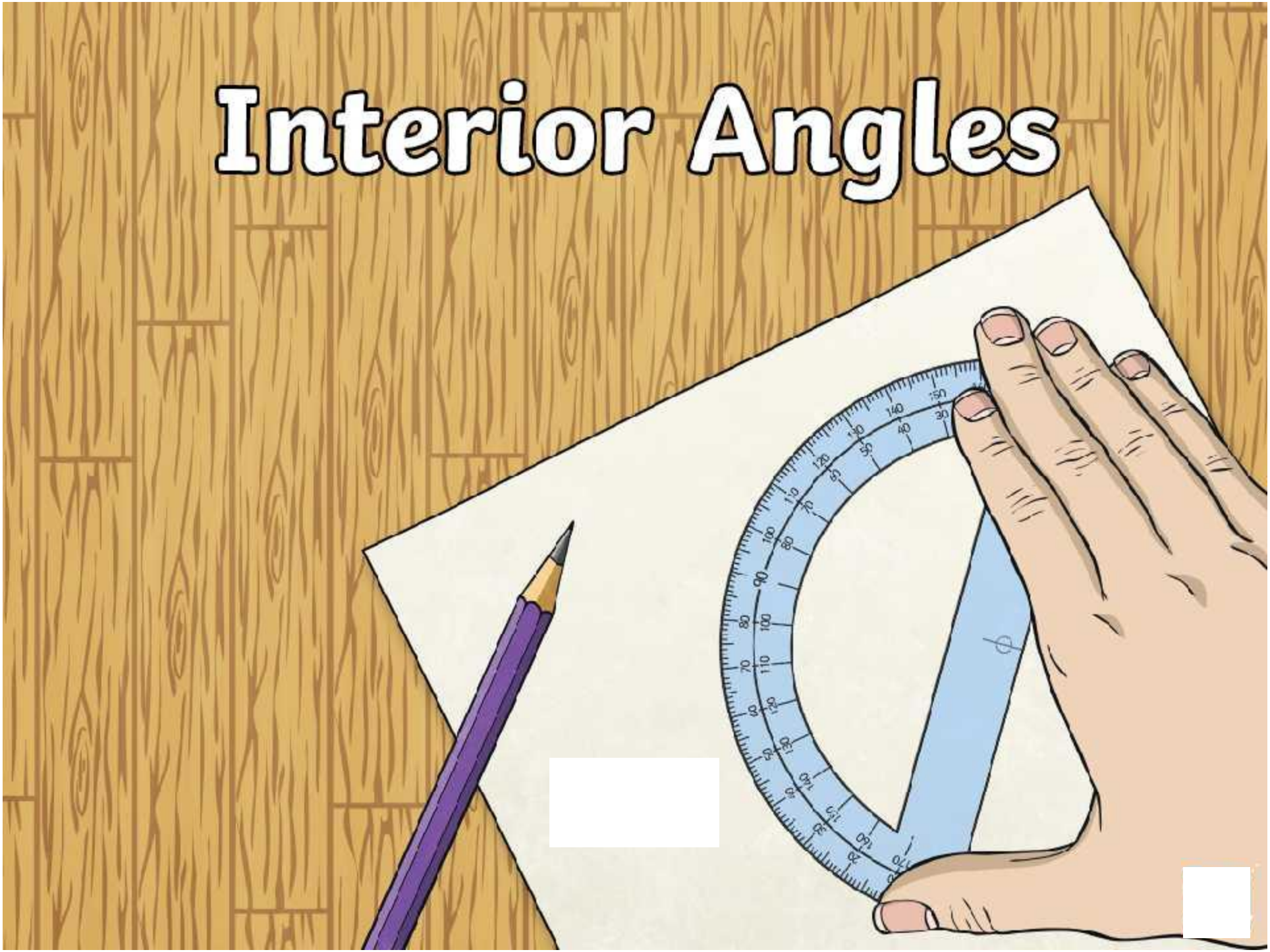
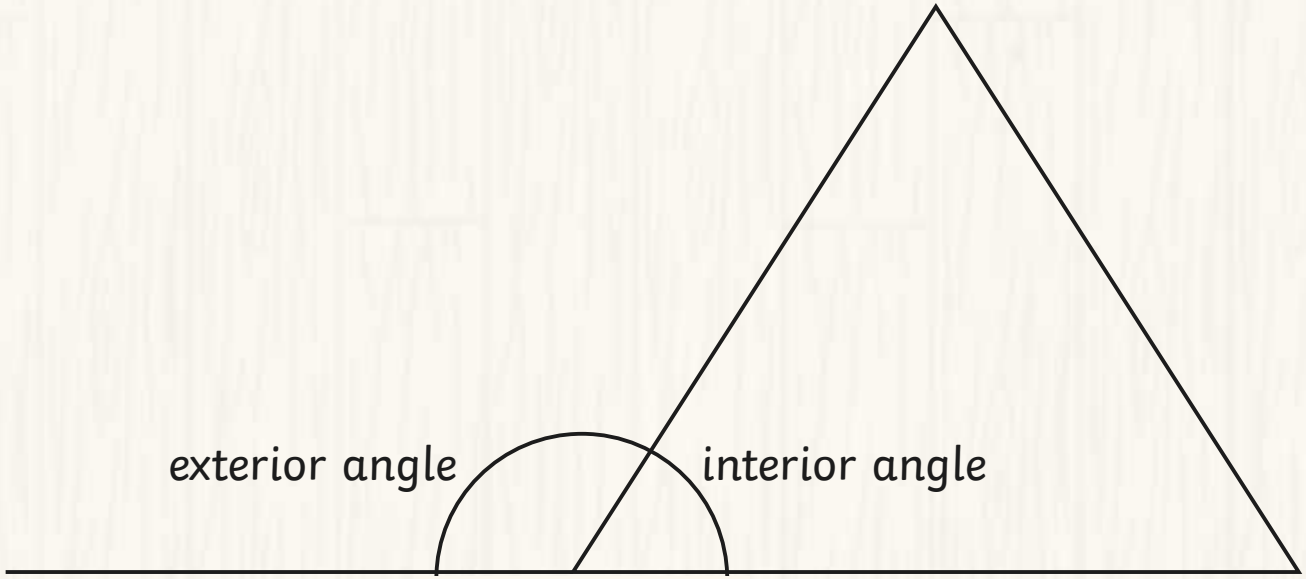
Interior Angles



