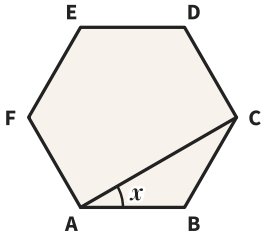
Angles in Regular Polygons

ANSWERS

1

ABCDEF is a regular hexagon.
Work out the size of angle x.



Not drawn accurately

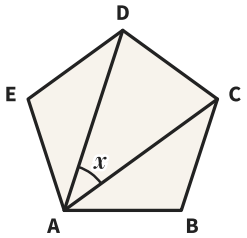
$ABC = 120°$ and $AB = BC$

$x = (180 - 120) \div 2$

Answer $x = 30°$

2

ABCDE is a regular pentagon.
Work out the size of angle x.



Not drawn accurately

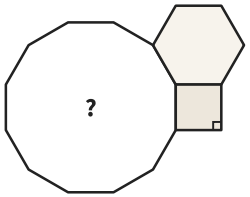
$BAC = EAD = (180 - 108) \div 2 = 36°$

$x = 108 - 36 - 36$

Answer $x = 36°$

3

A square, a regular hexagon and another regular polygon fit together round a point with no gap. How many sides has the other polygon?



Not drawn accurately

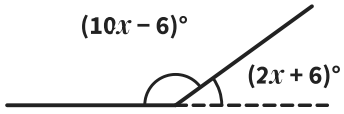
$360 - 90 - 120 = 150°$, its interior angle

exterior angle $30°$, $360 \div 30 = 12$

Answer 12 sides

4

Part of a regular polygon is shown.
How many sides does the polygon have?



Not drawn accurately

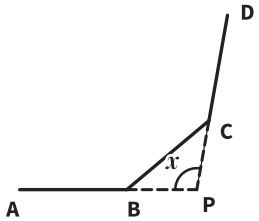
they add to 180: $12x = 180$, $x = 15$

exterior angle $36°$, $360 \div 36 = 10$

Answer 10 sides

5

Part of a regular nonagon is shown.
Sides AB and DC are extended to meet at P. Work out the size of angle x.



Not drawn accurately

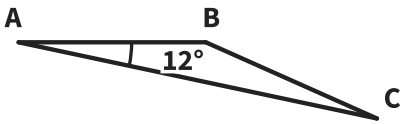
$PBC = PCB = 360 \div 9 = 40°$

$x = 180 - 40 - 40$

Answer $x = 100°$

6

A, B and C are three corners next to each other on a regular polygon.
Angle BAC is 12°. How many sides does the polygon have?



Not drawn accurately

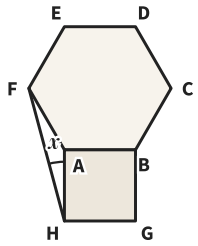
$AB = BC$, so $ABC = 180 - 12 - 12 = 156°$

exterior angle $24°$, $360 \div 24 = 15$

Answer 15 sides

7

ABCDEF is a regular hexagon and ABGH is a square. Work out the size of angle x.



Not drawn accurately

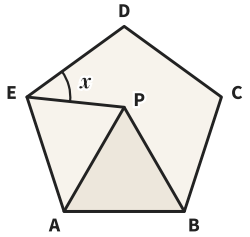
$FAH = 360 - 120 - 90 = 150°$

$AF = AB = AH$, so $x = (180 - 150) \div 2$

Answer $x = 15°$

8

ABCDE is a regular pentagon and ABP is an equilateral triangle. Work out the size of angle x.



Not drawn accurately

$EAP = 48°$; $AE = AP$, so $AEP = 66°$

$x = 108 - 66$

Answer $x = 42°$