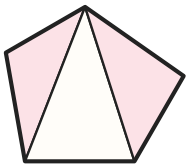
Sum of Interior Angles

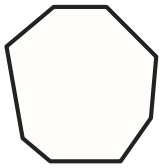
ANSWERS

1
A pentagon has 5 sides. Find the sum of its interior angles.



Sum = (5 − 2) × 180°
= 3 × 180° = 540°
Answer 540°

2
An octagon has 8 sides. Find the sum of its interior angles.

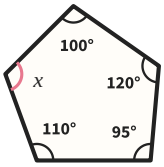


Sum = (8 − 2) × 180°
= 6 × 180° = 1080°
Answer 1080°

3
A polygon has 11 sides. Find the sum of its interior angles.

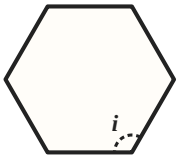
Sum = (11 − 2) × 180°
= 9 × 180° = 1620°
Answer 1620°

4
A pentagon is not regular. Four of its angles are 110°, 95°, 120° and 100°.
Find the size of angle x.



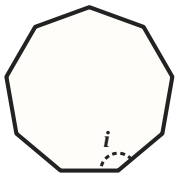
Sum = (5 − 2) × 180° = 540°
540 − 110 − 95 − 120 − 100 = 115°
Answer x = 115°

5
A regular hexagon has 6 sides. Find (a) the sum of the interior angles and (b) the interior angle i.



Sum = (6 − 2) × 180° = 720°
i = 720° ÷ 6 = 120°
Answer (a) 720° (b) 120°

6
A regular nonagon has 9 sides. Find (a) the sum of the interior angles and (b) the interior angle i.



Sum = (9 − 2) × 180° = 1260°
i = 1260° ÷ 9 = 140°
Answer (a) 1260° (b) 140°

7
A regular polygon has 20 sides.
Find (a) the sum of its interior angles and (b) the size of each interior angle.

Sum = (20 − 2) × 180° = 3240°
3240° ÷ 20 = 162°
Answer (a) 3240° (b) 162°

8
Show that each interior angle of a regular polygon with 24 sides is 165°.

Sum = (24 − 2) × 180° = 3960°
3960° ÷ 24 = 165°
Answer each angle is 165°

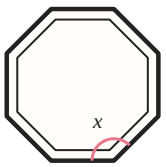
Sum of Interior Angles *further practice*

ANSWERS

9
The interior angles of a polygon add up to 1440°. How many sides does the polygon have?

1440 ÷ 180 = 8 triangles, then 8 + 2
Answer 10 sides

10
A road sign is a regular octagon.
Find the size of angle x, one of its interior angles.

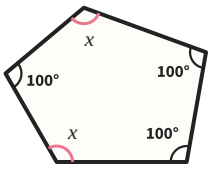


(8 − 2) × 180 = 1080, then 1080 ÷ 8
Answer x = 135°

11
How much bigger is the sum of the interior angles of a decagon (10 sides) than of an octagon (8 sides)?

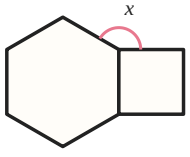
1440 − 1080
Answer 360°

12
A pentagon has three angles of 100°.
Its other two angles are equal.
Find the size of angle x.



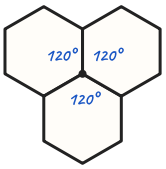
540 − 300 = 240, then 240 ÷ 2
Answer x = 120°

13
A regular hexagon and a square share a side. Find the size of angle x.



360 − 120 − 90
Answer x = 150°

14
Floor tiles are regular hexagons.
Three of them meet at a point.
Show that they fit with no gap.



120 + 120 + 120 = 360
Answer they make 360°

15
Can a floor be tiled with regular pentagons, meeting at a point with no gap? Explain how you know.

3 × 108 = 324, 4 × 108 = 432
Answer No

16
Sam says the interior angles of an octagon add up to 8 × 180° = 1440°.
Explain Sam's mistake.

an octagon splits into 6 triangles, not 8
Answer (8 − 2) × 180° = 1080°