X & Y INTERCEPTS

AGENDA

Warm-Up
Notes p. 48
Assignment:
#1-12

ESSENTIAL QUESTION

How do I find both the x- and y- intercepts of graphs, tables, and equations?

WARM-UP THURSDAY

HINT: $m = \frac{y_2 - y_1}{x_2 - x_1}$

1. Find the slope of the line connecting the points (2, 3k) and (1, 2k).

x_1 y_1 x_2 y_2

x	y
2	3k
1	2k

$-1 \quad -k$

$m = \frac{2k - 3k}{1 - 2} = \frac{-1k}{-1} = 1k = \boxed{k}$

2. Find the slope of the line connecting the points (4a, 4b) and (a, -b)

x_1 y_1 x_2 y_2

$m =$ _____

X & Y INTERCEPTS

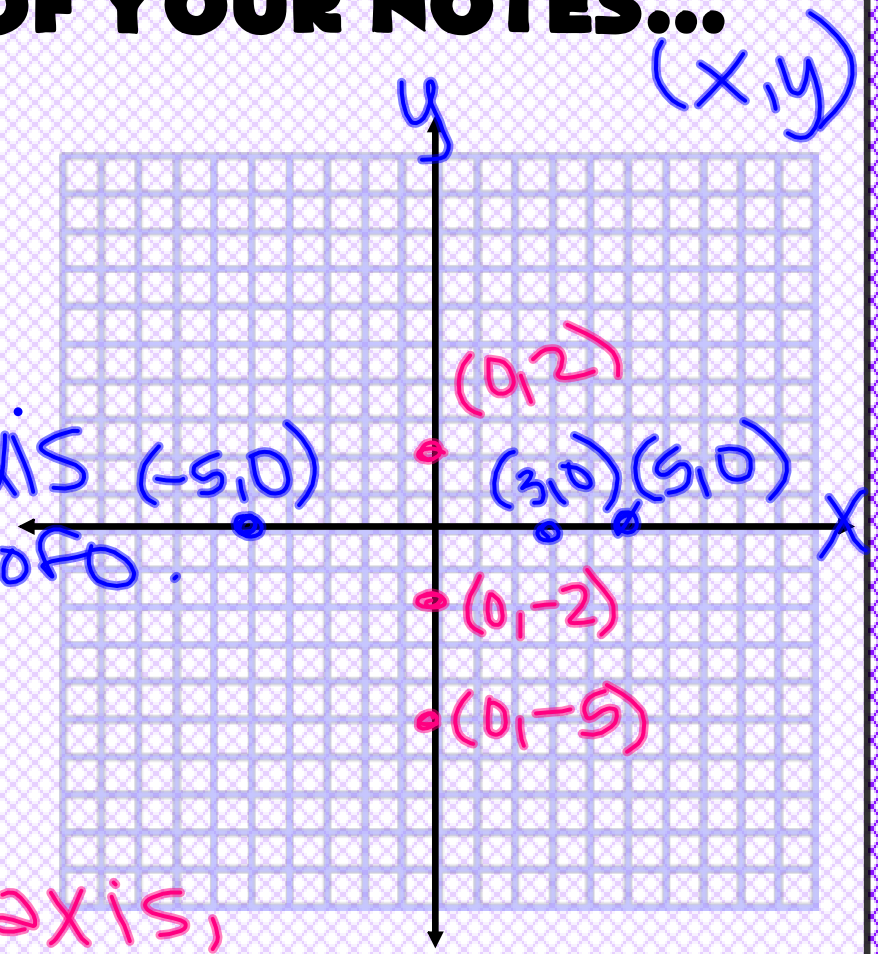
ON THE BACK OF YOUR NOTES...

1. Draw a coordinate plane. Plot any 3 points on the x-axis. What do you notice about the coordinates of all 3 points?

Any point on x-axis has y-coordinate of 0.

2. Plot any 3 points on the y-axis. What do you notice about the coordinates of all 3 points?

Any point on y-axis, has x-coordinate of 0.



~~Think~~: What does it mean to get an interception in football?

Fold your paper in half, glue onto page 48.

