QUADRILATERALS

Pathways of **definitions** and **properties**

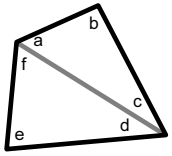
Quadrilaterals play a prominent role right through to Grade 12!

The arrows indicate various 'ROUTES' from 'any' quadrilateral to the square, the 'ultimate quadrilateral'.

See how the properties accumulate as you move from left to right.

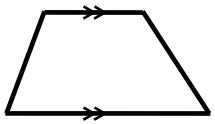
i.e. the first quad has no special properties and each successive quadrilateral has all preceding properties.

'Any' Quadrilateral



Sum of the ∠^{s} of ***any*** quadrilateral = 360°

A Trapezium



Definition of a trapezium

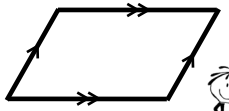
A quadrilateral with 1 pair of opposite sides parallel

Properties of a trapezium

The Sides

- 1 pair of opposite sides parallel

A Parallelogram



Definition of a parallelogram

A quadrilateral with 2 pairs of opposite sides parallel

Properties of a parallelogram

The Sides

- 2 pairs of opposite sides parallel
- 2 pairs of opposite sides equal

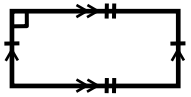
The Angles

- 2 pairs of opposite angles equal

The Diagonals . . .

- bisect each other

A Rectangle



Definition of a rectangle

A parallelogram with one right angle

Properties of a rectangle

The Sides

- 2 pairs of opposite sides parallel
- 2 pairs of opposite sides equal

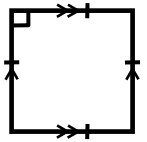
The Angles

- all 4 angles equal 90°

The Diagonals . . .

- bisect each other equally (the diagonals are equal to each other!)

The Square



Definition of a square

A rectangle with one pair of adjacent sides equal

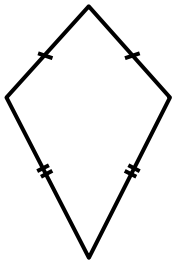
OR

A rhombus with one angle of 90°

Properties of a square

A square contains ALL the accumulated properties of sides, angles and diagonals!!!

A Kite



Definition of a kite

A quadrilateral with 2 pairs of adjacent sides equal

Properties of a kite

The Sides

- 2 pairs of adjacent sides equal

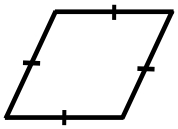
The Angles

- the following pair of angles will be equal because of isosceles triangles as a result of adjacent sides equal

The Diagonals . . .

- cut perpendicularly
- the **LONG DIAGONAL** bisects the short diagonal and the opposite angles

A Rhombus



Definition of a rhombus

A parallelogram with one pair of adjacent sides equal

OR

A kite with 2 pairs of opposite sides parallel

Properties of a rhombus

The Sides

- all 4 sides equal

The Angles

- 2 pairs of opposite angles equal

The Diagonals . . .

- cut perpendicularly
- bisect each other
- bisect the opposite angles