Angles in Polygons

Year 10–11 Maths · Years 10–11 · NCEA Level 1 · 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

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.

YFCampus offers one-to-one online Maths tutoring matched to your school curriculum. Book a free trial class at **www.yfcampus.com/nz**

Written for students aged 13 to 16 and suitable for Years 10–11. Check your school’s curriculum for the exact order of topics. YFCampus is independent and is not affiliated with any exam board or education ministry.