Teachers Only!

In Key Stage 2, the objectives focus on interior angles. In KS3, they will be introduced to the exterior angle.

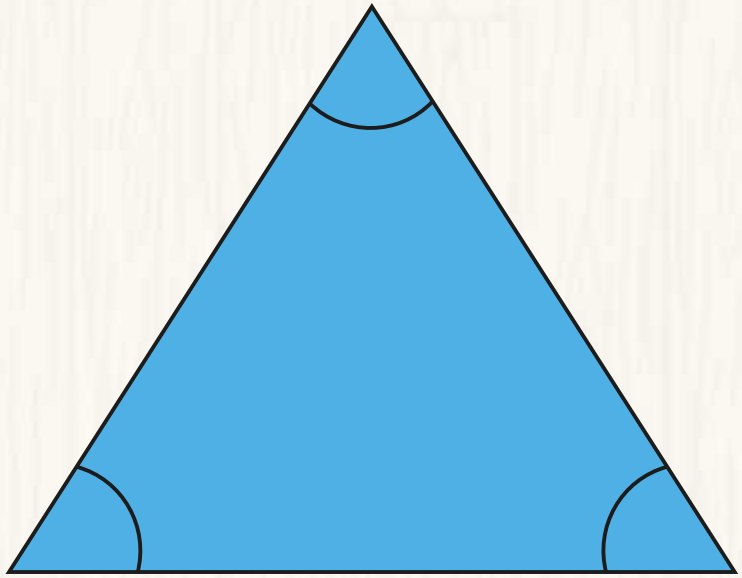


The total of the exterior angles of a polygon = 360°

What Is an Interior Angle?

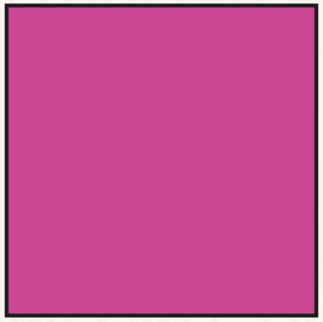
An interior angle is the angle made between
2 adjacent sides in any 2D shape.

This triangle has
3 interior angles.

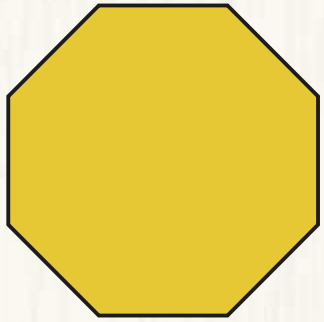


Regular Shapes

The interior angles of regular shapes are always equal.



