Y10 FOUNDATION HT2 ANGLES

Basic angle rules and notation (R)

Acute Angles
0° < angle < 90°

Right Angles
90°

Right angle notation

Obtuse
90° < angle < 180°

Reflex
180° < angle < 360°

Straight Line
180°

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

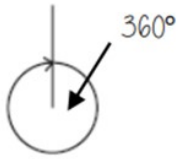
Angle Notation: three letters ABC
This is the angle at B = 113 °
Line Notation: two letters EC
The line that joins E to C.

Vertically opposite angles
Equal

Angles around a point
360 °

Sum of angles at a point

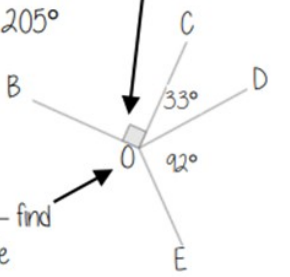
The sum of angles around a point is 360°

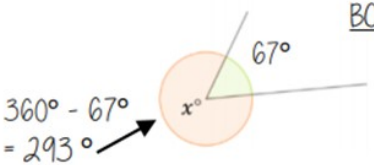


Find angle BOE

90° + 33° + 92° = 205°
360° - 205°
BOE = 155°

Angle notation – 90°

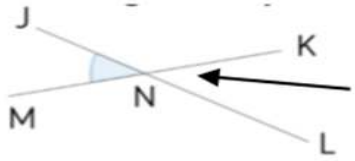




360° - 67°
= 293 °

Angle notation – find this missing angle

Vertically opposite angles

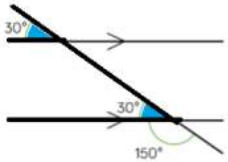


Angle JNM is vertically opposite to angle KNL

JNM = KNL

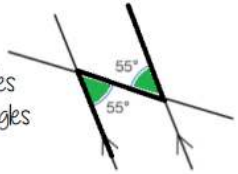
Vertically opposite angles are the same

Alternate/ Corresponding angles

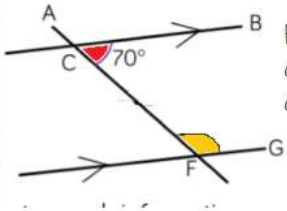


Because alternate angles are equal the highlighted angles are the same size

Because corresponding angles are equal the highlighted angles are the same size



Co-interior angles



Because co-interior angles have a sum of 180° the highlighted angle is 110°

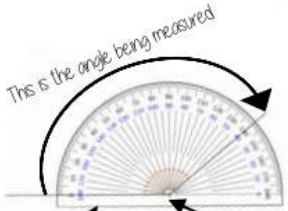
As angles on a line add up to 180° co-interior angles can also be calculated from applying alternate/ corresponding rules first

Angle notation (R)

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

Angle Notation: three letters $A\hat{B}C$ This is the angle at B = 113 °
$\angle ABC$ is also used to represent the angle at B.

Measure angles to 180° (R)



Read from 0° on the base line. Remember to use estimation. This is an obtuse angle so between 90 ° and 180 °

The base line follows the line segment

Make sure the cross is at the point the two lines meet

Keywords

Parallel: Straight lines that never meet
Angle: The figure formed by two straight lines meeting (measured in degrees)
Transversal: A 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: Addition (total of all the interior angles added together)
Regular polygon: All the sides have equal length; all the interior angles have equal size.

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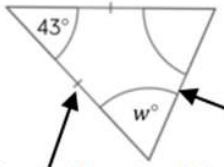
Sum of angles in triangles

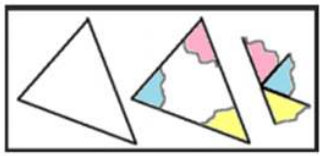
Sum of interior angles in a triangle = 180°



The two base angles will be the same size

Look at triangle notation
This indicates an isosceles triangle
∴ 180 - 43 = 137
137 ÷ 2 = 68.5°

A triangle can only have ONE right angle



Have a go!
Tearing the corners from triangles forms a straight line which is therefore 180°

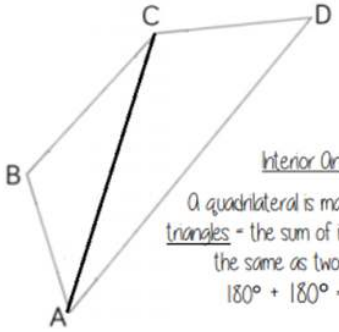
Sum of angles in quadrilaterals

Sum of interior angles in a quadrilateral = 360°

Convex Quadrilateral

Concave Quadrilateral

Interior angles are those that make up the perimeter (outline) of the shape

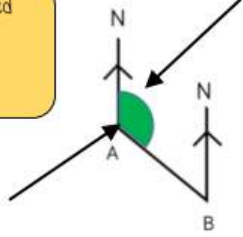


Interior Angles

A quadrilateral is made up of two triangles - the sum of interior angles is the same as two triangles
180° + 180° = 360°

Understand and represent bearings

- A bearing is always measured from **NORTH**
- It is always given as three figures



The angle indicated starts from the North line at A and joins the path connecting A to B.

This angle shows the bearing of **B from A**

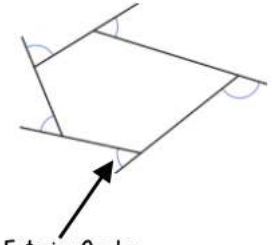
The bearing of B from A is calculated by measuring the highlighted angle

Using **estimation** it is clear this angle is between 090° and 180°

The sentence... "Bearing of ____ from _____" is really important in identifying the bearing being represented.

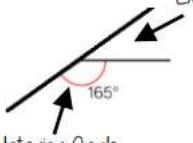
Sum of exterior angles

Exterior angles all add up to 360°



Exterior Angles
Are the angle formed from the straight-line extension at the side of the shape

Using exterior angles



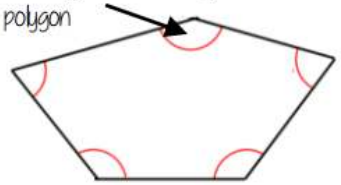
Interior angle + Exterior angle = straight line = 180°
Exterior angle = 180 – 165 = **15°**

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

Sum of interior angles

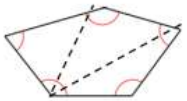
(number of sides – 2) x 180

Interior Angles
The angles enclosed by the polygon



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

Sum of the interior angles = (5 – 2) x 180



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

Sum of the interior angles = 3 x 180
= 540°

Remember this is **all** of the interior angles added together