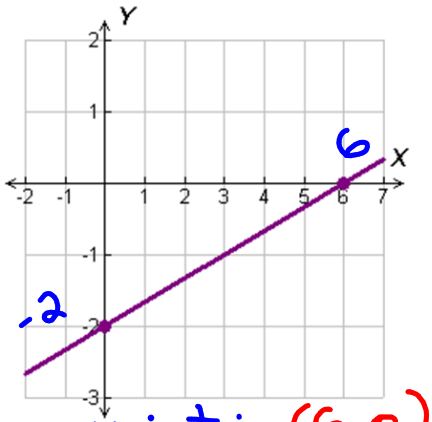
(x, y)



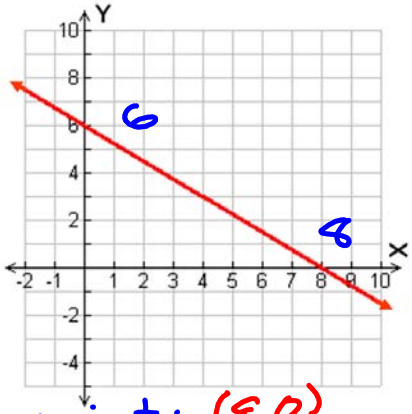


Try These!

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



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

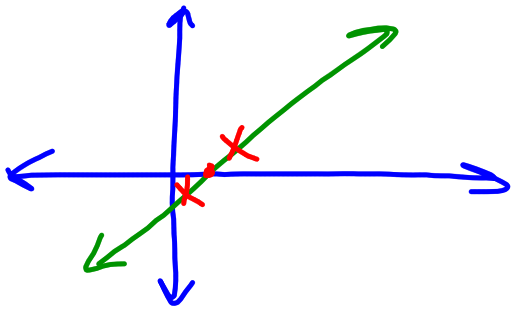


x-int: (8,0)
y-int: (0,6)

$y = 2x - 3$

$(0, -3)$

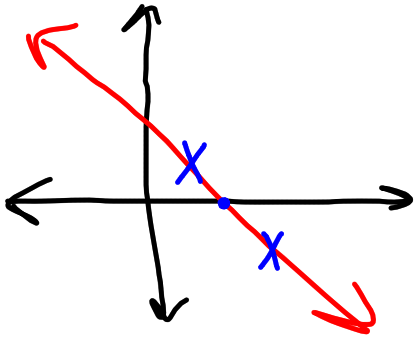
$(1.5, 0)$



$y = -2x + 4$

$(0, 4)$

$(2, 0)$



Finding x and y Intercepts from an Equation

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

$-5x \quad -5x$

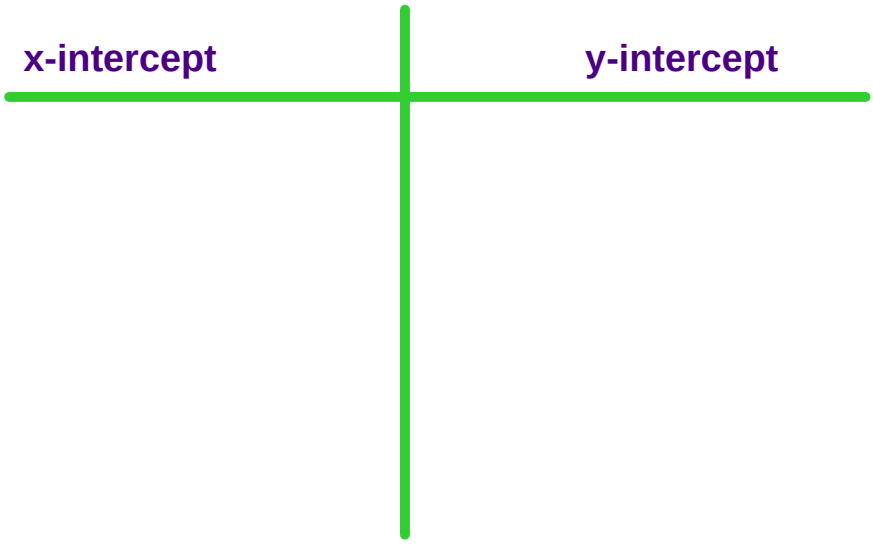
$\frac{-2y}{-2} = \frac{10}{-2} - \frac{5x}{-2}$

$y = -5 + \frac{5x}{2}$

x-intercept	y-intercept
$5x - 2(0) = 10$	$5(0) - 2y = 10$
$\frac{5x}{5} = \frac{10}{5}$	$\frac{-2y}{-2} = \frac{10}{-2}$
$x = 2$	$y = -5$
$(2, 0)$	$(0, -5)$

