GCSE Mathematics (1MA1)

Themed papers – Angles

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 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	Sum of interior angles of a pentagon $= (5 - 2) \times 180$	P1	This mark is given for a process to find the total of the interior angles of a pentagon
	540	A1	This mark is give for the correct total of the interior angles of a pentagon
	$540 - 90 - 115 - 125 = 210$	P1	This mark is given for a process to find the sum of the angles *ABC* and *BCD*
	$BCD = 2 \times ABC$ $BCD : ABC = 140 : 70$	P1	This mark is given for a process to find the ratio between angle *BCD* and angle *ABC*
	$BCD = 140$	A1	This mark is given for the correct answer only

Question 2 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$(6 - 2) \times 180 = 720$	M1	This mark is given for a method to find the sum of the interior angles of a hexagon
	Letting the angles *AFE* and *BCD* = x and the angles *FED* and *CDE* = $2x$, then $720 - 117 - 117 = 6x$	M1	This mark is given for a method to find the missing angles of the hexagon
	$x = \frac{486}{6} = 81$	M1	This mark is given for a method to find the value of x
	Thus angle $CDE = 2x = 162$	C1	This mark is given for the correct answer only following from correct working

Question 3 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$ACB = 180 - 75 - 51 = 54$	M1	This mark is given for a method to find the angle *ACB*
	$ACD = \frac{54}{2+1} = 18$ $DCB = \frac{54}{2+1} \times 2 = 36$	M1	This mark is given for a method to find the size of angles *ACD* and *DCB*
	$BDC = 180 - 51 - 36$	M1	This mark is given for a method to find the angle *BDC*
	$BDC = 93$	A1	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
	$ABE = 70°$ Co-interior angles add up to 180	M1	This mark is given for finding the size of angle *ABE*
	$EBG = 75°$, $BEG = 45°$ Angles on a straight line add up to 180	M1	This mark is given for finding the size of angles *EBG* and *BEG*
	$x = 60$ Angles in a triangle add up to 180	A1	This mark is given for the correct answer only
		C1	This mark is given for a full set of reasons given with working

Question 5 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$ABE = 180° - 142° = 38°$	M1	This mark is given for a method to find one angle
	Angles on a straight line add up to 180°	C1	This communication mark is given for a correct statement allied to the calculation made
	$BAE = 71°$	M1	This mark is given for a method to find further angle(s)
	Base angles of an isosceles triangle are equal Angles in a triangle add up to 180°	C1	This communication mark is given for a correct statement allied to the calculation made
	$BAE = AED = x = 71°$ Alternate angles are equal	A1	This mark is given for the correct answer only with a correct supporting statement

NB: There are other ways to arrive at the solution for this question.

Mark scheme for 1MA1 Higher themed papers: Angles

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	8	June 2018	3H	5	Geometry	G3, A21, R6	3	67	3.36	4.91	4.70	4.27	3.65	2.82	1.73	0.68	-	-	0.22
2	5	June 2019	3H	4	Geometry	G3	2	56	2.22	3.69	3.26	2.77	2.23	1.61	0.96	0.42	-	-	0.19
3	5	Nov 2019	1H	4	Ratio	R5, G3	3	43	1.71	4.00	3.65	3.29	3.09	2.42	1.14	0.59	-	-	0.25
4	3	Nov 2018	2H	4	Geometry	G3, G4	2	32	1.28	3.80	3.06	2.96	2.30	2.00	1.01	0.33	-	-	0.12
5	2	Mock Set 2	1H	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				22					**8.57**	**16.4**	**14.67**	**13.29**	**11.27**	**8.85**	**4.84**	**2.02**	**-**	**-**	**0.78**