

Section 6.3 Rectangles

Objective To recognize and apply the properties of rectangles.

Rectangles A quadrilateral with four right angles.

Theorem If a parallelogram is a rectangle, then its diagonals are congruent.

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

A Quadrilateral is a rectangle, then the following properties hold true.

1. Opposite sides are congruent and parallel.
2. Opposite angles are congruent.
3. Consecutive angles are supplementary.
4. **Diagonals are congruent** and bisect each other.
5. **All four angles are right angles.**

Example The coordinates of the vertices of quadrilateral EFGH are $E(-6,9)$, $F(5,10)$, $G(6,-1)$, and $H(-5,-2)$. Determine if quadrilateral EFGH is a parallelogram, rectangle, rhombus or square?

Two methods to solve this problem.

Method 1 Using Slopes

Method 2 Using Distance Formula

Quadrilateral ABCD is a rectangle. Find the value of x .

1. $AZ = 13$, $BZ = 3x - 2$
2. $AB = x + 5$, $DC = 4x - 13$
3. $m\angle DCB = 3x - 45$
4. $m\angle 1 = 37$, $m\angle BZC = x$

