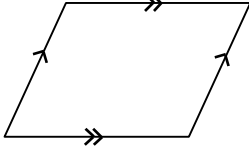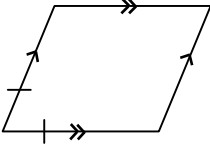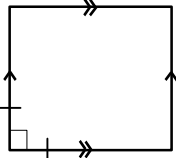# PROPERTIES AND TESTS FOR QUADRILATERALS – SUMMARY

COURSE/LEVEL

NSW Secondary High School Year 11 Preliminary Mathematics.

TOPIC

Plane Geometry: Properties of Quadrilaterals and Tests for Special Quadrilaterals. (Syllabus Ref: 2.2)

Quadrilateral	Definition	Properties
Parallelogram	Quadrilateral with opposite sides parallel	• opposite sides are equal • opposite angles are equal • diagonals bisect each other
Rectangle	Parallelogram with a right angle	• all the properties of a parallelogram, and • diagonals are equal
Rhombus	Parallelogram with a pair of adjacent equal sides	• all the properties of a parallelogram, and • diagonals bisect each other at right angles • diagonals bisect the vertex angles through which they pass
Square	Rectangle with a pair of adjacent equal sides	• all the properties of a rectangle and a rhombus

TEST FOR SPECIAL QUADRILATERALS

Only some of the properties of special quadrilaterals can be used to test, or identify, the shape of a given quadrilateral.

1 A quadrilateral is a **parallelogram** if
   • both pairs of opposite sides are equal, or
   • both pairs of opposite angles are equal, or
   • one pair of opposite sides are parallel and equal, or
   • the diagonals bisect each other.

2 A quadrilateral is a **rhombus** if
   • all sides are equal, or
   • the diagonals bisect each other at right angles.

3 A quadrilateral is a **rectangle** if the diagonals are equal.