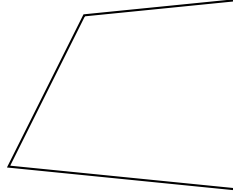


# PROPERTIES OF QUADRILATERALS

## A QUADRILATERAL CLASSIFICATION

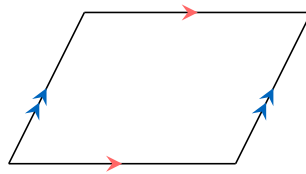
### Definition Quadrilateral

A **quadrilateral** is a polygon with four sides.



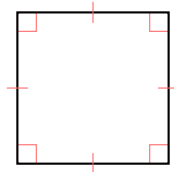
### Definition Parallelogram

A **parallelogram** is a quadrilateral with two pairs of opposite sides parallel.



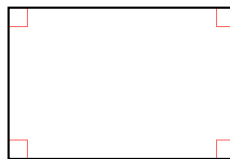
### Definition Square

A **square** is a quadrilateral with four right angles and four equal sides.



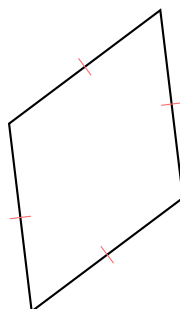
### Definition Rectangle

A **rectangle** is a quadrilateral with four right angles.



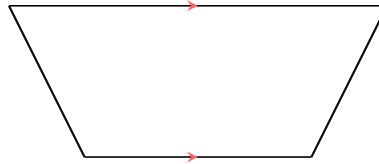
### Definition Rhombus

A **rhombus** is a quadrilateral with four equal sides.



### Definition Trapezium

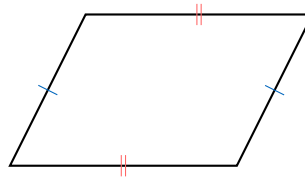
A **trapezium** is a quadrilateral with one pair of opposite sides parallel.



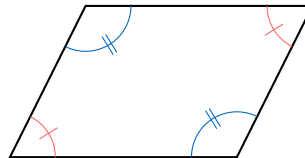
## B PROPERTIES

### Proposition Properties of a Parallelogram

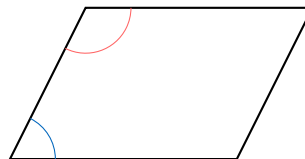
- The opposite sides are equal in length.



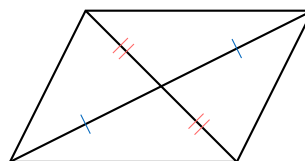
- The opposite angles are equal.



- The adjacent angles are supplementary.

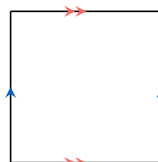


- The diagonals bisect each other.

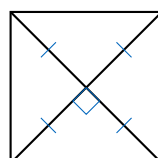


### Proposition Properties of a Square

- The opposite sides are parallel.

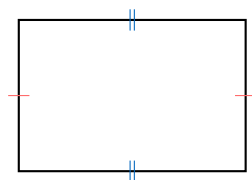


- The diagonals bisect each other at right angles and are equal in length.



### Proposition **Properties of a Rectangle**

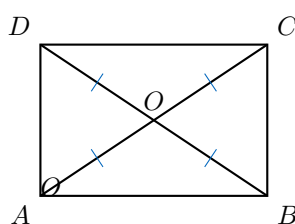
- The opposite sides are equal in length.



- The opposite sides are parallel.

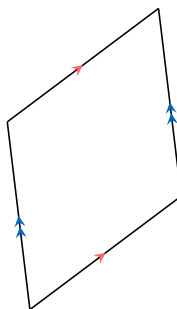


- The diagonals bisect each other and are equal in length.

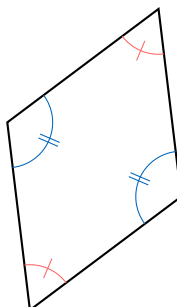


### Proposition **Properties of a Rhombus**

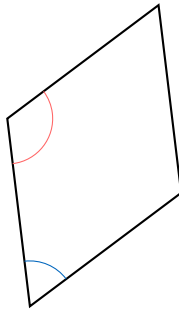
- The opposite sides are parallel.



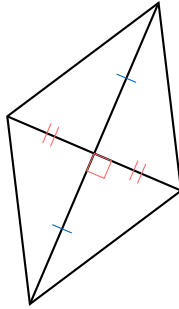
- The opposite angles are equal.



- The adjacent angles are supplementary.



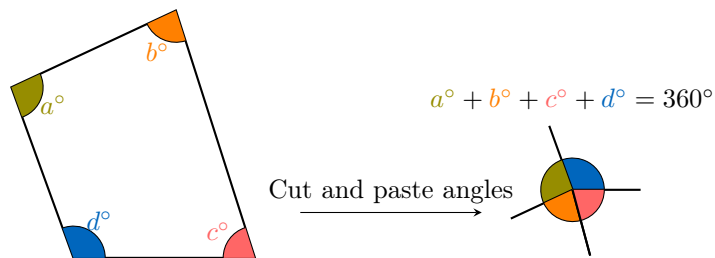
- The diagonals bisect each other at right angles.



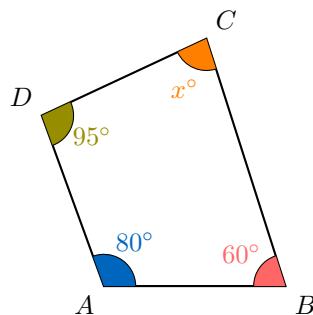
## C ANGLES

### Proposition Sum of the Angles of a Quadrilateral

The sum of the angles of a quadrilateral is  $360^\circ$ .



**Ex:** Find the unknown angle  $x^\circ$ .



*Answer:* The sum of the angles of a quadrilateral is  $360^\circ$ . Given angles  $60^\circ$ ,  $95^\circ$ , and  $80^\circ$ :

$$x^\circ + 95^\circ + 80^\circ + 60^\circ = 360^\circ$$

$$x^\circ + 235^\circ = 360^\circ \quad (\text{Adding known angles})$$

$$x^\circ = 360^\circ - 235^\circ \quad (\text{Subtracting 235 from both sides})$$

$$x^\circ = 125^\circ$$