DEVELOPING GEOMETRY

@whisto_maths Ongles in parallel lines and polygons

What do I need to be able to do?

By the end of this unit you should be able to:

- Identify alternate angles
- Identify corresponding angles
- Identify co-interior angles
- Find the sum of interior angles in polygons
- Find the sum of exterior angles in polygons
- Find interior angles in regular polygons

Keywords

Parallel: Straight lines that never meet

Onale: The figure formed by two straight lines meeting (measured in degrees)

Transversal: O line that cuts across two or more other (normally parallel) lines Isosceles: Two equal size lines and equal size angles (in a triangle or trapezium)

Polygon: a 2D shape made with straight lines

The letter in the middle is the anale

Onale Notation: three letters ABC

This is the angle at B = 113 °

Line Notation: two letters EC

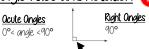
The line that joins E to C.

The arc represents the part of the angle

Sum: Oddition (total of all the interior angles added together)

Regular polygon: All the sides have equal length; all the interior angles have equal size.

Basic anale rules and notation 🕡



Obtuse

Reflex

90°< angle <180°

180°< angle <360°

Right angle notation

Straight Line

Vertically opposite angles Equal

Ongles around a point

Parallel lines

Corresponding angles often identified by their straight lines, around a point and vertically oppositell

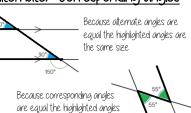
"F shape" in position

Lines OF and BE are transversals (lines that bisect the parallel lines)

> Olternate angles often identified by their "Z shape" in position

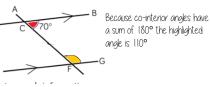
This notation identifies parallel lines

Olternate/Corresponding anales



are the same size

Co-interior anales



Os angles on a line add up to 180° co-interior angles can also be calculated from applying alternate/corresponding rules first

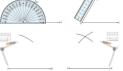
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Trianales & Quadrilaterals Side, Ongle, Ongle



Side, Ongle, Side

Side, Side, Side



Properties of Quadrilaterals



Oll sides equal size Opposite sides are parallel





Opposite sides are parallel Opposite angles are equal Co-interior angles

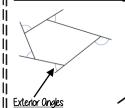
Trapezium

One pair of parallel lines

Kite

No parallel lines Equal lengths on top sides Equal lengths on bottom sides One pair of equal angles

Sum of exterior angles



Ore the anale formed from

the straight-line extension

at the side of the shape

Interior angle

Exterior Onale

Using exterior angles

Interior angle + Exterior angle = straight line = 180° Exterior angle = 180 - 165 = 15°

Number of sides = 360° ÷ exterior angle Number of sides = 360 ÷ 15 = 24 sides

Exterior angles all add up to 360°

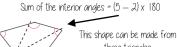
Sum of interior anales

Interior Ongles

The angles enclosed by the polygon

This is an irregular polygon — the sides and angles are different sizes

(number of sides - 2) x 180



three triangles Each triangle has 180°

Sum of the interior angles = 3×180

= 540°

Remember this is all of the interior angles added together

Missing angles in regular polugons



Exterior angle = $360 \div 8 = 45^{\circ}$ Interior angle = $(8-2) \times 180 = 6 \times 180 = 135^{\circ}$

Exterior angles in regular polygons = $360^{\circ} \div \text{number of sides}$

Interior angles in regular polygons = $(number of sides - 2) \times 180$ number of sides