

Geometry (H)  
Section 5.4 – Special Parallelograms

Name: \_\_\_\_\_

Today we will be studying the properties of special parallelogram.

Define each of the following and draw a diagram, mark any parts that are congruent.

**Rectangle** –

**Rhombus** –

**Square** –

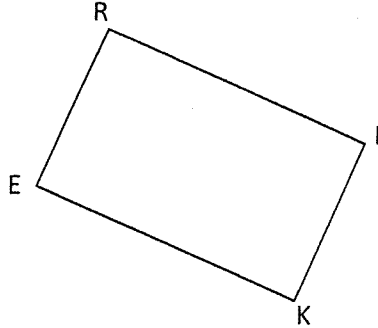
A Venn diagram can be drawn to show the relationship between all the quadrilaterals we've studied so far.

Use the Venn diagram to determine if the statement is sometimes, always or never true.

1. A square is a parallelogram. \_\_\_\_\_
2. A rectangle is a square. \_\_\_\_\_
3. A square is a rectangle. \_\_\_\_\_
4. A parallelogram is a rhombus. \_\_\_\_\_
5. A square is a rhombus. \_\_\_\_\_
6. A rhombus has opposite angles congruent. \_\_\_\_\_
7. A rectangle is a rhombus. \_\_\_\_\_

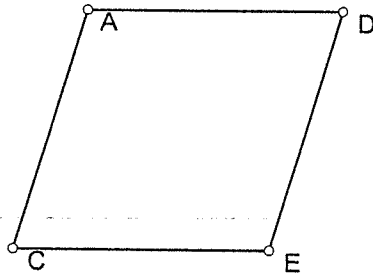
Because a rhombus, rectangle and square are parallelograms they take on the properties of a parallelogram. However, the rectangle and rhombus have some additional properties relating to their diagonals.

Look at the rectangle below. Draw in the diagonals and measure them. What seems to be true about them?



Look at the rhombus below. Draw in the diagonals. Are they congruent? Measure one angle at the intersection of the diagonals. What seems to be true?

Now measure the angles formed at D and C. What do you observe with their measurements?



Note: A square is a rectangle and rhombus so it has all the properties of both.

Let summarize our findings:

**Properties of a Rectangle:**

**Properties of a Rhombus:**

**Properties of a Square:**

All of the above properties can be proven. Let's look at 2 additional theorems.

**Thm: If an angle of a parallelogram is a right angle, then the parallelogram is a rectangle.**

Given:

Diagram:

Prove:

**Thm: If two consecutive sides of a parallelogram are congruent, then the parallelogram is a rhombus.**

Given:

Diagram:

Prove:

