Angles in polygons: fact sheet

Planner week 13 · Learn these facts

Names

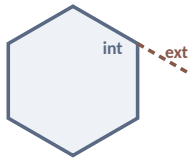
5 pentagon 6 hexagon

7 heptagon 8 octagon

9 nonagon 10 decagon

Regular: all sides and angles equal

Interior + exterior



Interior + exterior = 180°

They sit on a straight line

Exterior angles

add up to 360°

regular: 360 ÷ n

Hexagon: 360 ÷ 6 = 60°

Sum of interior angles

(n − 2) × 180°

pentagon: 3 × 180 = 540°

Split into triangles from one corner

Each interior (regular)

180 − exterior

hexagon: 180 − 60 = 120°

Or sum ÷ n

Number of sides

n = 360 ÷ exterior

exterior 15°: 360 ÷ 15 = 24

Find the exterior angle first

Missing angles

total − the ones you know

540 − 330 = 210

Use letters if angles are linked

e.g. 7c = 385

Sums to learn

Triangle	180°
Quadrilateral	360°
Pentagon	540°
Hexagon	720°

Key words

- **Polygon** a flat shape with straight sides
- **Regular** all sides and all angles equal
- **Interior angle** inside the shape
- **Exterior angle** between one side and the next side extended

Exam tips

- Write the angle sum first: (n − 2) × 180.
- Regular polygon? Start with 360 ÷ n.
- Interior + exterior = 180.
- Angles round a point add up to 360°.
- Linked angles: write an equation in one letter.
- Show all your working and give a reason.

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Worked example

QUESTION

Work out the size of each interior angle of a regular hexagon (6 sides).

ANSWER

1. Exterior angle = 360 ÷ 6 = 60°
2. Interior angle = 180 − 60

120°

Exterior angle = 360 ÷ number of sides. Interior angle = 180 − exterior.

How to do it

1. Find the exterior angle: 360 ÷ n.
2. Interior angle = 180 − exterior.
3. Or angle sum = (n − 2) × 180.
4. Use other angle facts: round a point 360°, on a line 180°.
5. Number of sides: 360 ÷ exterior angle.

Model answer:

180 − 360 ÷ 6 = 120°

Watch out

- Using 180 for the angle sum of every shape.
- Mixing up interior and exterior angles.
- Using 360 ÷ n for the interior angle.