

## Proving Quadrilateral Properties...

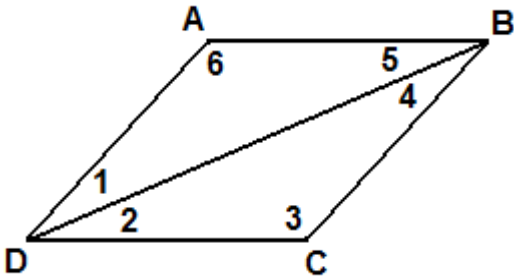
With the definitions below, we can prove the various properties of quadrilaterals.

- 1.) Parallelogram: A quadrilateral that has two pairs of parallel sides.
- 2.) Rectangle: A quadrilateral with four right angles.
- 3.) Rhombus: A quadrilateral with four congruent sides.
- 4.) Square: A quadrilateral with four right angles and four congruent sides.
- 5.) Kite: A quadrilateral with two pairs of congruent, adjacent sides and its opposite sides are not congruent.

**1.) A diagonal of a parallelogram divides the parallelogram into two congruent triangles.**

Given: Parallelogram ABCD

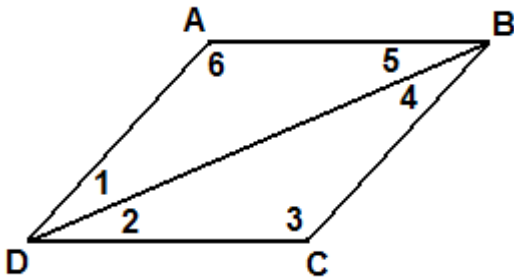
Proof:



**2.) Sides of a parallelogram across from each other are congruent.**

Given: Parallelogram ABCD

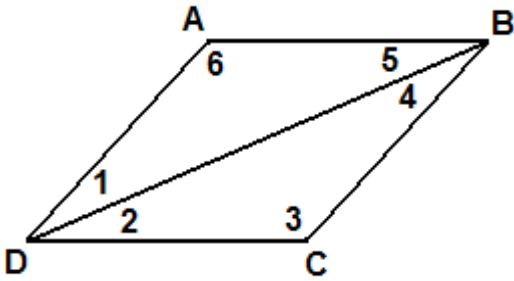
Proof:



3.) **Angles across from each other in a parallelogram are congruent.**

Given: Parallelogram ABCD

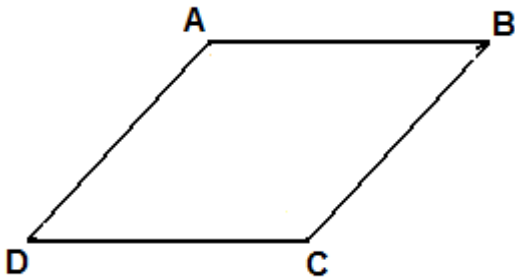
Proof:



4.) **Consecutive angles of a parallelogram are supplementary.**

Given: Parallelogram ABCD

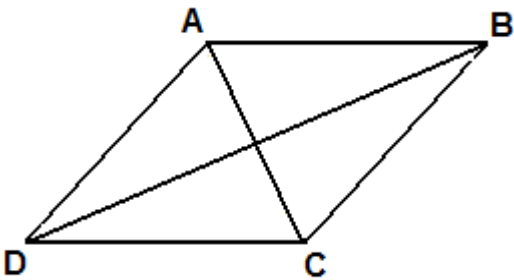
Proof:



5.) **Diagonals of a parallelogram bisect each other.**

Given: Parallelogram ABCD

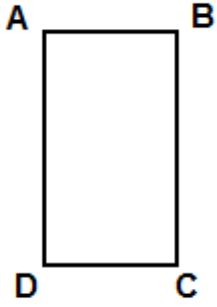
Proof:



6.) A rectangle is a parallelogram.

Given: Rectangle ABCD

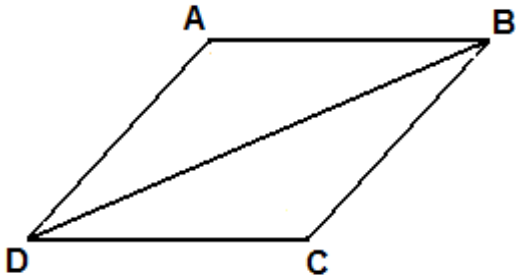
Proof:



7.) A rhombus is a parallelogram.

Given: Rhombus ABCD

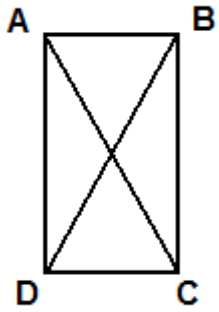
Proof:



8.) **Diagonals of a rectangle are congruent.**

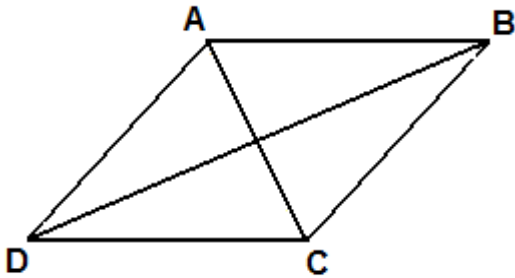
Given: Rectangle ABCD

Proof:



**Other Important Results (We won't prove...)**

9.) **Diagonals of a rhombus are perpendicular.**



10.) **Diagonals of a kite are perpendicular.**

