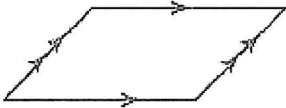


Name: Key

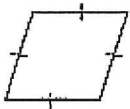
Hour: _____

Quadrilaterals and Special Parallelograms Notes

A **parallelogram** is a quadrilateral with both pairs of opposite sides parallel.



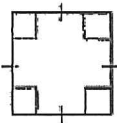
A **rhombus** is a parallelogram with 4 congruent sides.



A **rectangle** is a parallelogram with 4 right angles.

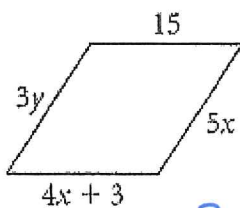


A **square** is a parallelogram with 4 congruent sides and 4 right angles.



Examples: By using the definitions, solve for the variables.

1. A Rhombus



$$15 = 5x$$

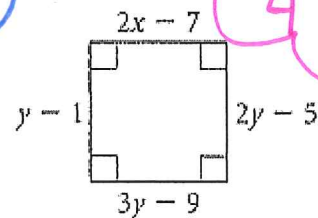
$$3 = x$$

$$3y = 15$$

$$y = 5$$

Rhombus is a para w/ 4 congruent sides

2. A Square.



4 congruent sides
4 Right angles

$$y - 1 = 2y - 7$$

$$6 = y$$

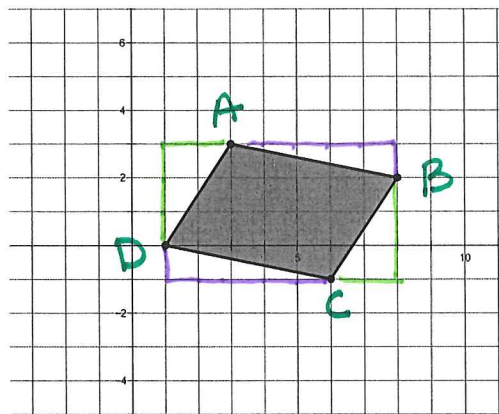
Name: Key

Hour: _____

Quadrilateral Coordinate Examples:

1. Determine whether the figure with vertices A(3,3), B(8,2), C(6,-1), D(1,0) is a parallelogram.

To be a parallelogram, you must test for opposite sides parallel



$$\text{Slope } AB = -\frac{1}{5}$$

$$\text{Slope } DC = -\frac{1}{5}$$

$$\boxed{AB \parallel DC}$$

$$\text{Slope } DA = \frac{3}{2}$$

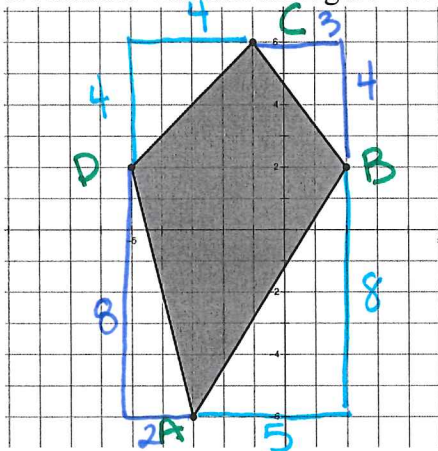
$$\text{Slope } CB = \frac{3}{2}$$

$$\boxed{DA \parallel CB}$$

Test for parallel
Slopes

ABCD is a Parallelogram because opposite sides are **PARALLEL**

2. Determine whether the figure with vertices A(-3,-6), B(2,2), C(-1,6), D(-5,2) is a parallelogram.



check opposite slopes

$$\text{Slope } CB = -\frac{4}{3}$$

$$\text{Slope } DA = -\frac{8}{2} = -4$$

$$\boxed{CB \not\parallel DA}$$

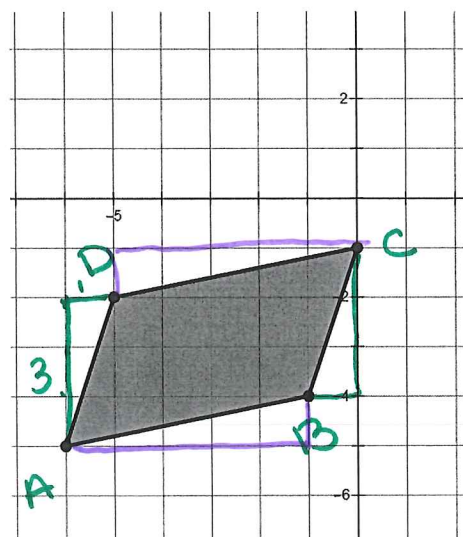
$$\text{Slope } DC = +1$$

$$\text{Slope } AB = \frac{8}{5}$$

$$\boxed{DC \not\parallel AB}$$

opposite sides are **NOT** parallel therefore, ABCD is **NOT** a parallelogram

3. Determine whether the figure with vertices A(-6,-5), B(-1,-4), C(0,-1), D(-5,-2) is a parallelogram.



$$\text{Slope } AB = \frac{1}{5}$$

$$\text{Slope } DC = \frac{1}{5}$$

$$\boxed{AB \parallel DC}$$

$$\text{Slope } AD = 3$$

$$\text{Slope } BC = 3$$

$$\boxed{AD \parallel BC}$$

ABCD is a Parallelogram because opposite sides are parallel.