Angles and Polygons: exam questions

10 questions · 26 marks · mark schemes at the end

Name _____ Date _____ Score / 26

- Calculators are allowed on both 4MA1 Higher papers (1H and 2H). Show your working: most marks are for method.
- Mark schemes start after the questions. M marks are for a correct method, A marks for an accurate answer that follows a correct method, and B marks for a correct result on its own.
- Online, with more practice: igcsemathrevision.com/igcse-frontend/4ma1/exam-questions/angles-and-polygons

1. **2 marks**

Work out the size of each interior angle of a regular decagon.

2. **2 marks**

Each exterior angle of a regular polygon is $24°$.

How many sides does the polygon have?

3. **2 marks**

Work out the sum of the interior angles of a heptagon.

4. **3 marks**

The interior angles of a pentagon are $x°$, $2x°$, $110°$, $120°$ and $100°$.

Work out the size of the largest angle.

5. **3 marks**

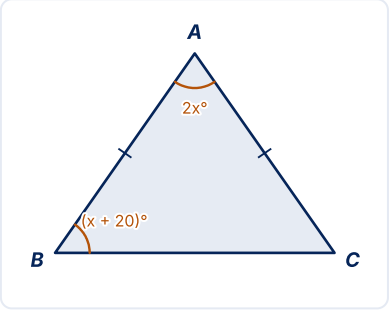
Each interior angle of a regular polygon is 5 times the size of each exterior angle.

How many sides does the polygon have?

6. **3 marks**

Triangle ABC is isosceles with $AB = AC$. Angle $BAC = 2x°$ and angle $ABC = (x + 20)°$.

Work out the size of angle BAC.

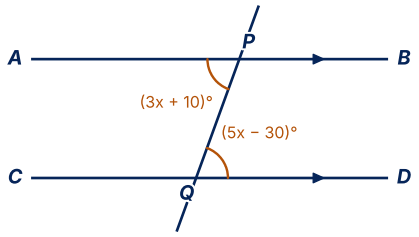


7. 3 marks

The lines AB and CD are parallel. A straight line crosses AB at P and CD at Q, so that angle APQ and angle PQD are alternate angles.

Angle $APQ = (3x + 10)°$ and angle $PQD = (5x - 30)°$.

Find the value of x. Give a reason for your answer.



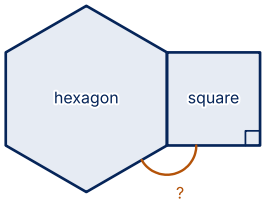
8. 2 marks

Can a regular polygon have interior angles of $130°$? You must show how you decide.

9. 3 marks

A regular hexagon and a square are joined along one edge. At one end of the shared edge there is a gap between the other edge of the hexagon and the other edge of the square.

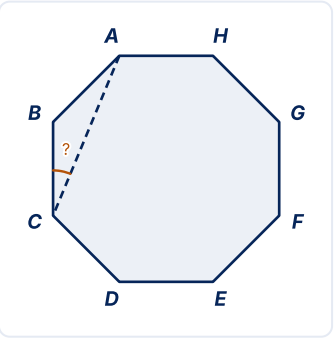
Work out the size of the angle of the gap.



10. **3 marks**

$ABCDEFGH$ is a regular octagon.

Work out the size of angle ACB.



Answers and worked solutions

Question 1 — 2 marks

M1 exterior angle $360 \div 10 = 36°$, or $\dfrac{(10-2)\times 180}{10}$

A1 $144°$

Answer: $144°$

Question 2 — 2 marks

M1 $360 \div 24$

A1 15

Answer: 15

Question 3 — 2 marks

M1 $(7-2)\times 180$

A1 $900°$

Answer: $900°$

Question 4 — 3 marks

M1 sum of angles $540°$

M1 $3x + 330 = 540$, so $x = 70$

A1 $140°$

Answer: $140°$

Question 5 — 3 marks

M1 $e + 5e = 180$

M1 $e = 30°$

A1 $360 \div 30 = 12$

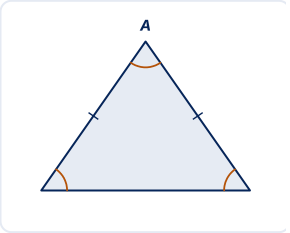
Answer: 12

Question 6 — 3 marks

M1 $2x + 2(x + 20) = 180$

A1 $x = 35$

A1 $70°$



Answer: $70°$

Question 7 — 3 marks

M1 $3x + 10 = 5x - 30$

A1 $x = 20$

B1 alternate angles are equal

Answer: $x = 20$

Question 8 — 2 marks

M1 exterior angle $50°$, $360 \div 50 = 7.2$

A1 No, because 7.2 is not a whole number of sides

Answer: No

Question 9 — 3 marks

M1 interior angle of the hexagon $120°$

M1 $360 - 120 - 90$

A1 $150°$

Answer: $150°$

Question 10 — 3 marks

M1 interior angle $135°$

M1 triangle ABC is isosceles: $\dfrac{180-135}{2}$

A1 $22.5°$

Answer: $22.5°$

Online, with every solution: igcsemathrevision.com/igcse-frontend/4ma1/exam-questions/angles-and-polygons
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