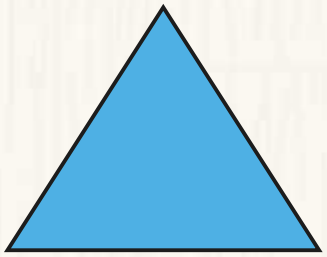
A square has 4 equal interior angles.



An octagon has 8 equal interior angles.

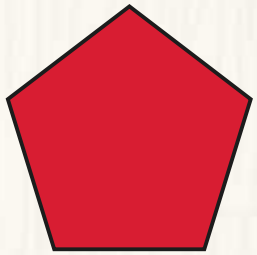
What other shapes have equal interior angles?

Other Shapes

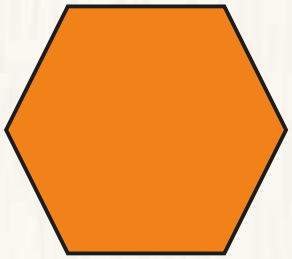


equilateral triangle

rectangle



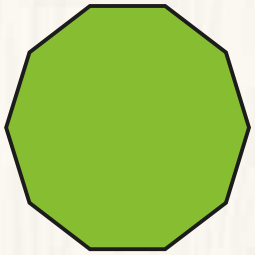
regular pentagon



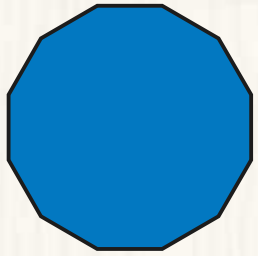
regular hexagon

regular heptagon

regular nonagon



regular decagon



regular dodecagon

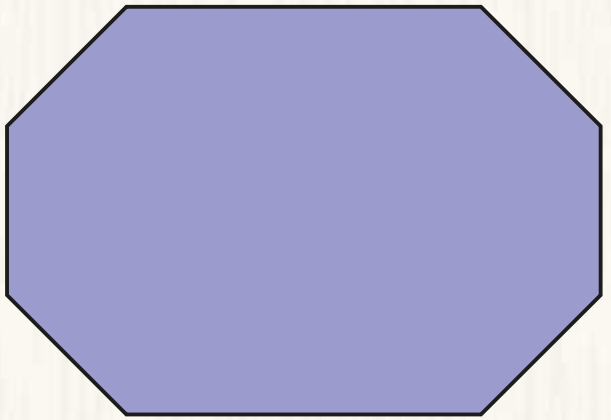
Why is a rectangle included?

It has equal interior angles but 2 different length sides.

What other irregular shapes can be drawn with equal interior angles?

Irregular Shapes with Equal Interior Angles

All polygons can be drawn with unequal sides and equal interior angles. Here are some examples:



Can you draw some yourself?

The Size of Equal Angles in Polygons

Calculate the size of the angles in different polygons and record them in a table.

Shape	Number of Sides	Interior Angle	Total of All Angles
Equilateral triangle	3	60°	180°

Example

Shape	Number of Sides	Interior Angle	Total of All Angles
Equilateral triangle	3	60°	180°
Square	4	90°	360°
Pentagon	5	108°	540°
Hexagon	6	120°	720°
Octagon	8	135°	1080°
Nonagon	9	140°	1260°
Decagon	10	144°	1440°
Dodecagon	12	150°	1800°

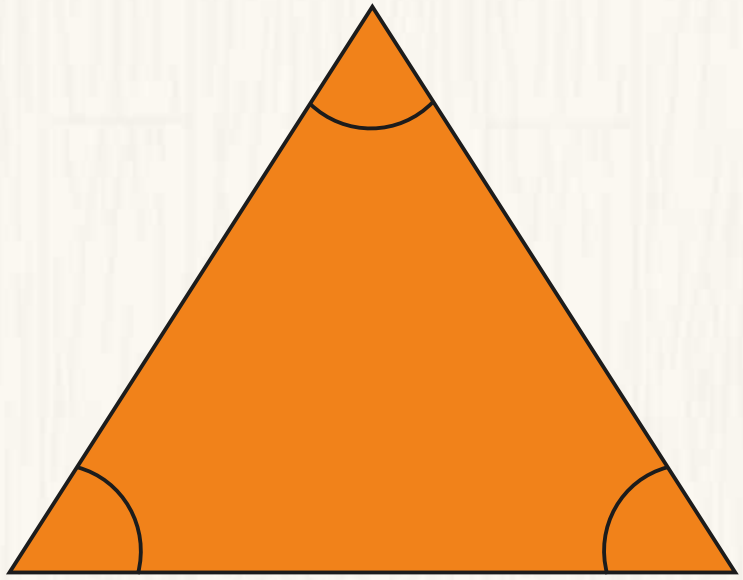
Can you spot any patterns?

