Y7 Maths Knowledge Organiser Topic 15: Angles 1

What must I be able to do?

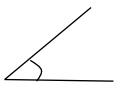
- Recognise acute, right, obtuse and reflex angles
  - Sparx M502
- Know and use the facts the angles around a point total 360°, that angles on a straight line total 180°, and that vertically opposite angles are equal
  - Sparx M818, M163
- Know and use the fact the sum of interior angles of a triangle is 180°
  - Sparx M351
- Know and use the fact the interior angles of a quadrilateral sum to 360°
  - Sparx M679
- Extend by including problem solving involving algebra and reasoning.

Key vocabulary

Angle	A measure of <u>turn</u>. We measure it in degrees
Acute	Angle <u>less than 90°</u>.
Obtuse	Angle <u>larger than 90°</u>, <u>smaller than 180°</u>.
Reflex	Angle <u>larger than 180°</u>, <u>smaller than 360°</u>.
Interior	The angles <u>inside</u> a shape.

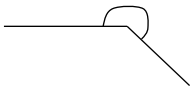
Types of angles

Acute



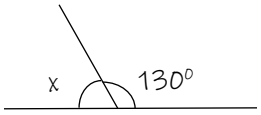
Obtuse

Reflex



Angle facts

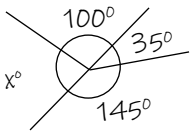
Angles at a point on a straight line sum to 180°



x = 180 – 130

x = 50°

Angles around a point sum to 360°



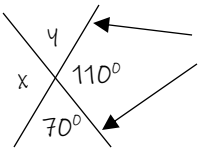
x = 360 – 100 – 35 – 145

x = 80°

Vertically opposite angles are equal

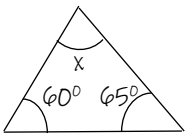
x = 110°

y = 70°



These lines must be straight to make vertically opposite angles

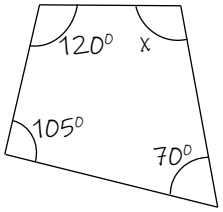
Angles inside a triangle sum to 180°



x = 180 – 60 – 65

x = 55°

Angles inside any quadrilateral sum to 360°

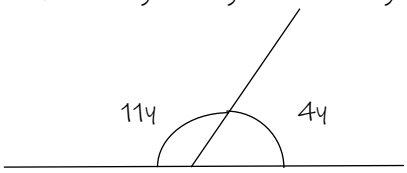


x = 360 – 120 – 105 - 70

x = 65°

Problem solving with angles and shapes

Find the size of the largest angle on this diagram



Unless told it is drawn to scale, always assume it is not accurately drawn so you cannot measure it with a protractor.

As angles on a straight line add to 180°

11y + 4y = 180°

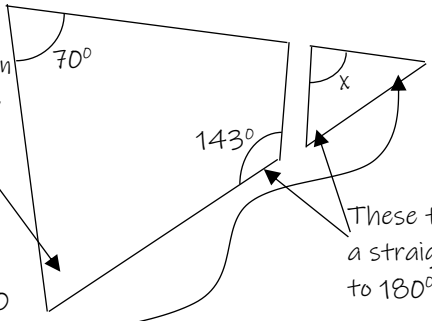
15y = 180°

y = 12°

As 11y > 4y, the largest angle is 11y which is 12° x 11 = 132°

Simon started with an isosceles triangle.

He cut the "top" off the triangle by cutting through the two equal sides. How large is the angle marked x?



Base angles of an isosceles triangle are equal so this is also 70°

Therefore the angle at the "top" is 180 – 70 – 70 = 40° as angles in a triangle sum to 180°

These two angles are on a straight line so sum to 180°

So the missing angle is 180 – 143 = 37°

As x is in a triangle, the total angle sum is 180°

So x = 180 – 40 – 37

x = 103°