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

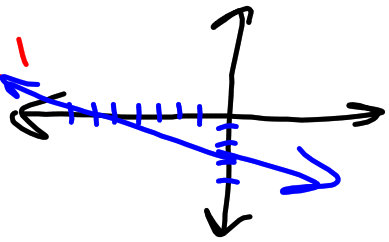
Find the x and the y-intercepts of 3x + 7y = -21

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

$2x - 4y = 8$

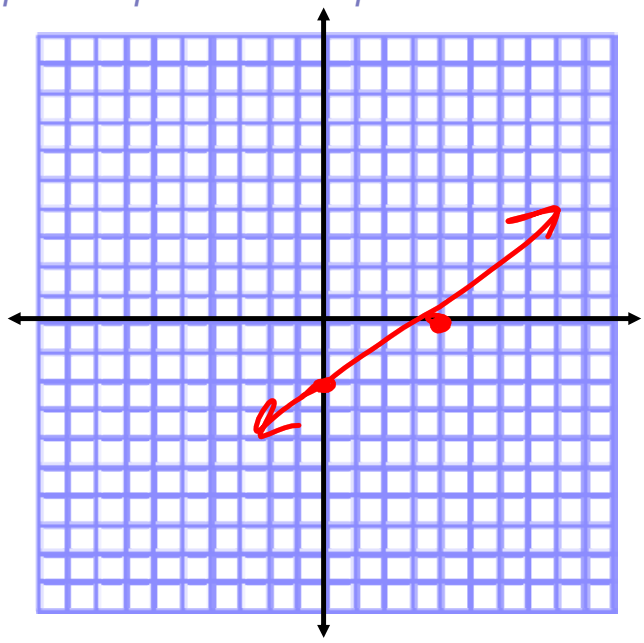
Step 1: Make sure equation is in Standard Form

Step 2: Find the intercepts

(4, 0)

(0, -2)

Step 3: Graph the intercepts on a Coordinate Plane



Application of Intercepts (Using Intercepts)

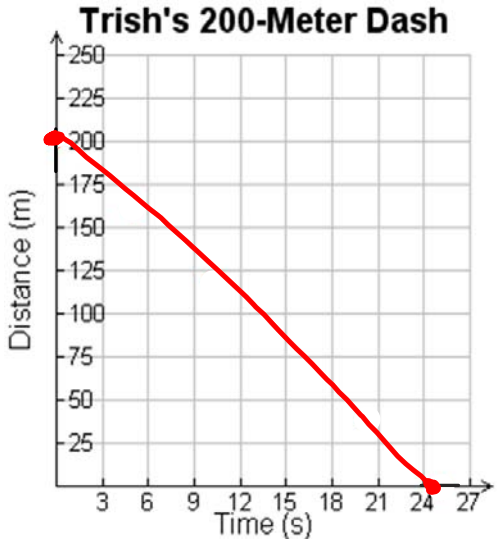
Trish can run the 200 m dash in 25 s. The function $f(x) = 200 - 8x$ gives the distance remaining to be run after x seconds. Graph this function and find the intercepts. What does each intercept represent?

$y = 200 - 8x$

(0, 200)

(25, 0)

x					
f(x)=200-8x					

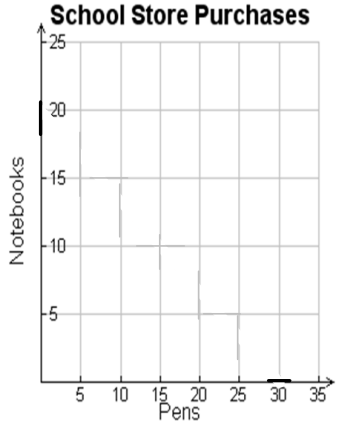


Try This!

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					
f(x)=					



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.

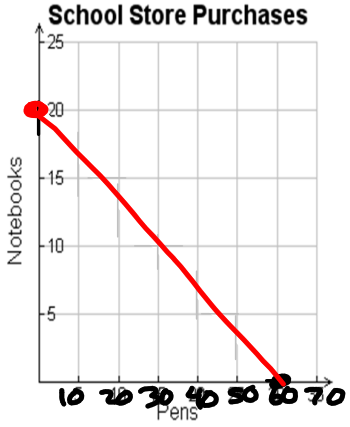
$x+3y=60$
$-x \quad -x$
$3y=60-x$

(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: $0+3y=60$
$\frac{3y}{3}=\frac{60}{3}$
$y=20$



Homework

pg. 240 1-5 (odd)