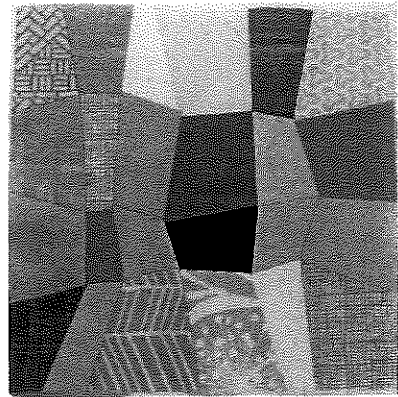


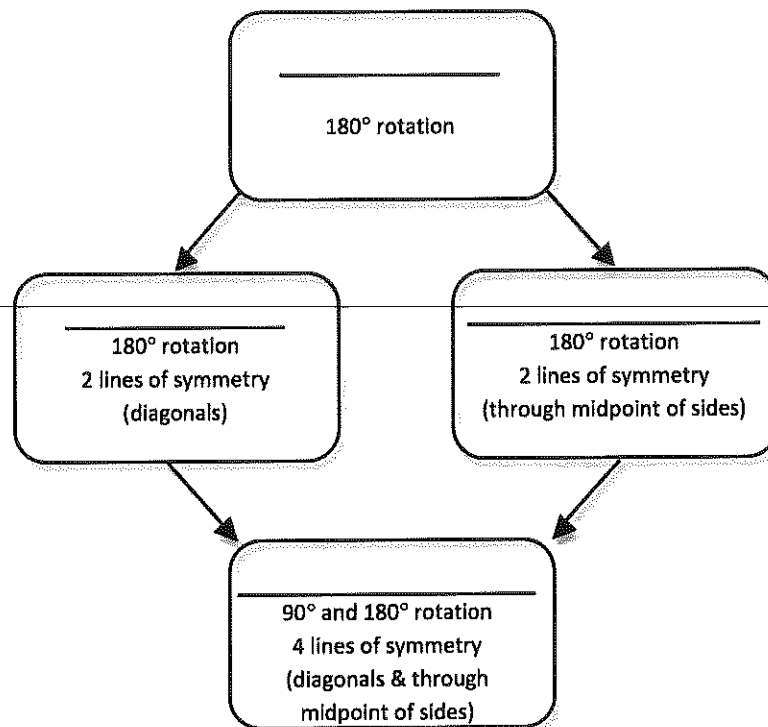
## 6.7 Quadrilaterals—Beyond Definition

### *A Practice Understanding Task*



CC BY Gabrielle  
<https://flic.kr/d/9tKTTn>

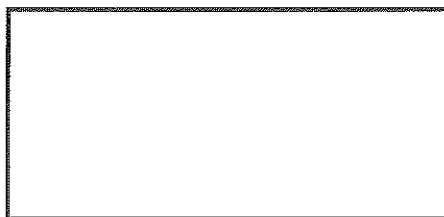
We have found that many different quadrilaterals possess lines of symmetry and/or rotational symmetry. In the following chart, write the names of the quadrilaterals that are being described in terms of their symmetries.



What do you notice about the relationships between quadrilaterals based on their symmetries and highlighted in the structure of the above chart?

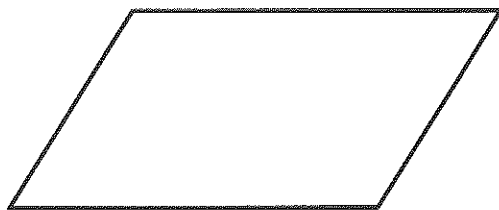
Based on the symmetries we have observed in various types of quadrilaterals, we can make claims about other features and properties that the quadrilaterals may possess.

1. A **rectangle** is a quadrilateral that contains four right angles.



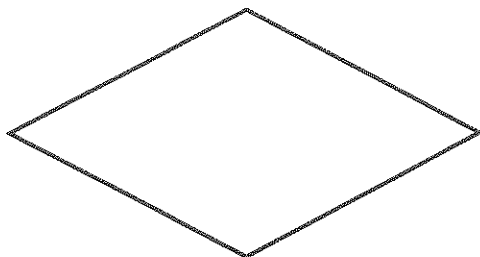
Based on what you know about transformations, what else can we say about rectangles besides the defining property that “all four angles are right angles?” Make a list of additional properties of rectangles that seem to be true based on the transformation(s) of the rectangle onto itself. You will want to consider properties of the sides, the angles, and the diagonals. Then justify why the properties would be true using the transformational symmetry.

2. A **parallelogram** is a quadrilateral in which opposite sides are parallel.



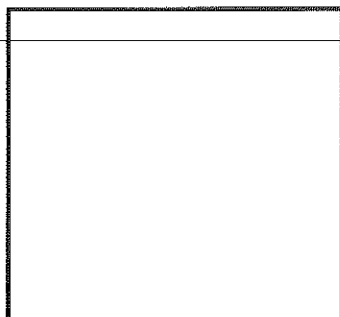
Based on what you know about transformations, what else can we say about parallelograms besides the defining property that “opposite sides of a parallelogram are parallel?” Make a list of additional properties of parallelograms that seem to be true based on the transformation(s) of the parallelogram onto itself. You will want to consider properties of the sides, angles and the diagonals. Then justify why the properties would be true using the transformational symmetry.

3. A **rhombus** is a quadrilateral in which all four sides are congruent.



Based on what you know about transformations, what else can we say about a rhombus besides the defining property that “all sides are congruent?” Make a list of additional properties of rhombuses that seem to be true based on the transformation(s) of the rhombus onto itself. You will want to consider properties of the sides, angles and the diagonals. Then justify why the properties would be true using the transformational symmetry.

