TOPIC: THE RECTANGULAR COORDINATE SYSTEM

Introduction to the Rectangular Coordinate System

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

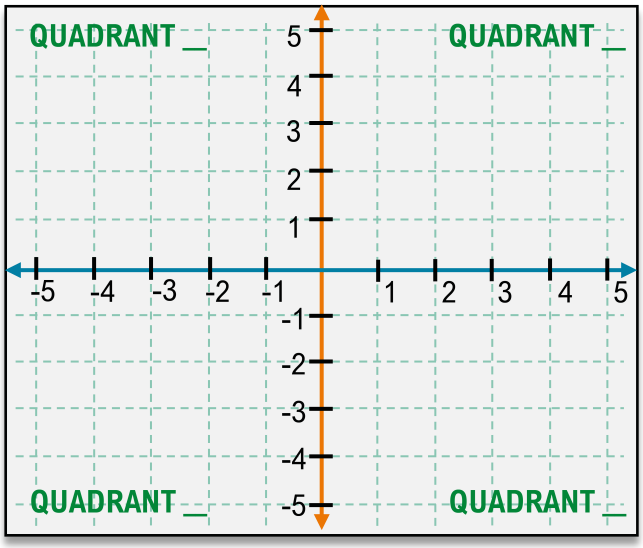
Rectangular Coordinate System ("Cartesian Plane"): 2 perpendicular _____ form a 2-D plane.

- ▸ 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 _____.

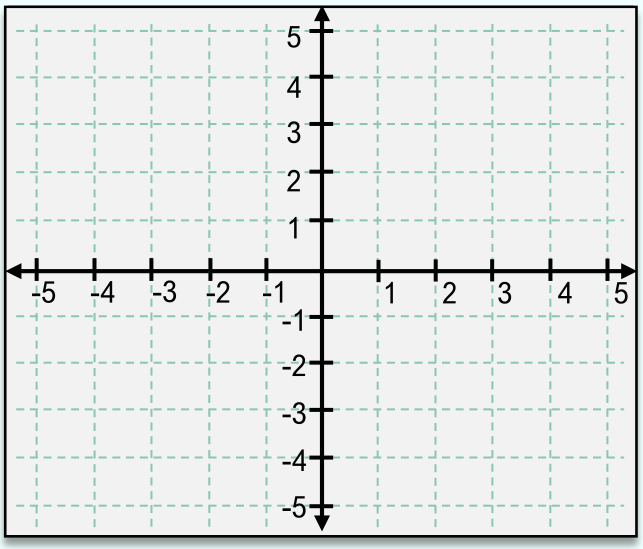
  Q1 starts at top-right, #s continue counter-clockwise



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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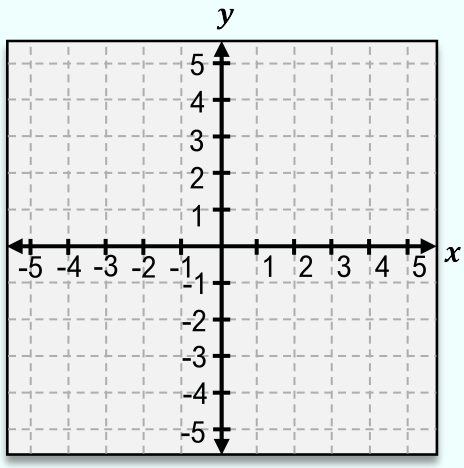
PRACTICE In which quadrant is the following point located?

(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. $x + 2 = 5$ $3 + 2 = 5$ $5 = 5$ ✓	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?

$(\boldsymbol{A})\ (\mathbf{-1, -4})$

$(\boldsymbol{B})\ (\mathbf{0, 6})$

$(\boldsymbol{C})\ (\mathbf{1, 4})$

$(\boldsymbol{D})\ (\mathbf{2, 7})$

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

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

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

$(\boldsymbol{C})\ (\mathbf{6, 0})$

$(\boldsymbol{D})\ (\mathbf{0, -3})$