

GCSE Mathematics (1MA1)

Themed papers – Angles: Regular Polygons

Compiled from student-friendly mark schemes

Please note that this mark scheme is not the one used by examiners for making scripts. It is intended more as a guide to good practice, indicating where marks are given for correct answers. As such, it doesn't show follow-through marks (marks that are awarded despite errors being made) or special cases.

It should also be noted that for many questions, there may be alternative methods of finding correct solutions that are not shown here – they will be covered in the formal mark scheme.

NOTES ON MARKING PRINCIPLES

Guidance on the use of codes within this mark scheme

M1 – method mark. This mark is generally given for an appropriate method in the context of the question. This mark is given for showing your working and may be awarded even if working is incorrect.

P1 – process mark. This mark is generally given for setting up an appropriate process to find a solution in the context of the question.

A1 – accuracy mark. This mark is generally given for a correct answer following correct working.

B1 – working mark. This mark is usually given when working and the answer cannot easily be separated.

C1 – communication mark. This mark is given for explaining your answer or giving a conclusion in context supported by your working.

Some questions require all working to be shown; in such questions, no marks will be given for an answer with no working (even if it is a correct answer).

Question 1 (Total 4 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
	$180 - \frac{360}{12} = 150$	M1	This mark is given for a complete method to find the interior angle of the dodecagon
	at B or C, $360 - 150 - 90 = 120$	M1	This mark is given for a complete method to find the interior angle of polygon P
	$180 - \frac{360}{x} = 120, \quad \frac{360}{x} = 60, \quad x = 6$	A1	This mark is given for using the interior and to find out the number of sides of polygon P
	Polygon P has 6 sides, so is a hexagon	C1	This mark is given for a complete solution, fully supported by accurate figures

Question 2 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$180 - 117 = 63$	P1	This mark is given for a process to find the other angle in the parallelogram
	$180 - \frac{360}{5} = 108$	P1	This mark is given for a process to find the interior angle of the pentagon
	$108 - 63$	P1	This mark is given for a process to find the value of x
	45	A1	This mark is given for the correct answer only

Question 3 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$RST = \frac{(12-2) \times 180}{12} = 150$	1	This mark is given for finding an interior angle of a regular 12-sided polygon
	$STR = \frac{180-150}{2}$	1	This mark is given for a method to find the size of STR
	15	1	This mark is given for the correct answer only

Question 4 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	interior angle: $(8-2) \times 180 \div 8$ or exterior angle: $360 \div 8$	M1	This mark is given for a method to find the size of an interior angle or an exterior angle
	interior angle = 135 or exterior angle = 45	A1	This mark is given for finding the size of an interior angle or an exterior angle
	$CDA = \frac{(360-135 \times 2)}{2} = 45$	M1	This mark is given for method to find size of angle CDA
	$CDJ = 180 - 45 = 135$	C1	This mark is given for a correct conclusion from correct working

Question 5 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$(180 \times 3) \div 5 (= 108)$ or $360 \div 5 (= 72)$	P1	This mark is given for a process to find either an interior or an exterior angle of the pentagon $ABCDE$
	$FCD = CDF = 72$ $CFD = 180 - 72 - 72$	P1	This mark is given for a complete process to find angle CFD
	36	A1	This mark is given for a correct answer only

Mark scheme for 1MA1 Higher themed papers: Angles: Regular Polygons

Performance data:

Q	Taken from			Total Marks available	TOPIC	Spec Ref	AO	% Mean marks	Edexcel mean averages Marks of candidates who achieved grade:										
	Q	Series	Paper						ALL	9	8	7	6	5	4	3	2	1	U
1	5	June 2017	3H	4	Geometry	G3	2	53	2.12	3.88	3.57	2.95	2.22	1.40	0.60	0.17	-	-	0.05
2	8	Nov 2019	3H	4	Geometry	G3, G4	3	49	1.97	4.00	3.84	3.64	3.41	2.67	1.45	0.68	-	-	0.27
3	12	Nov 2017	2H	3	Geometry	G3	3	17	0.52	2.5	2.94	2.11	1.46	0.97	0.45	0.19			0.06
4	6	Mock Set 3	1H	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	6	Mock Set 1	3H	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				18					4.61	10.38	10.35	8.7	7.09	5.04	2.5	1.04	-	-	0.38