X & Y INTERCEPTS P.48

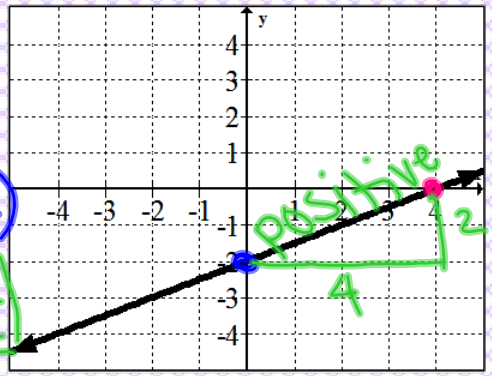
ESSENTIAL QUESTION How do I find both the x- and y- intercepts of graphs, tables, and equations?

- The x-**intercept**, **zero of a function**, **solution** is the point where a graph crosses or intersects the x-axis.
- The y-**intercept** is the point where a graph crosses or intersects the y-axis

(x,y)

Find the x and y- intercepts of each graph. Be sure to write each as an ordered pair.

1.



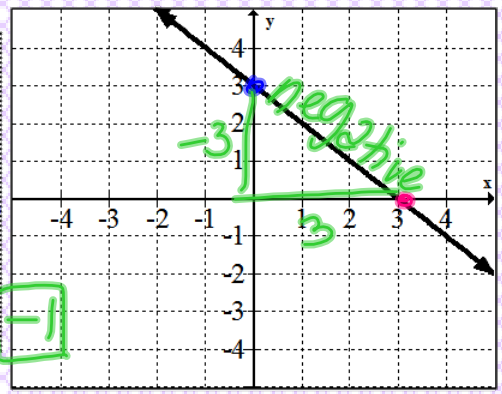
x-int: (4,0)

y-int: (0,-2)

Slope: $\frac{2}{4} = \boxed{\frac{1}{2}}$

positive

2.



x-int: (3,0)

y-int: (0,3)

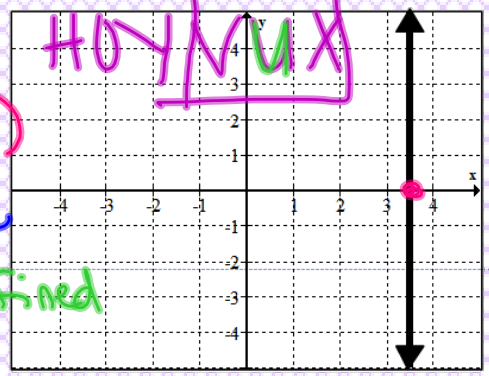
Rate of Change: $\frac{-3}{3} = \boxed{-1}$

slope

-3 3

negative

3.



x-int

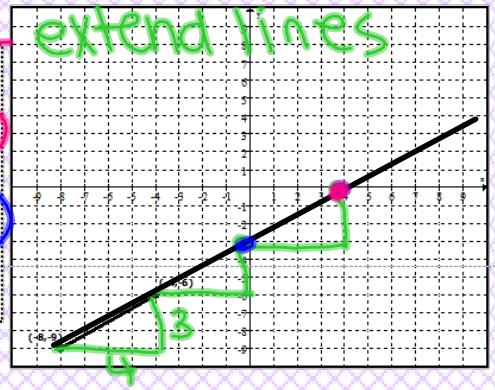
zero: (3.5,0)

y-int: None

m: undefined

HOY $\boxed{\text{NUX}}$

4.



x-int

solution: (4,0)

y-int: (0,-3)

m: $\frac{3}{4}$

extend lines

3

4

X & Y INTERCEPTS P.48

ESSENTIAL QUESTION How do I find both the x- and y- intercepts of graphs, tables, and equations?

Find the x- and y-intercepts and the slope from the table of values.

5.

x	y
-9	-10
-6	-5
-3	0
0	5
3	10

B < +5, +5, +5, +3 < +3

x-intercept: (-3,0)

y-intercept: (0,5)

Rate of Change: $\frac{5}{3}$

slope

$m = \frac{\Delta y}{\Delta x}$

6.

x	y
-3	8
0	6
3	4
6	2
9	0

+3 < −2

x-int

solution: (9,0)

y-intercept: (0,6)

