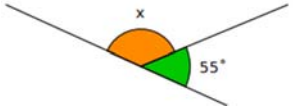
Geometry and Measure 1 – Investigating Angles and Shapes – Knowledge Organiser

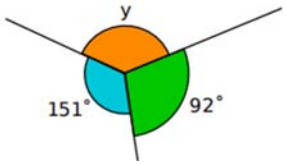
Objective
Recognise and use standard conventions for labelling lines and angles
Recognise and use terms related to angles and shapes
Use and apply a variety of angle rules to solve problems
Explore a variety of geometrical situations involving different angle rules
Be able to construct triangles accurately using a compass, ruler and protractor

Key Facts



Angles on a straight line add up to 180^0

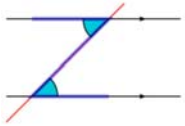
$x + 55^0 = 180^0$



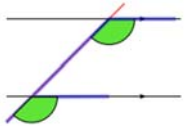
Angles around a point add up to 360^0

$y + 92^0 + 151^0 = 360^0$

Angles between parallel lines and a line which crosses them:



Alternate angles are equal



Corresponding angles are equal

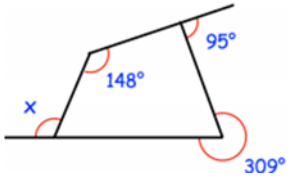
- **Angles in a triangle** add up to 180^0
- **Angles in a quadrilateral** add up to 360^0
- The **sum of the interior angles** of any polygon is given by the following formula:

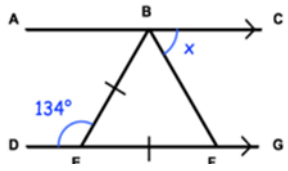
$$\left[\begin{array}{c}\text{Sum of} \\ \text{interior angles}\end{array}\right] = 180(n-2), \quad \text{where } n \text{ is the number of sides}$$

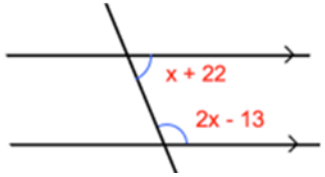
Constructing triangles:
Triangles can be constructed accurately with a compass, ruler and protractor if we know one of the following about the triangle:

- Two and angles and the side length in between **(ASA)**
- **OR** Three side lengths **(SSS)**
- **OR** Two side lengths and the angle in between **(SAS)**

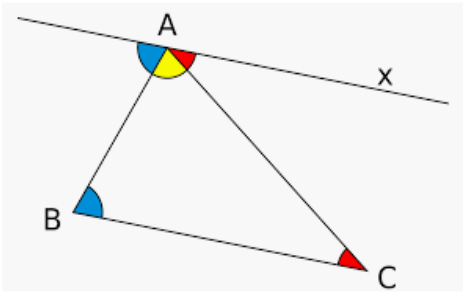
Key Concept Check

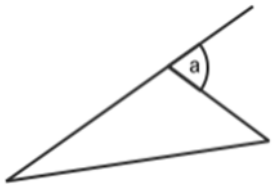






Use your knowledge of angle rules to find the value of x in each of these diagrams.
Give reasons for your answer.



Key words used in this unit:

Parallel – lines that are parallel will never meet
Perpendicular – a line that is at right angles to a second line
Acute angle – an angle between 0^0 and 90^0
Obtuse angle - an angle that is greater than 90^0 but less than 180^0
Reflex angle – an angle greater than 180^0 but less than 360^0
Interior angle – at a vertex of a polygon, the angle that lies inside the polygon
Vertically opposite – when two straight lines intersect, the angles on opposite sides of the intersection are equal
Exterior angle – of a polygon, the angle between one side and the adjacent side extended – see diagram below