
GCSE Mathematics

Angles in Polygons

Mark Scheme - Foundation | Grades 4-6

M = method mark, A = accuracy mark (dependent on the preceding M mark), B = independent mark.

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Edexcel-style questions

Q1 Grade 4 Edexcel style

Total: 2

Part	Mark scheme	Marks
(a)	$(9 - 2) \times 180$	M1
(a)	1260°	A1

Q2 Grade 4 Edexcel style

Total: 2

Part	Mark scheme	Marks
(a)	$(9 - 2) \times 180 \div 9$	M1
(a)	140°	A1

Q3 Grade 5 Edexcel style

Total: 2

Part	Mark scheme	Marks
(a)	$360 \div 15$	M1
(a)	24°	A1

Q4 Grade 5 Edexcel style

Total: 3

Part	Mark scheme	Marks
(a)	exterior angle = $180 - 140 = 40^\circ$	M1
(a)	$360 \div 40$	M1
(a)	9 sides	A1

Q5 Grade 6 Edexcel style

Total: 3

Part	Mark scheme	Marks
(a)	interior angle of the hexagon = 120°	M1
(a)	interior angle of the square = 90°	M1
(a)	$x = 360 - 120 - 90 = 150^\circ$	A1

AQA-style questions

Q6 Grade 4 AQA style

Total: 3

Part	Mark scheme	Marks
(a)	$\text{sum} = (5 - 2) \times 180 = 540^\circ$	M1
(a)	$540 - 100 - 120 - 90 - 110$	M1
(a)	$x = 120^\circ$	A1

Q7 Grade 4 AQA style

Total: 2

Part	Mark scheme	Marks
(a)	$(12 - 2) \times 180 \div 12$	M1
(a)	150°	A1

Q8 Grade 5 AQA style

Total: 2

Part	Mark scheme	Marks
(a)	$360 \div 20$	M1
(a)	18 sides	A1

Q9 Grade 5 AQA style

Total: 3

Part	Mark scheme	Marks
(a)	$3x + 2x + 4x + x = 360$	M1
(a)	$10x = 360 \Rightarrow x = 36$	M1
(a)	largest angle = $4x = 144^\circ$	A1

Q10 Grade 6 AQA style

Total: 2

Part	Mark scheme	Marks
(a)	interior angle of a regular pentagon = 108° ; $360 \div 108 = 3.3$	M1
(a)	regular pentagons cannot tessellate, because 108° does not divide exactly into 360°	A1

OCR-style questions

Q11 Grade 4 OCR style**Total: 2**

Part	Mark scheme	Marks
(a)	$(10 - 2) \times 180$	M1
(a)	1440°	A1

Q12 Grade 5 OCR style**Total: 3**

Part	Mark scheme	Marks
(a)	exterior angle = $180 - 156 = 24^\circ$	M1
(a)	$360 \div 24$	M1
(a)	15 sides	A1

Q13 Grade 5 OCR style**Total: 2**

Part	Mark scheme	Marks
(a)	$360 - 50 - 70 - 65 - 55 - 45$	M1
(a)	$x = 75^\circ$	A1

Q14 Grade 6 OCR style**Total: 3**

Part	Mark scheme	Marks
(a)	interior + exterior = 180, so $8 \times \text{exterior} + \text{exterior} = 180$	M1
(a)	$9 \times \text{exterior} = 180 \Rightarrow \text{exterior} = 20^\circ$	M1
(a)	$360 \div 20 = 18$ sides	A1

Q15 Grade 6 OCR style**Total: 3**

Part	Mark scheme	Marks
(a)	$3x = 360 \Rightarrow x = 120^\circ$	M1
(a)	$(n - 2) \times 180 \div n = 120 \Rightarrow n = 6$	M1
(a)	each interior angle is 120° ; the polygon is a regular hexagon	A1

Teachably-style questions

Q16 Grade 4 Teachably style

Total: 3

Part	Mark scheme	Marks
(a)	$\text{sum} = (6 - 2) \times 180 = 720^\circ$	M1
(a)	$720 - 130 - 140 - 110 - 150 - 100$	M1
(a)	$x = 90^\circ$	A1

Q17 Grade 5 Teachably style

Total: 3

Part	Mark scheme	Marks
(a)	$\text{exterior angle} = 180 - 144 = 36^\circ$	M1
(a)	$360 \div 36$	M1
(a)	10 sides	A1

Q18 Grade 5 Teachably style

Total: 2

Part	Mark scheme	Marks
(a)	both sums are 360°	B1
(a)	the sum of the exterior angles of a polygon is always 360° , whatever the number of sides	B1

Q19 Grade 5 Teachably style

Total: 3

Part	Mark scheme	Marks
(a)	$2x + 3x + (x + 10) + 4x + (x + 20) = 360$	M1
(a)	$11x + 30 = 360 \Rightarrow 11x = 330$	M1
(a)	$x = 30$	A1

Q20 Grade 6 Teachably style

Total: 3

Part	Mark scheme	Marks
(a)	$\text{interior} + \text{exterior} = 180$, so $(4 \times \text{exterior} + 30) + \text{exterior} = 180$	M1
(a)	$5 \times \text{exterior} = 150 \Rightarrow \text{exterior} = 30^\circ$	M1
(a)	$360 \div 30 = 12$ sides	A1

END OF PAPER

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