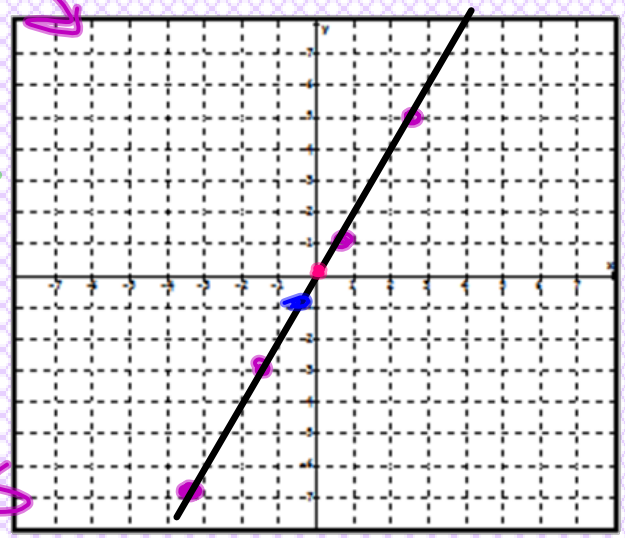
Slope: $\frac{-2}{3}$

7.

x	y
-3	-7
-1	-3
1	1
3	5

+2 < +4

Plot points



x-int

zero: (0.5,0)

y-intercept: (0,-1)

m= $\frac{4}{2}$ = 2

x-int: y=0

y-int: x=0

X & Y INTERCEPTS P.48

ESSENTIAL QUESTION How do I find both the x- and y- intercepts of graphs, tables, and equations?

9. The volleyball team is traveling to a game 120 miles away. Their average speed is 40 mph. The graphed line describes the distance left to travel at any time during the trip. Find the x and y–intercepts and state what each represents.

What is the x-intercept of this function?

(3,0)

What does the x-intercept represent?

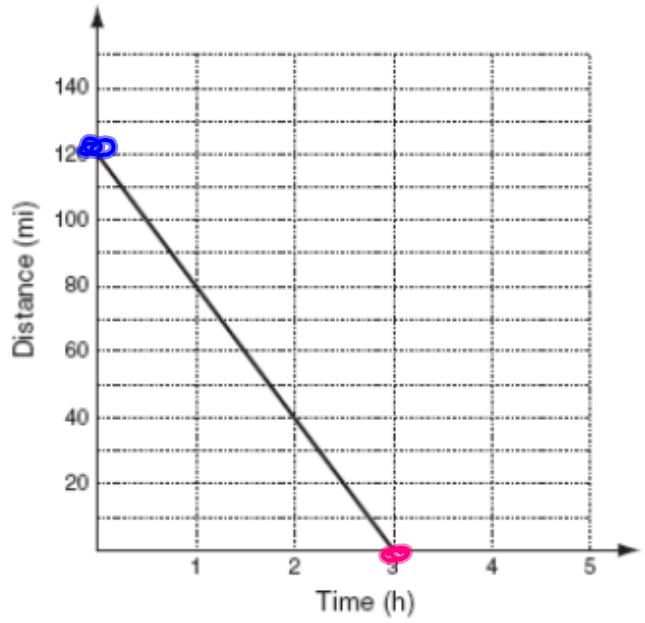
3 hours to drive to the game

What is the y-intercept for this function?

(0,120)

What does the y-intercept represent?

They have to travel 120 miles.



X & Y INTERCEPTS P.48

ESSENTIAL QUESTION How do I find both the x- and y- intercepts of graphs, tables, and equations?