The total of the angles increases by 180° each time.

Triangles

The interior angles in a triangle always total 180°.

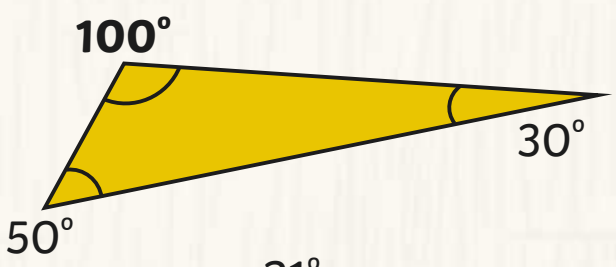
This means that if we know 2 angles, we can calculate the third.

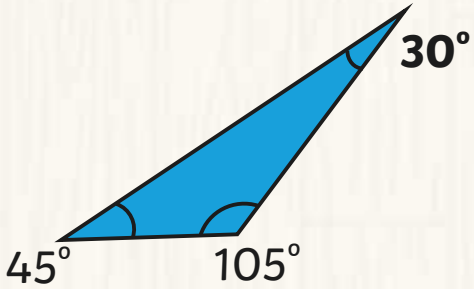


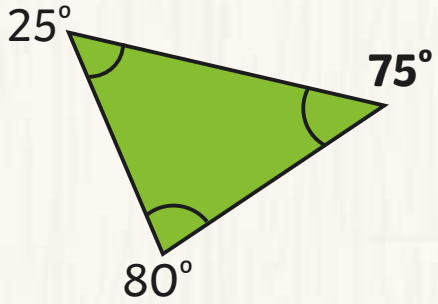
not to scale

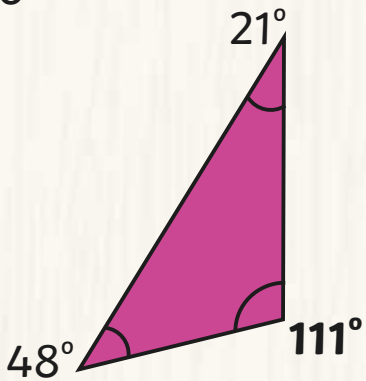
Triangles

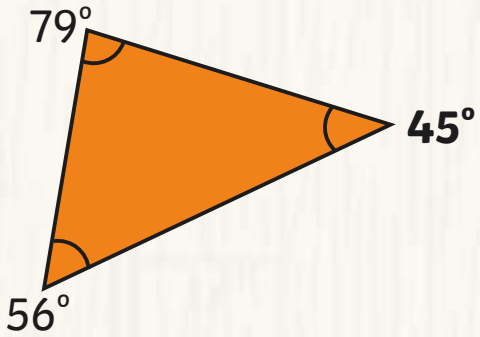
Calculate the unknown angle in these triangles.
Click for the answers.

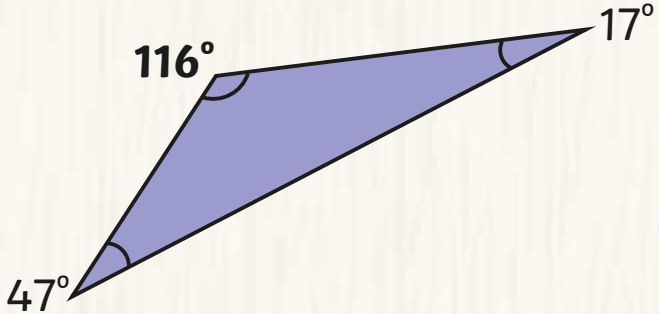












Challenge: Draw some triangles. Measure 2 angles and calculate the third. Check by measuring.

Quadrilaterals

The interior angles in a quadrilateral always total 360°.

