CLUEY LEARNING

MATHEMATICS: GEOMETRY

if you need additional help please contact us at 1300 182 000 or visit our website clueylearning.com.au

Learning Objective: To solve angles, triangles, and angle relationships.

Quadrilaterals and Polygons

The sum of the exterior angles of any convex polygon is 360°

In any regular n – sided convex polygon, each exterior angle measures:

$$\text{Exterior angles} = \frac{360^\circ}{n}$$

Example

Find the size of each exterior angle of a regular pentagon.

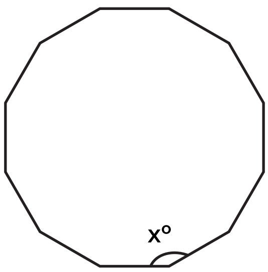
$$\text{Exterior angles} = \frac{360^\circ}{n}$$

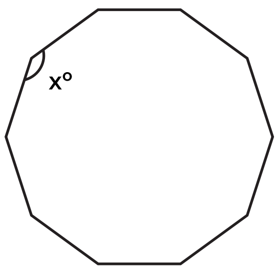
$$= \frac{360^\circ}{5}$$

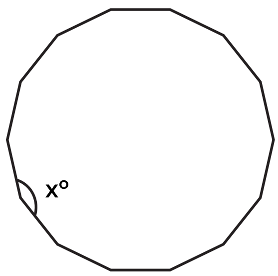
$$= 72^\circ$$

Therefore, each exterior angle is 72°.

Find the angle sum of the regular polygon. Hence, find the value of x^o







How many sides are there in a regular polygon whose exterior angles each measure:

12°	15°	30°	60°

MATHEMATICS: ANSWER SHEET

Learning Objective: To solve angles, triangles, and angle relationships.

Quadrilaterals and Polygons

The sum of the exterior angles of any convex polygon is 360°

In any regular n – sided convex polygon, each exterior angle measures:

Exterior angles = $\frac{360^\circ}{n}$

Example

Find the size of each exterior angle of a regular pentagon.

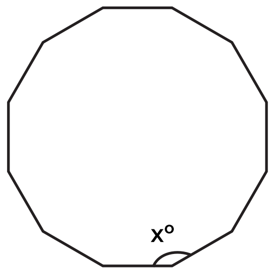
$$\text{Exterior angles} = \frac{360^\circ}{n}$$

$$= \frac{360^\circ}{5}$$

$$= 72^\circ$$

Therefore, each exterior angle is 72˚.

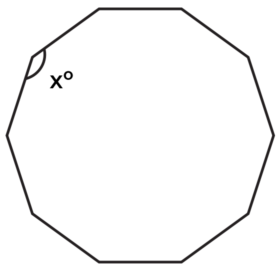
Find the angle sum of the regular polygon. Hence, find the value of x° to the nearest degree.



S = (n – 2) x 180°
= (12 – 2) x 180°
= 1800°

Since all angles are equal in a regular polygon,

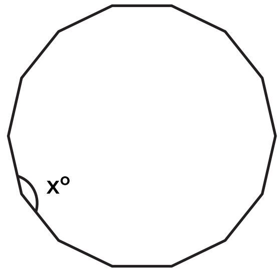
x° = 1800 / 12
x° = 150°



S = (n – 2) x 180°
= (10 – 2) x 180°
= 1440°

Since all angles are equal in a regular polygon,

x° = 1440 / 10
x° = 144°



S = (n – 2) x 180°
= (14 – 2) x 180°
= 2160°

Since all angles are equal in a regular polygon,

x° = 2160 / 14
x° = 154°

How many sides are there in a regular polygon whose exterior angles each measure:

12°

Exterior angles = 360° / n
12 = 360° / n
12n = 360
n = 360 / 12
n = 30

Therefore, the polygon has 30 sides.

15°

Exterior angles = 360° / n
15 = 360° / n
15n = 360
n = 360 / 15
n = 24

Therefore, the polygon has 24 sides.

30°

Exterior angles = 360° / n
30 = 360° / n
30n = 360
n = 360 / 30
n = 12

Therefore, the polygon has 12 sides.

60°

Exterior angles = 360° / n
60 = 360° / n
60n = 360
n = 360 / 60
n = 6

Therefore, the polygon has 6 sides.