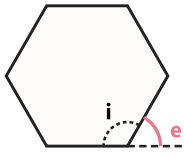


Angles in Regular Polygons

ANSWERS

1

A regular hexagon has 6 sides. Find (a) the exterior angle e and (b) the interior angle i .



exterior angles of any polygon add to 360°

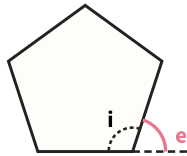
$$e = 360^\circ \div 6 = 60^\circ$$

$$i = 180^\circ - 60^\circ = 120^\circ$$

Answer (a) 60° (b) 120°

2

A regular pentagon has 5 sides. Find (a) the exterior angle e and (b) the interior angle i .



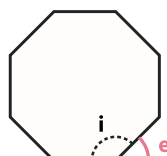
$$e = 360^\circ \div 5 = 72^\circ$$

$$i = 180^\circ - 72^\circ = 108^\circ$$

Answer (a) 72° (b) 108°

3

A regular octagon has 8 sides. Find (a) the exterior angle e and (b) the interior angle i .



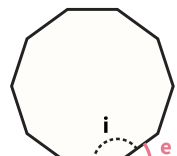
$$e = 360^\circ \div 8 = 45^\circ$$

$$i = 180^\circ - 45^\circ = 135^\circ$$

Answer (a) 45° (b) 135°

4

A regular decagon has 10 sides. Find (a) the exterior angle e and (b) the interior angle i .



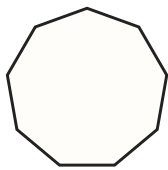
$$e = 360^\circ \div 10 = 36^\circ$$

$$i = 180^\circ - 36^\circ = 144^\circ$$

Answer (a) 36° (b) 144°

5

A regular nonagon has 9 sides. Find (a) the exterior angle e and (b) the interior angle i .



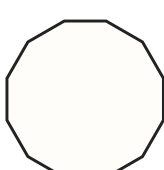
$$e = 360^\circ \div 9 = 40^\circ$$

$$i = 180^\circ - 40^\circ = 140^\circ$$

Answer (a) 40° (b) 140°

6

A regular dodecagon has 12 sides. Find (a) the exterior angle e and (b) the interior angle i .



$$e = 360^\circ \div 12 = 30^\circ$$

$$i = 180^\circ - 30^\circ = 150^\circ$$

Answer (a) 30° (b) 150°

7

Each exterior angle of a regular polygon is 30° . How many sides does the polygon have?

$$360 \div 30$$

Answer 12

8

Can a regular polygon have an exterior angle of 50° ? Explain how you know.

$$360 \div 50 = 7.2 \text{ is not a whole number}$$

Answer No

Angles in Regular Polygons further practice

ANSWERS

9

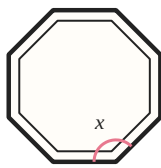
Each exterior angle of a regular polygon is 20° . How many sides does the polygon have?

$$360 \div 20$$

Answer 18 sides

10

A road sign is a regular octagon. Find the size of angle x , one of its interior angles.



$$\text{exterior } 360 \div 8 = 45, \text{ then } 180 - 45$$

Answer $x = 135^\circ$

11

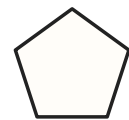
Each interior angle of a regular polygon is 156° . How many sides does the polygon have?

$$\text{exterior } 24^\circ, \text{ then } 360 \div 24$$

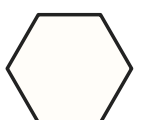
Answer 15 sides

12

Which has the bigger interior angle, a regular pentagon or a regular hexagon? By how much?



pentagon



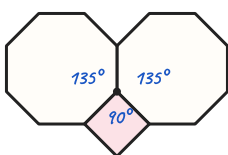
hexagon

$$108^\circ \text{ and } 120^\circ$$

Answer the hexagon, by 12°

13

Floor tiles are regular octagons and squares. Two octagons and a square meet at a point. Show that they fit with no gap.

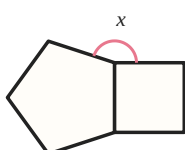


$$135 + 135 + 90 = 360$$

Answer they make 360°

14

A regular pentagon and a square share a side. Find the size of angle x .

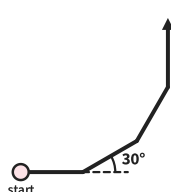


$$360 - 108 - 90$$

Answer $x = 162^\circ$

15

A robot moves along a path that is a regular polygon. At each corner it turns through 30° . How many corners does the path have?



$$\text{the turn is the exterior angle: } 360 \div 30$$

Answer 12 corners

16

Kai says that the more sides a regular polygon has, the bigger each exterior angle is. Is Kai right? Explain.

$$360^\circ \text{ is shared between more angles, so each is smaller}$$

Answer No