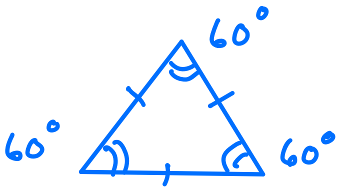
Triangles and Quadrilaterals

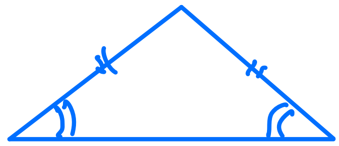
Triangles



Equilateral Triangle

3 angles each 60°

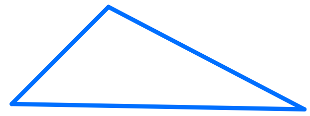
3 sides same length



Isosceles Triangle

2 angles same

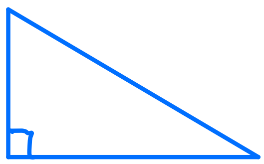
2 sides same



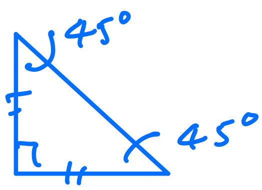
Scalene Triangle

All angles different

All sides different



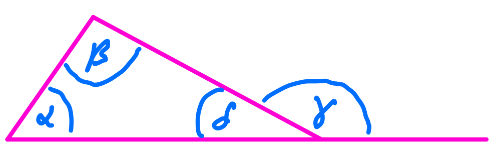
right-angled triangle
usually scalene



but can be isosceles

Theorem An exterior angle of a triangle is equal to the sum of the interior opposites

Proof



$\alpha + \beta + \delta = 180°$ ($\angle$ sum of $\triangle$)

$\therefore \delta = 180 - \alpha - \beta$

But $\delta + \gamma = 180^\circ$ ($\angle$s on a str line)

$\therefore \quad \gamma = 180^\circ - \delta$

Sub for δ

$$\gamma = 180^\circ - (180 - \alpha - \beta)$$

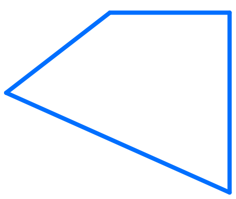
$$\gamma = 180 - 180 + \alpha + \beta$$

$$\underline{\gamma = \alpha + \beta}$$

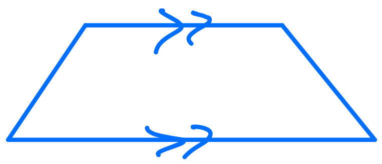
$\therefore$ the exterior angle γ is equal to the sum of the interior opposites α and β.

Quadrilaterals

The angles of any quadrilateral sum to 360°

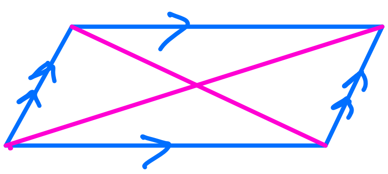


Quadrilateral



Trapezium

one pair of parallel sides



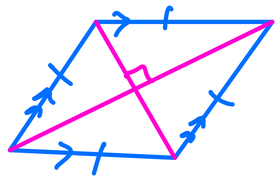
Parallelogram

2 pairs of parallel sides

Each pair are equal in length

Opposite angles are equal

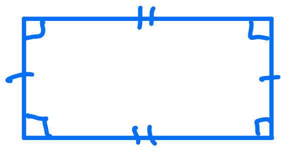
Diagonals bisect each other



Rhombus

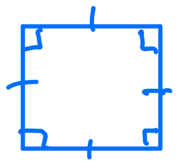
Parallelogram with 4 equal sides

Diagonals bisect at 90°



Rectangle

Parallelogram with 4 right angles

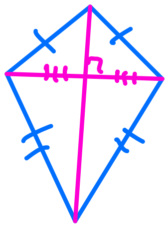


Square

is the regular quadrilateral

it is a rhombus with

4 right angles



Kite

2 pairs of equal sides

but a pair of equal sides

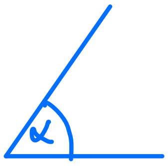
are adjacent not opposite

Diagonals cross at 90°

One diagonal is bisected

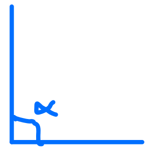
by the other

Naming Angles



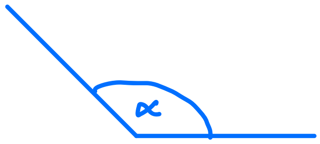
$0^\circ < \alpha < 90^\circ$

Acute



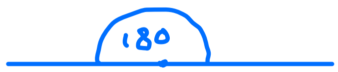
$\alpha = 90^\circ$

Right angle



$90^\circ < \alpha < 180^\circ$

Obtuse



$\alpha = 180^\circ$

straight line

$180^\circ < \alpha < 360^\circ$

Reflex angle

Parallel Lines

See Parallel Lines Fact Sheet

Corresponding Angles are Equal

Alternate Angles are Equal

Allied Angles add to 180°

(Also called Co-Interior Angles)