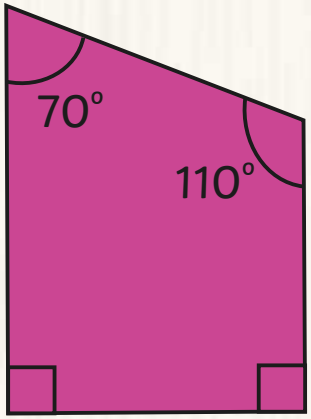
This means that if we know 3 angles, we can calculate the fourth.

In some shapes, some of the angles are equal, so we may only need to know 1 or 2 to calculate the others.

Quadrilaterals

Diagonally opposite angles are equal in a parallelogram.

Adjacent angles in a parallelogram add up to 180°.

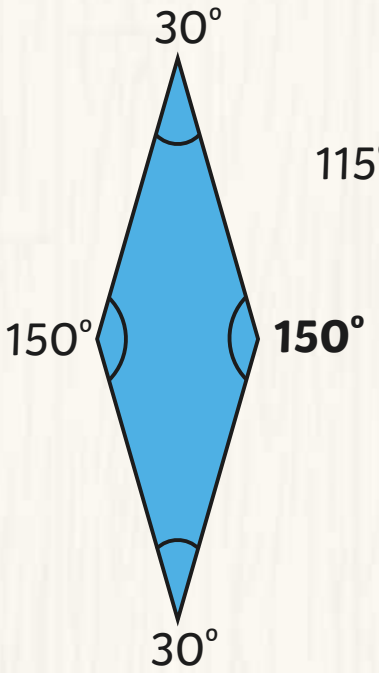


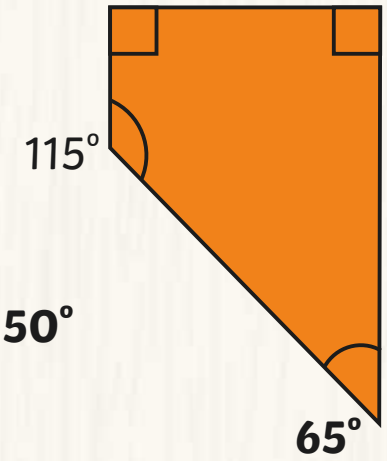
In this trapezium, the angles at the bottom of the shape are right angles, so the other 2 angles add up to 180°.

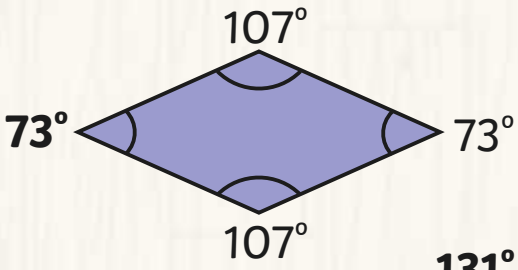
not to scale

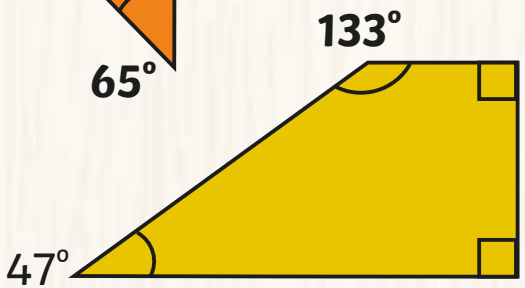
Quadrilaterals

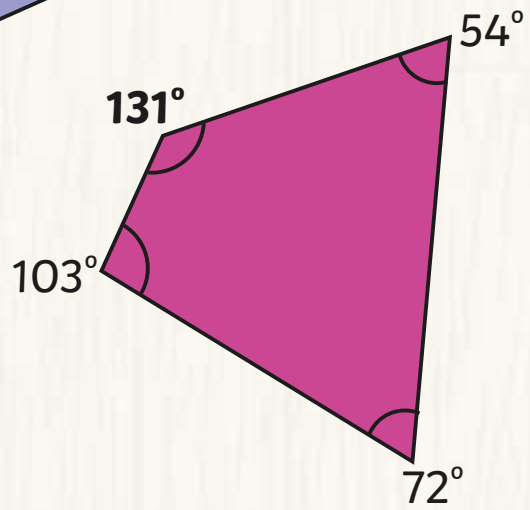
Calculate the unknown angle in these quadrilaterals.
Click for the answers.











Challenge: Draw some quadrilaterals. Measure 3 angles and calculate the fourth. Check by measuring.