7.7 Area and Perimeter on a Coordinate Plane

Obj: Here you'll learn how to differentiate among parallelograms, rectangles, rhombuses, squares, kites, trapezoids, and quadrilaterals in the coordinate plane.

Area Formulas:

Square $A = s^2$

Rectangle $A = lw$ or $A = bh$

Parallelogram $A = bh$

Trapezoid $A = \frac{1}{2}h(b_1 + b_2)$

Rhombus $A = \frac{1}{2}d_1d_2$ or $A = bh$

Perimeter:

Square $P = 4s$

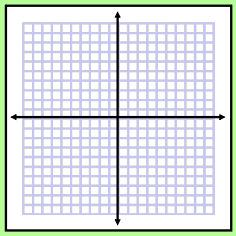
Rectangle $P = 2l + 2w$

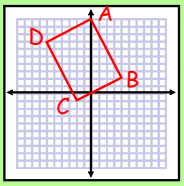
ABCD is a rectangle with coordinates of: A(0,10), B(4,2), C(-2,-1), and D(-6,7). What is the area and perimeter?

First graph the coordinates.

Next find the distances for each side.

Then plug into area and perimeter formulas.





$AB = \sqrt{}$ $BC = \sqrt{}$

Do we need to find AD and CD if we know ABCD is a rectangle?

Now we substitute the information we have learned into the two rectangle formulas.

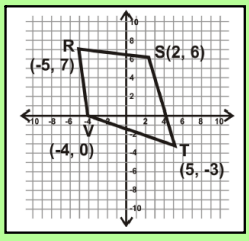
A quadrilateral is defined by the four lines:

$$y=2x+1,\quad y=2x-4,\quad y=-x+5,\quad y=-x-5$$

Is this quadrilateral a parallelogram?

To check if its a parallelogram we have to check that it has two pairs of parallel sides.

Determine what type of quadrilateral RSTV is.



Turn to a neighbor, what does it look like to you?

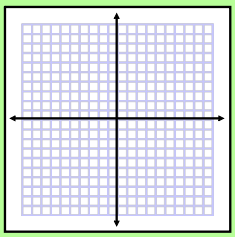
Use the distance formula to determine if the adjacent sides are congruent.

RS ST

RV VT

Given the coordinates, determine the shape of the quadrilateral. L(-5, -2), M(-2,2), N(2,2), O(5,-2).

What formula will we use to find the area of this quadrilateral?



Graph quadrilateral EFGH with vertices E(2,3), F(8,4), G(7,-2), and H(1,-3). Determine whether the quadrilateral is a parallelogram. If it is what is the area of the parallelogram?

How do we determine if the quadrilateral is a parallelogram just by analyzing the graph?