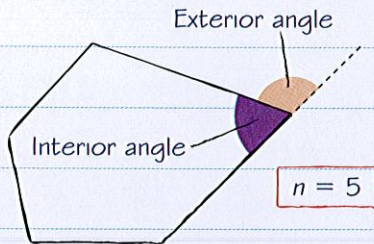
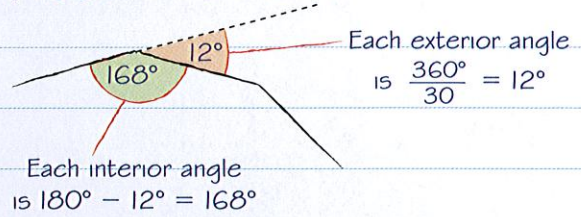


Angles in polygons

Polygon questions are all about interior and exterior angles.



This diagram shows part of a regular polygon with 30 sides.



Use these formulae for a polygon with n sides.

Sum of interior angles = $180^\circ \times (n - 2)$

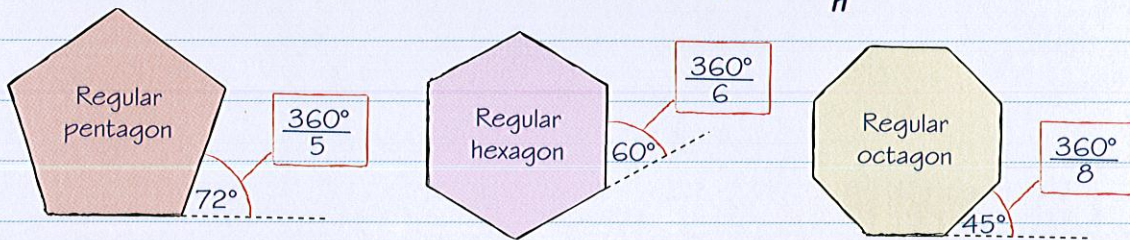
Sum of exterior angles = 360°

Don't try to draw a 30-sided polygon! If there's no diagram given in a polygon question, you probably don't need to draw one.

Regular polygons

In a regular polygon all the sides are equal and all the angles are equal.

If a regular polygon has n sides then each exterior angle is $\frac{360^\circ}{n}$



You can use the fact that the angles on a straight line add up to 180° to work out the size of one of the interior angles.

Worked example

grade D

Work out the size of an exterior angle of a regular pentagon.

Exterior angles of polygon add up to 360°
So exterior angle is $360^\circ \div 5 = 72^\circ$

EXAM ALERT!

Two-thirds of students dropped a mark here.

A pentagon has 5 sides. You need to know the names of the polygons with 3 to 8 sides (triangle, quadrilateral, pentagon, hexagon, heptagon, octagon) and 10 sides (decagon) for your exam.

This was a real exam question that caught students out – be prepared!

ResultsPlus

Now try this

edexcel

grade D

- (a) The size of each exterior angle of a regular polygon is 40° .
Work out the number of sides of the regular polygon. (2 marks)

grade C

- (b) $ABCDEF$ is a regular hexagon.
 BAG and EFG are straight lines.
Work out the size of angle AGF .
Give your reason for your answer. (3 marks)

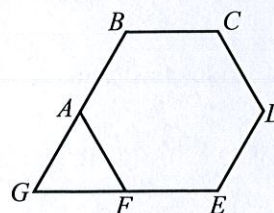


Diagram NOT accurately drawn