

Properties of Polygons

- $180(n-2) = \text{SUM}$
 - $n = \#$ of sides of the polygon
 - SUM = sum of all the interior angles of the polygon
- The sum of all exterior angles of a polygon is 360°
- Regular polygons have sides and angles that are all congruent

# of Sides:	3	4	5	6
Name:	Triangle	Quadrilateral	Pentagon	Hexagon
	7	8	9	10
	Heptagon	Octagon	Nonagon	Decagon

Parallelograms

- Both pairs of opposite sides are congruent
- Both pairs of opposite sides are parallel
- Both pairs of opposite angles are congruent
- All adjacent angles are supplementary
- Diagonals bisect each other

A Quadrilateral is a Parallelogram if...

- Any of the above are true
- One pair of opposite sides are both congruent and parallel

Rhombuses

- Have all the properties of parallelograms, plus...
 - All sides are congruent
 - Diagonals are perpendicular
 - Diagonals are angle bisectors

Rectangles

- Have all the properties of parallelograms, plus...
 - All angles are congruent (90°)
 - Diagonals are congruent

Squares

- Have all the properties of parallelograms, rhombuses and rectangles
 - A square IS a parallelogram, rhombus and rectangle

Trapezoids

- Are NOT parallelograms
- Exactly one pair of opposite sides is parallel
- The parallel sides are called **bases**
- The non-parallel sides are called **legs**
- **MIDSEGMENT**: The midsegment of a trapezoid is a segment that connects the midpoints of the legs

Isosceles Trapezoids

- Have all the properties of trapezoids, plus...
 - Base angle pairs are congruent
 - Legs are congruent (but bases are NEVER congruent in a trapezoid)
 - Diagonals are congruent

Kites

- Are NOT parallelograms
- Opposite sides are NOT congruent
- Two pairs of adjacent sides ARE congruent
- Diagonals are perpendicular
- Exactly one pair of opposite angles are congruent

Summary

If a statement is **ALWAYS** true for a type of quadrilateral, then there is an X in the box.

1. All sides are congruent
2. Both pairs of opposite sides are congruent
3. Both pairs of opposite sides are parallel
4. All angles are congruent
5. Exactly one pair of opposite sides are congruent
6. Exactly one pair of opposite angles are congruent
7. Diagonals are perpendicular
8. Diagonals are congruent
9. Diagonals bisect each other
10. Exactly one pair of opposite sides are parallel
11. Two pairs of adjacent sides are congruent
12. Diagonals are angle bisectors
13. All adjacent angles are supplementary

#	Quad.	//-gram	Rhomb.	Rect.	Square	Trap.	Is. Trap.	Kite
1			X		X			
2		X	X	X	X			
3		X	X	X	X			
4				X	X			
5							X	
6								X
7			X		X			X
8				X	X		X	
9		X	X	X	X			
10						X	X	
11								X
12			X		X			
13		X	X	X	X			

If a statement is *ALWAYS* true for a type of quadrilateral, then write an X in the box.

1. All sides are congruent
2. Both pairs of opposite sides are congruent
3. Both pairs of opposite sides are parallel
4. All angles are congruent
5. Exactly one pair of opposite sides are congruent
6. Exactly one pair of opposite angles are congruent
7. Diagonals are perpendicular
8. Diagonals are congruent
9. Diagonals bisect each other
10. Exactly one pair of opposite sides are parallel
11. Two pairs of adjacent sides are congruent
12. Diagonals are angle bisectors
13. All adjacent angles are supplementary

#	Quadrilateral	Parallelogram	Rhombus	Rectangle	Square	Trapezoid	Isosceles Trapezoid	Kite
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								