

Rules for Quadrilaterals

1. These rules are the same for all quadrilaterals:

- They are all polygons.
- The interior angles **ALWAYS** add to 360 degrees.

2. These are the rules for rectangles

- The diagonals of a rectangle are **congruent** and bisect each other.
- Opposite sides are **ALWAYS** parallel. A rectangle is also a parallelogram but the reverse is not always true.
- Are formed when TWO sets of parallel lines meet at right angles (90 degrees).
- Opposite angles are **ALWAYS** congruent.
- Adjacent angles are **ALWAYS** supplementary (form a straight angle or equal 180 degrees).



3. These are the rules for parallelograms.

- The diagonals of are **NOT congruent BUT** they do bisect each other.
- Opposite sides are **ALWAYS** parallel.
- Are formed when TWO sets of parallel lines meet **BUT NOT** at 90 degrees.
- Opposite angles are **ALWAYS** congruent.
- Adjacent angles are **ALWAYS** supplementary (form a straight angle or equal 180 degrees).
- The height is **ALWAYS** perpendicular to the base.



4. These are the rules for a square.

- All four sides are always congruent (equal). A square is also a rhombus but the reverse is not always true.
- The diagonals of are **congruent** and bisect each other.
- Diagonals bisect and form four 90 degree angels. Diagonals are also perpendicular.
- Opposite sides are **ALWAYS** parallel.
- Are formed when TWO sets of parallel lines meet at right angles (90 degrees).
- Opposite angles are **ALWAYS** congruent.
- Adjacent angles are **ALWAYS** supplementary (form a straight angle or equal 180 degrees).



5. These are rules for rhombus (a rhombus is a parallelogram with 4 equal sides):

- All four sides are always congruent (equal).
- The diagonals are **NOT congruent BUT** they do bisect each other.
- Diagonals bisect and form four 90 degree angles. Diagonals are also perpendicular.
- Opposite sides are **ALWAYS** parallel.
- Are formed when TWO sets of parallel lines meet **BUT NOT** at 90 degrees.
- Opposite angles are **ALWAYS** congruent.
- Adjacent angles are **ALWAYS** supplementary (form a straight angle or equal 180 degrees).
- The height is **ALWAYS** perpendicular to the base.



6. These are the rules for a trapezoid:

- A trapezoid is a quadrilateral with only **one pair of parallel lines**.
- The two parallel lines are called the bases
- The two non- parallel lines are the legs.
- The vertical adjacent angles are **ALWAYS** supplementary (form a straight angle or equal 180 degrees).
- The diagonals **ARE NOT** congruent.



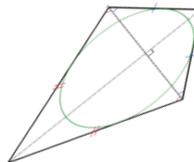
7. These are the rules for an isosceles trapezoid.

- A trapezoid is a quadrilateral with one pair of parallel lines.
- The two parallel lines are called the bases.
- The two non parallel lines are the legs **AND** are congruent (that's why is called an isosceles trapezoid).
- Adjacent angles are **ALWAYS** supplementary (form a straight angle or equal 180 degrees).
- The diagonals **ARE** congruent **BUT** do not bisect each other.



8. These are the rules for a kite.

- A kite is a **quadrilateral** with two pairs of adjacent, **congruent** sides. It looks like the kites you see flying in the sky.
- The diagonals of a kite intersect at 90 degrees.



9. Know this about angles:
- All angles are measured on the fact that all circles measure 360 degrees. (all of them, no matter how large or small). Each circle only has 360 degrees.
 - A 90 degree angle forms a shape that looks like an upper case L. This can be facing any direction and can even be upside down or tilted like on a house.
 - Angles that measure less than 90 degrees are called acute angles.
 - All angles that measure exactly to 90 degrees are called 'right angles' – regardless of what direction the angle is facing.
 - All angles that measure more than 90 degrees but less than 180 degrees are called obtuse angles.
 - All angles that measure 180 degrees are called straight angles.
 - Two or more angles that add exactly to 90 degrees are called complementary angles.
 - Two or more angles that add exactly to 180 degrees are called supplementary angles.
 - An angle more than 180 but less than 360 degree is called a reflex angle.
10. Know this about lines.
- Lines that are a certain distance apart and remain that same distance apart, without ever getting closer together or further apart are called parallel lines.
 - Lines that cross each other and form a right angle when doing so are called perpendicular lines
 - Lines that cross each other without forming a right angle are called intersecting lines.
 - Perpendicular lines are also intersecting lines.
 - Lines cannot be parallel and intersecting (each other) at the same time).
 - Lines can be parallel and intersecting with other lines - like the lines used to form a tic-tac-toe game.
 - A line with periods connected to the line at both ends is called a line segment.
 - A line with a connected period at one end but not the other is called ray.
 - Two rays that share the same end point (period at one end) form an angle.

Remember these ideas:

- Diagonals are line segments that connect non-adjacent or opposite angles.
- Adjacent angles in quadrilaterals are on the same side.
- Congruent means equal (sides are the same length/interior angles are the same).
- Supplementary angles are two or more angles that form a straight angle (180 degrees).
- Complementary angles are two or more angles that form a right angle (90 degrees).
- Obtuse angles are more than 90 degrees but less than 180 degrees.
- Bisect means to cut into two equal or congruent smaller pieces.
- When two lines meet and form a right angle (exactly 90 degrees) they are perpendicular to each other.
- The apothem is the distance from the center of a regular polygon to the midpoint of a side (must form a right angle).