

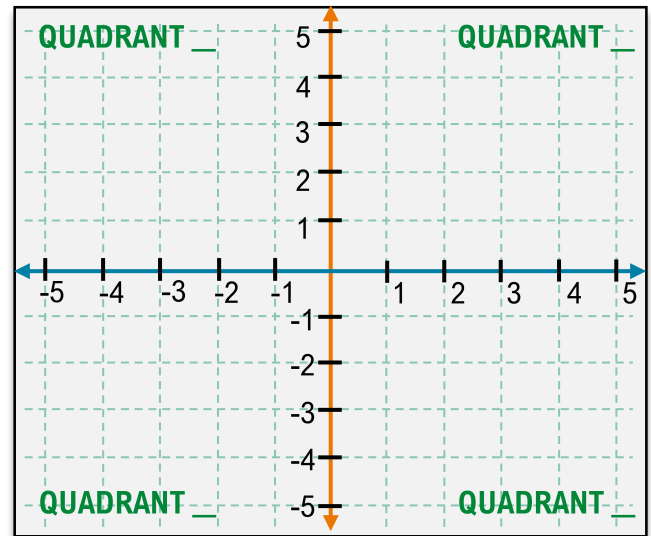
TOPIC: THE RECTANGULAR COORDINATE SYSTEM

Introduction to the Rectangular Coordinate System

◆ Graphing in this course usually involves plotting _____ or _____ on the rectangular coordinate system.

Rectangular Coordinate System ("Cartesian Plane"): 2 perpendicular _____ form a 2-D plane.

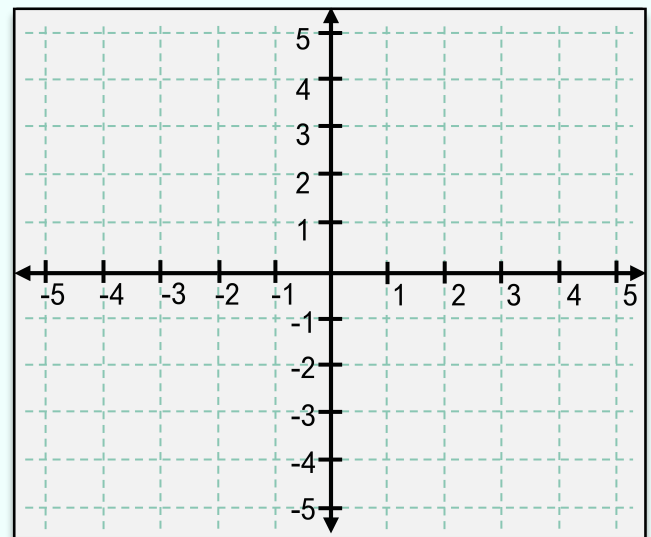
- ▶ Horizontal axis is the – axis
- ▶ Vertical axis is the – axis
- ▶ **Ordered pairs / points:** Position *always* in form _____
- ▶ **Origin:** point (,) where x & y axes intersect
 - x values are [+ | –] [RIGHT | LEFT] of origin
 - y values are [+ | –] [RIGHT | LEFT] of origin
- ▶ **Quadrants:** x & y axes divide graphs into 4 _____.
 - Q1 starts at top-right, #s continue counter-clockwise



EXAMPLE: Plot the points $A (4, 3)$, $B (-3, 2)$, $C (-2, -3)$, $D (5, -4)$, $E (0, 0)$, $F (0, -3)$ on the graph above.

EXAMPLE

Graph the points $W (1, -2)$, $X (5, 2)$,
 $Y (-3, -4)$, $Z (-4, 3)$. Identify the **quadrant** of each point.



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PRACTICE

In which quadrant is the following point located?

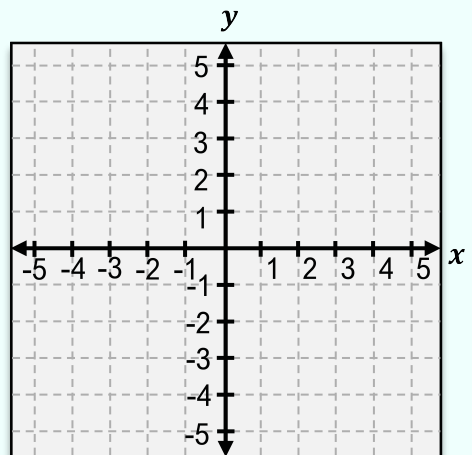
(A) $\left(-\frac{25}{2}, 47\right)$

(B) $(248, -321)$

EXAMPLE

Plot the following points in the cartesian plane below.

$(3, 4)$ $(-4, 2)$ $(-3, -5)$ $(5, -2)$



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Determine If an Ordered Pair Is a Solution

◆ Recall: An x -value is a solution to a ___-variable equation if it makes the equation true when x is plugged in.

► An ordered pair (x, y) is a solution to a ___-variable eqn if it makes the eqn true when x AND y are plugged in.

Recall	One-Variable Equation	New	Two-Variable Equation
	Verify that $x = 3$ is a solution. $x + 2 = 5$ $3 + 2 = 5$ $5 = 5 \quad \checkmark$		Verify that $(3, 1)$ is a solution. $x + 2y = 5$

EXAMPLE

Given the linear equation $x + 2y = 5$, which of the following ordered pairs are solutions?

(A)

(5,0)

(B)

(8,2)

(C)

(-3,4)

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PRACTICE

Given the equation $y - 4 = 2(x + 1)$ which of the following ordered pairs is a solution?

(A) $(-1, -4)$

(B) $(0, 6)$

(C) $(1, 4)$

(D) $(2, 7)$

PRACTICE

Given the equation $y = \frac{1}{2}x - \frac{3}{2}$ which of the following ordered pairs is a solution?

(A) $\left(4, \frac{1}{2}\right)$

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

(C) $(6, 0)$

(D) $(0, -3)$

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Completing Ordered Pair Solutions

◆ Recall: We can determine if an ordered pair (x, y) is a solution to a 2-variable equation by plugging in x and y .

► To complete an ordered pair solution, plug the _____ value into the equation & solve for the _____ value.

EXAMPLE

Given the linear equation $y = 2x + 3$, complete the ordered pair solutions by filling in the table.

New		Completing Ordered Pairs	
$y = 2x + 3$	x	y	(x, y)
	1		
		-7	
	$\frac{5}{2}$		

EXAMPLE

Given the linear equation $x = 3y - 2$, complete the following ordered pair solutions.

(A) $(2, \underline{\hspace{1cm}})$

(B) $(\underline{\hspace{1cm}}, 5)$

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PRACTICE

Given the equation $y = \frac{1}{2}x - \frac{4}{3}$, what is the missing variable shown below?

(A) $(2, \underline{\hspace{1cm}})$

(B) $(\underline{\hspace{1cm}}, \frac{20}{3})$

(C) $(\underline{\hspace{1cm}}, 0)$

PRACTICE

Given the equation $2x + 3y = 10$, what is the missing variable shown below?

(A) $(\underline{\hspace{1cm}}, 8)$

(B) $(\underline{\hspace{1cm}}, -\frac{5}{3})$

(C) $(5, \underline{\hspace{1cm}})$

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EXAMPLE

Given the linear equation $2x + y = -4$, complete the following table.

x	y
- 4	
	0
0	
2	
	- 12