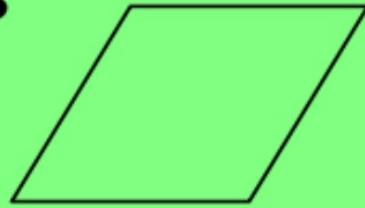## 6-4: Special Parallelograms

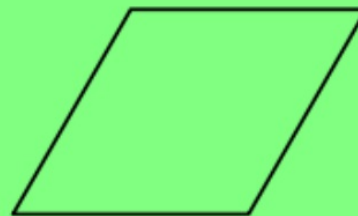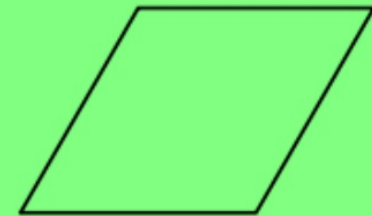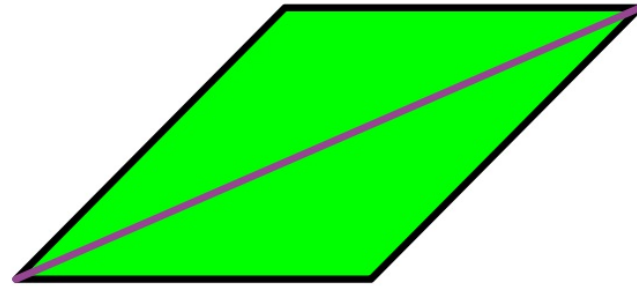**RHOMBUS**   **A parallelogram with**

_____.

Theorems:

1. Each diagonal of a rhombus bisects two angles of the rhombus.
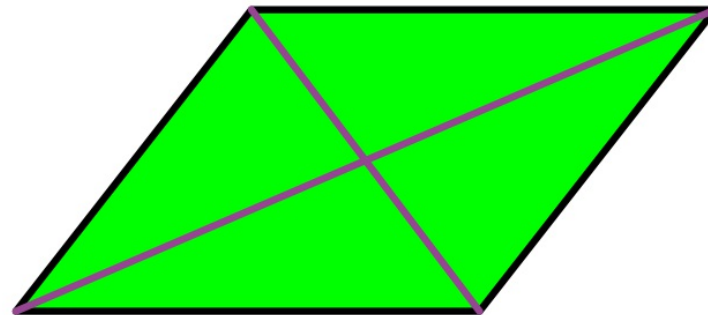
2. The diagonals of a rhombus are perpendicular.

More Theorems

3. If one diagonal of a parallelogram bisects two angles of the parallelogram, then the parallelogram is a rhombus.
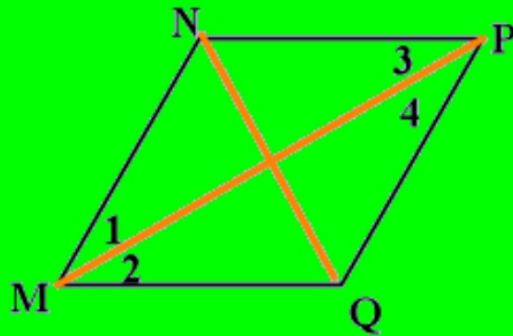
4. If the diagonals of a parallelogram are perpendicular, then the parallelogram is a rhombus.

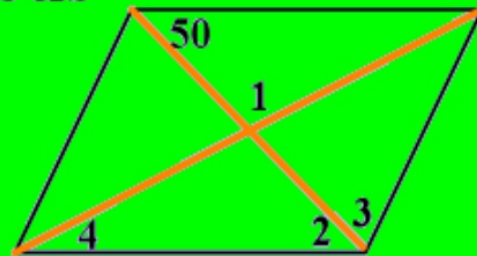*Each diagonal of a rhombus bisects two angles of the rhombus. The diagonals of a rhombus are perpendicular.*

Examples:

1) MNPQ is a rhombus and m < N = 120. Find the measures of the numbered angles.

Each diagonal of a rhombus bisects two angles of the rhombus. The diagonals of a rhombus are perpendicular.

2) Find the measures of the numbered angles in the rhombus

50

1

4   2   3

Rectangles

A rectangle is a parallelogram with _____.

Theorems:

1. The diagonals of a rectangle are congruent.

2. If the diagonals of a parallelogram are congruent, then the parallelogram is a rectangle.

The diagonals of a rectangle are congruent.

If the diagonals of a parallelogram are congruent, then the parallelogram is a rectangle.
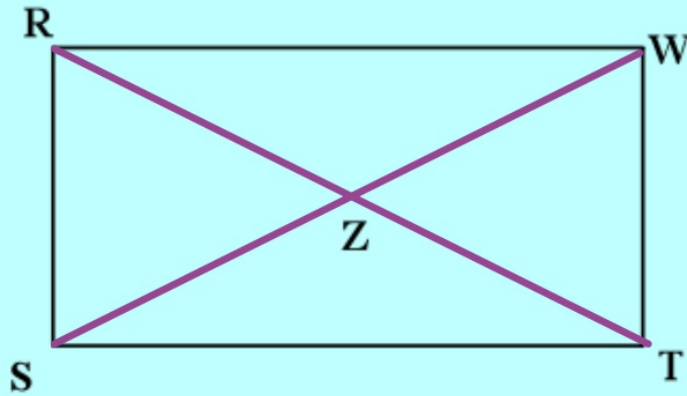
Examples:

1. ABCD is a rectangle. Find the value of x and the length of each diagonal if AC = 5x - 9 and BD = x + 5.

The diagonals of a rectangle are congruent.

If the diagonals of a parallelogram are congruent, then the parallelogram is a rectangle.

2.

$$RZ = 2x + 5$$
$$SW = 5x - 20$$

The diagonals of a rectangle are congruent.

If the diagonals of a parallelogram are congruent, then the parallelogram is a rectangle.

2. Can you conclude that the parallelogram is a rhombus or rectangle? Explain.

**a. The diagonals of ABCD are perpendicular.
AB = 16cm and BC = 8cm.**

b. A parallelogram has angles of 30, 150, 30 and 150 degrees.