Properties of quadrilaterals: Information sheets
http://topdrawer.aamt.edu.au/Geometric-reasoning/Big-ideas/Plane-shapes/Polygons

Trapeziums

A trapezium is a quadrilateral with at least one pair of sides parallel.

Here are some examples of trapeziums:

All trapeziums possess the following property: One pair of sides of a trapezium is parallel.

This trapezium is usually called a rhombus:

This trapezium is usually called a parallelogram:

This trapezium is usually called a square:

This trapezium is usually called a rectangle:

Challenge 1: Draw a trapezium with exactly 1 pair of parallel sides and exactly 2 equal sides.
Challenge 2: Draw a trapezium with exactly 1 pair of parallel sides and exactly 3 equal sides.
Challenge 3: Draw a trapezium with exactly 4 equal sides.
Kites

A **kite** is a quadrilateral with two pairs of adjacent sides equal.

Here are some examples of kites:

![Kite Examples](image)

All kites possess the following properties:

- Two pairs of adjacent sides of a kite are equal
- One diagonal of a kite bisects the other diagonal
- One diagonal of a kite bisects the opposite angles
- The diagonals of a kite are perpendicular
- A kite has at least one axis of symmetry

This kite is usually called a rhombus:

![Rhombus](image)

This kite is usually called a square:

![Square](image)
Parallelograms

A parallelogram is a quadrilateral whose opposite sides are parallel.

Here are some examples of parallelograms:

![Parallelogram Examples]

All parallelograms possess the following properties:

- The opposite sides of a parallelogram are parallel
- The opposite sides of a parallelogram are equal
- The opposite angles of a parallelogram are equal
- The diagonals of a parallelogram bisect each other
- A parallelogram has point symmetry and rotational symmetry

This parallelogram is usually called a rhombus:

![Rhombus]

This parallelogram is usually called a rectangle:

![Rectangle]

This parallelogram is usually called a square:

![Square]

I am a quadrilateral. I am also a trapezium. My best name is a parallelogram:
Rhombuses

A rhombus is a quadrilateral with all sides equal.

Here are some examples of rhombuses:

All rhombuses possess the following properties:

• The opposite sides of a rhombus are parallel
• All sides of a rhombus are equal
• The opposite angles of a rhombus are equal
• The diagonals of a rhombus bisect the opposite angles
• The diagonals of a rhombus bisect each other
• The diagonals of a rhombus are perpendicular
• A rhombus has two axes of symmetry
• A rhombus has point symmetry and rotational symmetry

This rhombus is usually called a square:

I am a quadrilateral. I am also a kite, a trapezium and a parallelogram. My best name is a rhombus:
Rectangles

A **rectangle** is a quadrilateral in which all angles are right angles.

Here are some examples of rectangles:

![Example rectangles](image)

All rectangles possess the following properties:

- The opposite sides of a rectangle are parallel
- The opposite sides of a rectangle are equal
- All angles at the vertices of a rectangle are $90^\circ$
- The diagonals of a rectangle are equal
- The diagonals of a rectangle bisect each other
- A rectangle has two axes of symmetry
- A rectangle has point symmetry and rotational symmetry

This rectangle is usually called a square:

![Square](image)

I am a quadrilateral. I am also a trapezium and a parallelogram. My best name is a rectangle:
Squares

A **square** is a quadrilateral that is both a rectangle and a rhombus. Here are some examples of squares:

All squares possess the following properties:

- Opposite sides of a square are parallel
- All sides of a square are equal
- All angles at the vertices of a square are 90°
- The diagonals of a square are equal
- The diagonals of a square bisect the opposite angles
- The diagonals of a square bisect each other
- The diagonals of a square are perpendicular
- A square has four axes of symmetry
- A square has point symmetry and rotational symmetry

I am a quadrilateral. I am also a kite, a trapezium, a rhombus, a parallelogram and a rectangle. My best name is a square.