# Angles in Polygons

IGCSE Maths · Grades 9–10 · British and American curriculum · About 20 minutes · 8 questions

Name _____ Date _____ Score / 8

**WHAT YOU WILL PRACTISE**

- Find the sum of the interior angles of a polygon
- Find interior and exterior angles of regular polygons
- Find the number of sides from an interior or exterior angle

**WORKED EXAMPLE**

Find the size of each interior angle of a regular nonagon (9 sides).

1. Use the angle sum formula: $(n - 2) \times 180° = (9 - 2) \times 180° = 1260°$.
2. A regular polygon has equal angles, so divide by the number of sides: $1260° \div 9$.
3. Each interior angle is $140°$.

**Answer:** $140°$

## Questions

Show your working in the space under each question.

**1.** Find the sum of the interior angles of a pentagon

**2.** Find the sum of the interior angles of a hexagon

**3.** Find the size of each interior angle of a regular octagon

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**4.** Find the size of each exterior angle of a regular pentagon

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

**6.** Each interior angle of a regular polygon is 160°. How many sides does it have?

**7.** Four angles of a pentagon are 100°, 110°, 120° and 95°. Find the fifth angle.

**8.** Find the size of each interior angle of a regular decagon (10 sides)

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# Answers: Angles in Polygons

Mark your own work, then go back to any question you got wrong before reading the tutor tip.

| Q | QUESTION | ANSWER |
|---|---|---|
| 1 | Find the sum of the interior angles of a pentagon | **540°** |
| 2 | Find the sum of the interior angles of a hexagon | **720°** |
| 3 | Find the size of each interior angle of a regular octagon | **135°** |
| 4 | Find the size of each exterior angle of a regular pentagon | **72°** |
| 5 | Each exterior angle of a regular polygon is 30°. How many sides does it have? | **12** |
| 6 | Each interior angle of a regular polygon is 160°. How many sides does it have? | **18** |
| 7 | Four angles of a pentagon are 100°, 110°, 120° and 95°. Find the fifth angle. | **115°** |
| 8 | Find the size of each interior angle of a regular decagon (10 sides) | **144°** |

**TUTOR TIP**

The exterior angles of any polygon add up to 360°. For a regular polygon it is often quicker to find the exterior angle first.

**Stuck on a question? Work through it live with a tutor.**

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