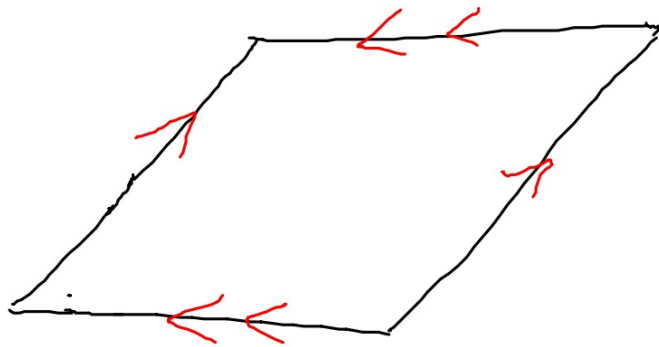


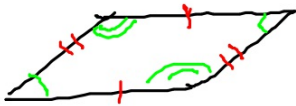
Tests for parallelograms		
Properties of parallelograms		
Parallelograms		



Parallelogram:  
a quadrilateral with two pairs of  
parallel sides

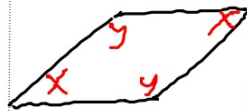


In a parallelogram:



both pairs of opposite sides are congruent

both pairs of opposite angles are congruent



$$x + y = 180^\circ$$

consecutive angles are supplementary

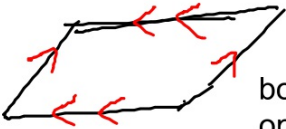


if a parallelogram has one right angle, it has four right angles

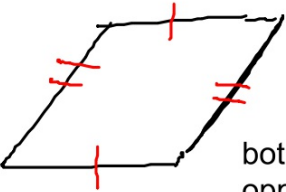
Properties of parallelograms

Tests for parallelograms

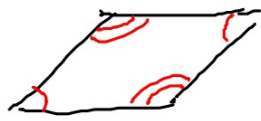
A quadrilateral is a parallelogram if ....



both pairs of opposite sides are parallel

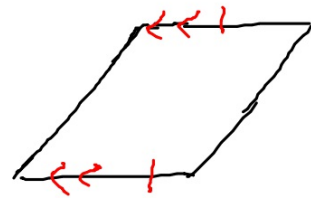
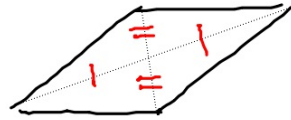


both pairs of opposite sides are congruent



both pairs of opposite angles are congruent

the diagonals bisect each other



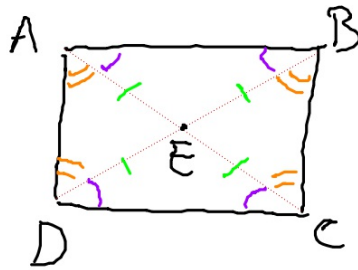
one pair of sides is both congruent and parallel

Parallelograms	Tests for parallelograms	Rhombus	
	Properties of parallelograms	Square	
Rectangles			

$$\overline{AE} \cong \overline{BE} \cong \overline{CE} \cong \overline{DE}$$

A rectangle is a parallelogram with four right angles.

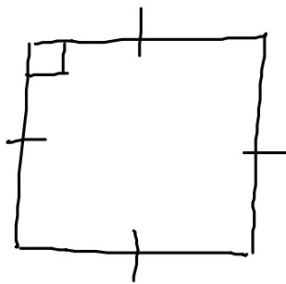
(all properties of parallelograms apply to rectangles)



$$\overline{AC} \cong \overline{BD}$$

in a rectangle, diagonals are congruent.

diagonals break the rectangle into four isosceles triangles.



a square is a  
parallelogram with four  
right angles and four  
congruent sides

a square is both a  
rectangle and a  
rhombus

(so all properties of  
parallelogram, rectangle, and  
rhombus apply to a square)

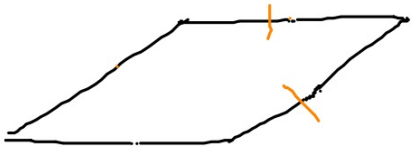
**Square**



each diagonal is  
an angle bisector



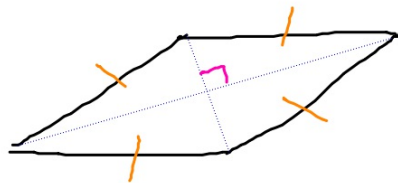
if, in a parallelogram, one  
pair of consecutive sides are  
congruent, then it is a  
rhombus



a rhombus is a parallelogram  
with 4 congruent sides.

In a Rhombus:

the diagonals are  
perpendicular

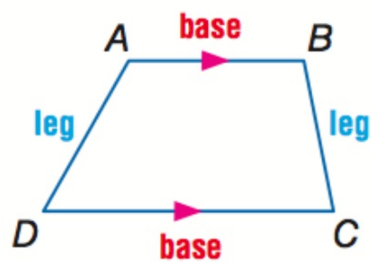


Rhombus

Tests for parallelograms	Rhombus	Kite
Properties of parallelograms	Square	Isosceles Trapezoid
Parallelograms	Rectangles	Trapezoid
Parallelograms	Rectangles	non-parallelograms

a trapezoid is a quadrilateral with exactly one pair of parallel sides

- The parallel sides are the bases.
- The other two sides are the legs.
- The pairs of base angles are the pairs along the same base.



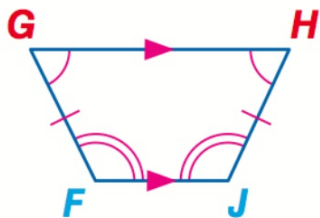
$\angle A$  and  $\angle B$  are one pair of base angles  
 $\angle C$  and  $\angle D$  are the other pair

Trapezoid

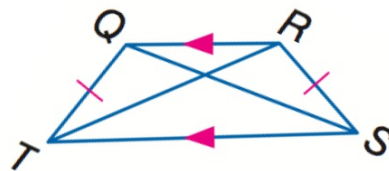
If the legs of a trapezoid are congruent, then it is an **isosceles trapezoid**.

In an isosceles trapezoid:

- Base angles are congruent

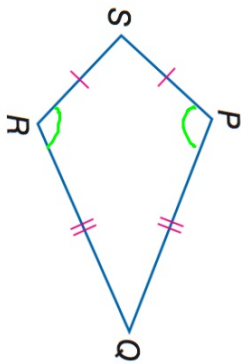


- Diagonals are congruent



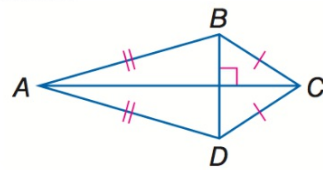
Isosceles Trapezoid

a kite is a quadrilateral with exactly two pairs of consecutive congruent sides.  
opposite sides are NOT congruent or parallel

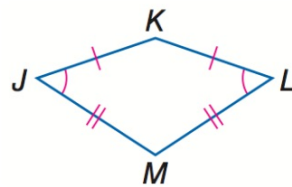


If a quadrilateral is a kite:

- its diagonals are perpendicular



- one pair of opposite angles is congruent



Kite