Polygons

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

Each interior angle = $\dfrac{(n-2) \times 180}{n}$

↳ Has to be a regular polygon

Sum of exterior angles = $360°$

Each exterior angle = $\dfrac{360}{n}$

↳ Has to be a regular polygon

Int. Angle + Exterior angle = $180°$

2

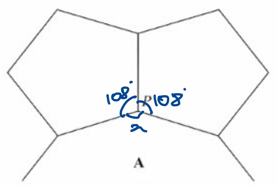


Diagram **NOT** accurately drawn

The diagram shows two congruent regular pentagons and part of a regular n-sided polygon **A**.
Two sides of each of the regular pentagons and two sides of **A** meet at the point P.

Calculate the value of n.
Show your working clearly.

Each interior angle = $\dfrac{(5-2) \times 180}{5}$

$= 108°$

Sum of 3 angles would be $360°$

$360 = 108 + 108 + x$

$360 = 216 + x$

$144° = x$

$\dfrac{(n-2) \times 180}{n} = 144$

$(n-2) \times 180 = 144n$

$36n = 360 \rightarrow \boxed{n = 10}$

Other method

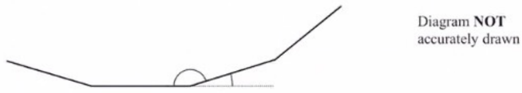
$144 + \text{Ext} = 180$

Each Ext Angle = $36°$

$\dfrac{360}{n} = 36$

$\boxed{n = 10}$

4 The diagram shows an incomplete regular polygon.



The size of each interior angle is 140 degrees greater than the size of each exterior angle.

Work out the number of sides the regular polygon has.

Exterior Angle　　　　Interior angle

x　　　　$x+140$

$$(x) + (x+140) = 180$$

$$x + x + 140 = 180$$

$$2x = 40$$

$$x = 20$$

Each ext angle $= \frac{360}{n}$

$$20 = \frac{360}{n}$$

$$\boxed{n = 18}$$