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

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

The letter in the middle is the anale The arc represents the part of the angle

Onale Notation: three letters ABC This is the angle at B = 113 ° Line Notation: two letters EC

Vertically opposite angles Equal

The line that joins E to C.

Ongles around a point



Corresponding angles often identified by their "F shape" in position

straight lines, around a point and vertically oppositell

Olternate angles often identified by their "Z shape" in

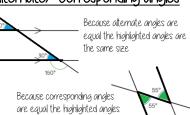
position

Lines OF and BE are transversals

(lines that bisect the parallel lines)

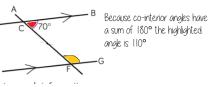
This notation identifies parallel lines

Olternate/Corresponding anales



are the same size

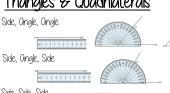
Co-interior anales



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

Trianales & Quadrilaterals

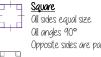


Side, Side, Side

Using exterior angles



Properties of Quadrilaterals



Opposite sides are parallel Rectanale

Oll angles 90° Opposite sides are parallel Rhombus

> Oll sides equal size Opposite angles are equal

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

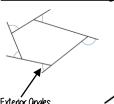


One pair of parallel lines

Kite

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

Sum of exterior angles



Exterior Onale

Interior angle

|| Exterior Ongles

Ore the angle formed from the straight-line extension at the side of the shape

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

Exterior angles all add up to 360°

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

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

This shape can be made from three triangles Each triangle has 180°

Sum of the interior angles = $(5 - 2) \times 180$

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