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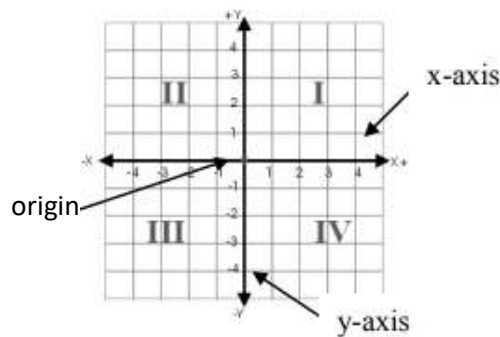
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Lesson: Transformations #1 – Plotting points and Translations

The **coordinate plane** is formed by two perpendicular lines called the **x-axis** and **y-axis**.

The **coordinate plane** is separated into 4 sections called **quadrants**. They are labeled counterclockwise from the top right.

The point in the middle of the coordinate plane is called the **origin**. The coordinates are $(0,0)$.



An **ordered pair** is a unique point that appears on the coordinate plane. The form of a point is (x, y) .

The x coordinate goes left and right on the horizontal axis. Left is negative right is positive.

The y coordinate goes up and down on the vertical axis. Up is positive down is negative.

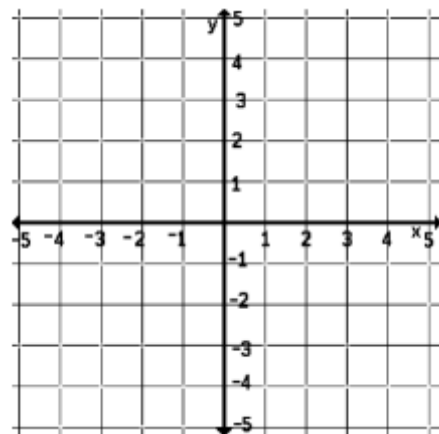
To graph a point always **start at the origin**. Now follow the directions for the x and y.

Example: On the graph above plot the two points $(3, 5)$ and $(-4, 1)$.

To help us learn more about this use the graph below to plot and label all the points listed on the chart.

State the quadrant which the point lies. If the point lies on one of the axis state which one.

Label	Point	Quadrant?
A	$(5, 3)$	
B	$(-1, -3)$	
C	$(0, -5)$	
D	$(3, -4)$	
E	$(3, 0)$	
F	$(0, -4)$	
G	$(0, 0)$	



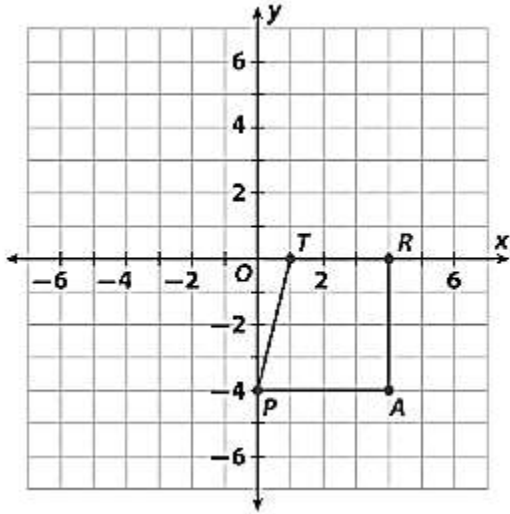
Exploring Translations

A **translation** is a transformation that slides a figure along a straight line.

Example #1:

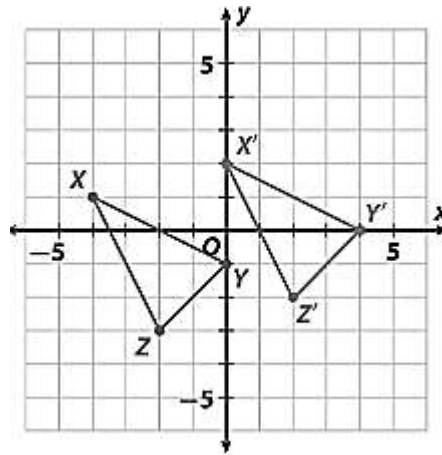
Take the quadrilateral *PART* and translate the shape **5 units left** and **3 units up**.

Another way we can describe this is to write $(x-5, y+3)$. Label the new points *P'A'R'T'*.



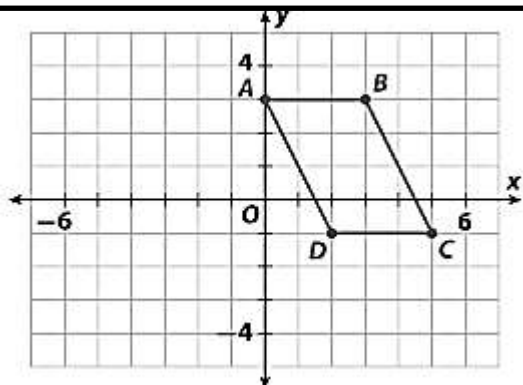
Example #2:

Write the rule that transforms triangle *XYZ* to *X'Y'Z'*.



Example #3:

The figure shows parallelogram *ABCD*. Graph the image of the parallelogram after a translation of 5 units to the left and 2 units down.



Example #4:

The figure shows trapezoid *WXYZ*. Graph the image of the trapezoid after a translation of 4 units up and 2 units to the left. (Example 1)

