AQA

GCSE
MATHEMATICS

2023 PRACTICE PAPER SET 2 Foundation Tier Paper 2
Mark Scheme

8300/2F

Version 1.0

Principal Examiners have prepared these mark schemes for specimen papers. These mark schemes have not, therefore, been through the normal process of standardising that would take place for live papers.

Further copies of this Mark Scheme are available from aqa.org.uk

Glossary for Mark Schemes

GCSE examinations are marked in such a way as to award positive achievement wherever possible. Thus, for GCSE Mathematics papers, marks are awarded under various categories.

If a student uses a method which is not explicitly covered by the mark scheme the same principles of marking should be applied. Credit should be given to any valid methods. Examiners should seek advice from their senior examiner if in any doubt.

M	Method marks are awarded for a correct method which could lead to a correct answer.
A	Accuracy marks are awarded when following on from a correct method. It is not necessary to always see the method. This can be implied.
B	Marks awarded independent of method.
ft	Follow through marks. Marks awarded for correct working following a mistake in an earlier step.
SC	Special case. Marks awarded within the scheme for a common misinterpretation which has some mathematical worth.
M dep	A method mark dependent on a previous method mark being awarded.
B dep	A mark that can only be awarded if a previous independent mark has been awarded.
oe	Or equivalent. Accept answers that are equivalent. eg accept 0.5 as well as $\frac{1}{2}$
[*a*, *b*]	Accept values between *a* and *b* inclusive.
3.14 …	Allow answers which begin 3.14 eg 3.14, 3.142, 3.1416
Use of brackets	It is not necessary to see the bracketed work to award the marks.

Examiners should consistently apply the following principles

Diagrams

Diagrams that have working on them should be treated like normal responses. If a diagram has been written on but the correct response is within the answer space, the work within the answer space should be marked. Working on diagrams that contradicts work within the answer space is not to be considered as choice but as working, and is not, therefore, penalised.

Responses which appear to come from incorrect methods

Whenever there is doubt as to whether a student has used an incorrect method to obtain an answer, as a general principle, the benefit of doubt must be given to the student. In cases where there is no doubt that the answer has come from incorrect working then the student should be penalised.

Questions which ask students to show working

Instructions on marking will be given but usually marks are not awarded to students who show no working.

Questions which do not ask students to show working

As a general principle, a correct response is awarded full marks.

Misread or miscopy

Students often copy values from a question incorrectly. If the examiner thinks that the student has made a genuine misread, then only the accuracy marks (A or B marks), up to a maximum of 2 marks are penalised. The method marks can still be awarded.

Further work

Once the correct answer has been seen, further working may be ignored unless it goes on to contradict the correct answer.

Choice

When a choice of answers and/or methods is given, mark each attempt. If both methods are valid then M marks can be awarded but any incorrect answer or method would result in marks being lost.

Work not replaced

Erased or crossed out work that is still legible should be marked.

Work replaced

Erased or crossed out work that has been replaced is not awarded marks.

Premature approximation

Rounding off too early can lead to inaccuracy in the final answer. This should be penalised by 1 mark unless instructed otherwise.

Q	Answer	Mark	Comments
1	5	B1	
2	9	B1	
3	$\frac{1}{6}$	B1	
4	2.40 ÷ 12 or 0.2(0) or 240 ÷ 12 or 20 or 30 ÷ 12 or 2.5	M1	oe eg build up in 20s to 240
	30 × their 0.2 or 30 × their 20 or 2.4(0) × their 2.5	M1	oe
	6(.00)	A1	
	Additional Guidance		
	Condone 600p		M1M1A1
	600		M1M1A0
5	$4x = 39 - 1$ or $4x = 38$ or $x + \frac{1}{4} = \frac{39}{4}$	M1	oe
	9.5	A1	oe
6(a)	4	M1	
6(b)	7 + 4 + 9 + …. or 50	M1	
	6.25	A1	