10. Find the x-intercept and the y-intercept, then graph using the intercepts.

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

x-int → cover up y

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

$2 \cdot \frac{1}{2}x = -4 \cdot 2$

$x = -8$

x-int: y=0

solution: $(-8, 0)$

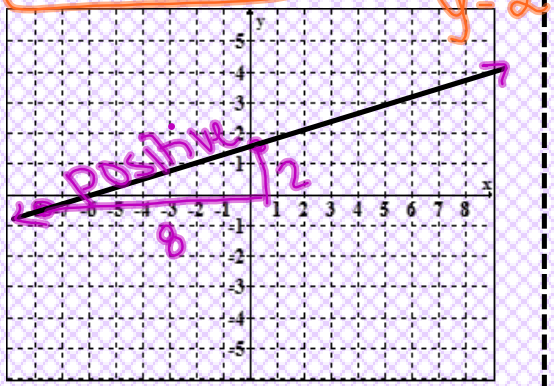
y-intercept: x=0

cover up x

$\frac{-2y}{-2} = \frac{-4}{-2}$

$y = 2$

$(0, 2)$



Rate of Change: slope $\frac{2}{8} = \frac{1}{4}$

b) $-4y = 3x - 12$

x-int

$= 3x - 12$

$0 = 3x - 12$

$+12 \quad +12$

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

$4 = x$

zero: $(4, 0)$

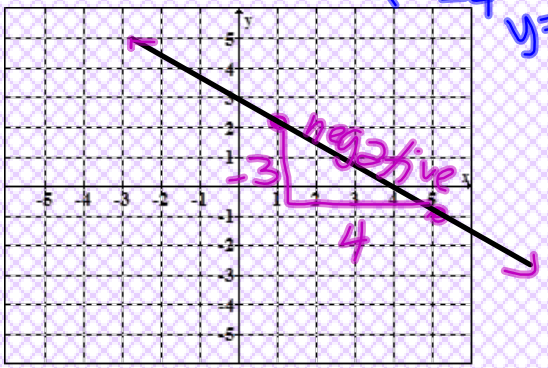
y-intercept:

$-4y = -12$

$\frac{-4y}{-4} = \frac{-12}{-4}$

$y = 3$

$(0, 3)$



Slope: $-\frac{3}{4}$

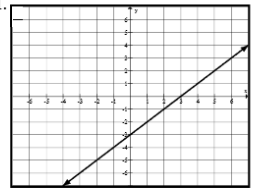
Algebra I - Unit 3: Topic 2 – x and y Intercepts #1-12

Practice – *x* and *y*-Intercepts **pp 303-309**

Name _____ Date _____ Period _____

Find the *x* and *y*-intercepts.

1.

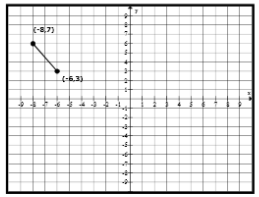


x-intercept _____

y-intercept _____

Slope: _____

2.

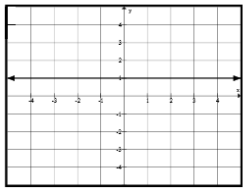


zero: _____

y-intercept_____

m = _____

3.



solution: _____

y-intercept: _____

Rate of Change: _____

4.

x	*y*
-2	10
0	6
1	4
2	2
3	0

zero: _____

y-intercept _____

Rate of Change: _____

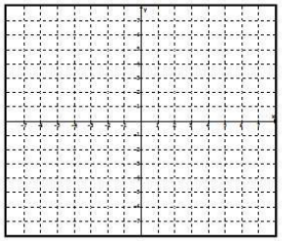
5.

x	*Y*
-6	6
-3	4
3	0
6	-2
9	-4

solution: _____

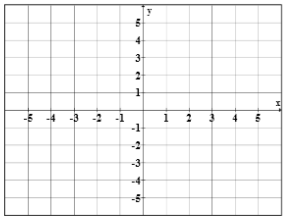
y-intercept: _____

m = _____



Find the *x*-intercept and *y*-intercept, then use them to graph the equations.

6. $3x + 9y = 9$



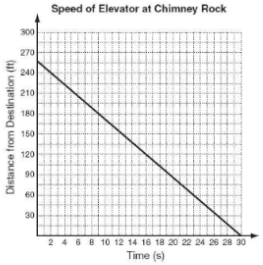
x-intercept: _____

y-intercept: _____

slope: _____

Algebra I - Unit 3: Topic 2 – x and y Intercepts

The graph shows the distance of an elevator at Chimney Rock, North Carolina, from its destination as a function of time. Use the graph to answer questions 7-9.



7. What is the x-intercept of this function?

8. What does the x-intercept represent?

9. What is the y-intercept for this function?

10. What does the y-intercept represent?

11. What is the y-intercept of the function $f(x) = \frac{1}{2}(x - 6)$?

12. Which of the following functions has 2 as a zero of the function?

A $f(x) = x + 2$

B $f(x) = x - 2$

C $f(x) = 2x$

D $f(x) = 2x + 2$

X & Y INTERCEPTS

HOMEWORK CHECK

1. x-intercept: (3,0)
   y-intercept: (0,-3)
   Slope: 1

2. zero: (-4,0)
   y-intercept: (0,-6)
   m= -3/2

3. Solution: none
   y-intercept: (0,1)
   Rate of Change: zero

4. zero: (3,0)
   y-intercept: (0,6)
   Rate of change: -2

5. solution: (3,0)
   y-intercept: (0,2)
   m= -2/3

6. x-intercept: (3,0)
   y-intercept: (0,1)
   slope: -1/3
7. (30,0)
8. Time to get to bottom
9. (0,265)
10. Distance from top
11. (0,-3)
12. B

HW 2.5 DUE TOMORROW!