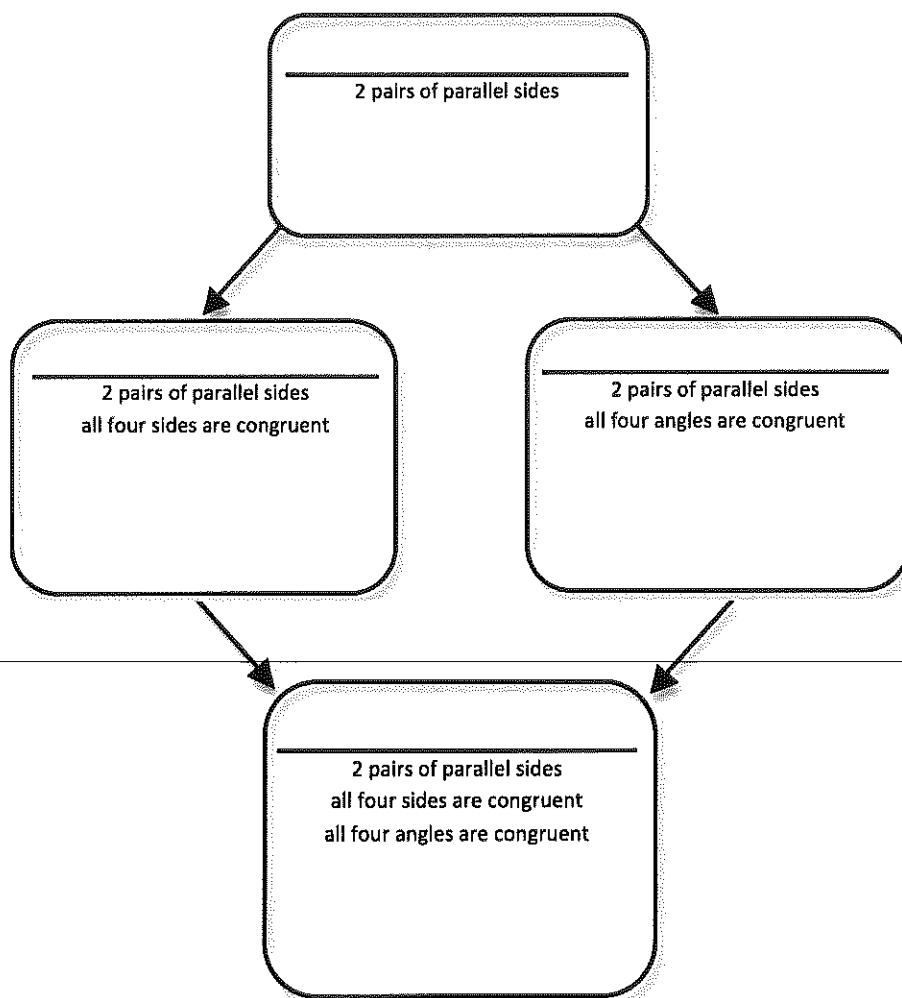
4. A **square** is both a rectangle and a rhombus.



Based on what you know about transformations, what can we say about a square? Make a list of properties of squares that seem to be true based on the transformation(s) of the squares onto itself. You will want to consider properties of the sides, angles and the diagonals. Then justify why the properties would be true using the transformational symmetry.

SECONDARY MATH I // MODULE 6  
TRANSFORMATIONS AND SYMMETRY - 6.7

In the following chart, write the names of the quadrilaterals that are being described in terms of their features and properties, and then record any additional features or properties of that type of quadrilateral you may have observed. Be prepared to share reasons for your observations.



What do you notice about the relationships between quadrilaterals based on their characteristics and the structure of the above chart?

How are the charts at the beginning and end of this task related? What do they suggest?

**READY, SET, GO!**

Name \_\_\_\_\_

Period \_\_\_\_\_

Date \_\_\_\_\_

**READY**

Topic: Defining congruence and similarity.

1. What do you know about two figures if they are congruent?
2. What do you need to know about two figures to be convinced that the two figures are congruent?
3. What do you know about two figures if they are similar?
4. What do you need to know about two figures to be convinced that the two figures are similar?

**SET**

Topic: Classifying quadrilaterals based on their properties.

Using the information given determine the most accurate classification of the quadrilateral.

- |  |  |
|--|--|
| 5. Has $180^\circ$ rotational symmetry.          | 6. Has $90^\circ$ rotational symmetry.               |
| 7. Has two lines of symmetry that are diagonals. | 8. Has two lines of symmetry that are not diagonals. |
| 9. Has congruent diagonals.                      | 10. Has diagonals that bisect each other.            |
| 11. Has diagonals that are perpendicular.        | 12. Has congruent angles.                            |

**GO**

Topic: Slope and distance.

Find the *slope* between each pair of points. Then, using the Pythagorean Theorem, find the *distance* between each pair of points. Distances should be provided in the most exact form.

13.  $(-3, -2), (0, 0)$

a. Slope:

b. Distance:

14.  $(7, -1), (11, 7)$

a. Slope:

b. Distance:

15.  $(-10, 13), (-5, 1)$

a. Slope:

b. Distance:

16.  $(-6, -3), (3, 1)$

a. Slope:

b. Distance:

17.  $(5, 22), (17, 28)$

a. Slope:

b. Distance:

18.  $(1, -7), (6, 5)$

a. Slope:

b. Distance:

S