Q	Answer	Mark	Comments
7	40 ÷ 1.75	M1	1.75 × 22 = 38.5(0) and 1.75 × 23 = 40.25
	22.8…	A1	may be implied by 22.8
	22.9	B1ft	ft their answer greater than 1dp
8	angle *BCD* = 60 or angle *CBD* = 60 or angle *BDC* = 60	M1	may be seen on diagram
	angle *ABC* = 120 or 180 – 20 – 120	M1	may be seen on diagram
	40	A1	
9(a)	Computer	B1	Either order
	In person	B1	Either order
9(b)	Value in range [18, 20]	M1	
	40	A1	
9(c)	Two different valid comparisons	B2	B1 for each valid comparison eg Higher percentage/proportion of 50 and over book on computer Higher percentage/proportion of 50 and over book over the phone Lower or similar percentage/proportion of 50 and over in person Lower percentage/proportion of 50 through an agent on line SC1 for any 2 valid statements without comparing eg more 50 and over in person than online and more 30 to 50 on computer than on phone SC1 for 2 statements with no reference to percentage or proportion eg more 50 and over book on computer And less 50 and over in person

Q	Answer	Mark	Comments

9(c) cont	**Additional Guidance**	
	Two different valid comparisons – not just reversed	
	List of readings	B0
	More/less can be implied by statement	

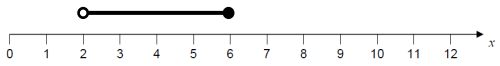
10(a)	290 and 113	B1	
	271	B1ft	ft their 290 – 19 or 500 – their 113 – 97 – 19
10(b)	$\frac{97+19}{500}$ or $\frac{97}{500}$ or $\frac{19}{500}$ or 97 + 19 or 116	M1	oe
	$\frac{116}{500}$ or $\frac{58}{250}$ or $\frac{29}{125}$ or 0.232 or 23.2%	A1	

11	Obtains an equivalent ratio or writes out two or more multiples of 11	M1	eg 6 : 16 9 : 24 11, 22, …
	22	A1	

Q	Answer	Mark	Comments
12(a)	**Alternative method 1**		
	120 ÷ 3 or 40	M1	
	720 ÷ 30 or 24	M1	
	their 40 ÷ 8 or 5 or their 24 ÷ 8 or 3 or their 40 + their 24 or 64	M1dep	dep on M1M0 or M0M1
	8	A1	
	Alternative method 2		
	3 × 8 or 24	M1	
	30 × 8 or 240	M1	
	120 ÷ their 24 or 5 or 720 ÷ their 240 or 3	M1dep	dep on M1M0 or M0M1
	8	A1	
	Alternative method 3		
	120 ÷ 8 or 15	M1	
	720 ÷ 8 or 90	M1	
	15 ÷ 3 or 5 or 90 ÷ 30 or 3	M1dep	Dep on M1M0 or M0M1
	8	A1	

Q	Answer	Mark	Comments
12(b)	$4 \times 4.8(0) = (£)19.2(0)$	B1	ft their 4
	$30 + 6 = 36$ doughnuts	B1	
	$36 \times 25 = (£)9(.00)$	B1ft	ft their 36
	$(£)19.2(0) + (£)9(.00) = (£)28.2(0)$	B1ft	ft their (£)19.2(0) and their (£)9(.00)
	Additional Guidance		
	A complete copy of the originals – no marks		
13(a)	False True True False	B3	B2 for 2 or 3 correct B1 for 1 correct Any unambiguous indication
13(b)	**Alternative method 1**		
	$2x + x + 2x + x$ or $6x$	M1	Any letter
	$x = 4.5$ or 9 seen	A1	
	81	A1ft	ft (their length)^2 with M1 scored
	Alternative method 2		
	$\frac{1}{2}l + \frac{1}{2}l + l + l$ or $3l$	M1	Any letter
	9 seen or 36	A1	
	81	A1ft	ft (their length)^2 with M1 scored

Q	Answer	Mark	Comments
13(b) cont	**Alternative method 3**		
	$l + w = 13.5$ and $l = 2w$ or $3w = 13.5$ or $1.5l = 13.5$	M1	
	$w = 4.5$ or 9 seen or 36	A1	
	81	A1ft	ft (their length)^2 with M1 scored
	Additional Guidance		
	Working may be on diagram.		
14(a)	0.2(24 000 – 12 570) or 0.2×11430	M1	oe
	2286	A1	
14(b)	12 570	B1	
14(c)	**Alternative method 1**		
	$6300 = 0.2(E - 12\,570)$	M1	oe
	$6300 \div 0.2$ or 31 500	M1dep	oe 6300×5
	44 070	A1	
	Alternative method 2		
	$6300 = 0.2(E - 12\,570)$	M1	oe
	$6300 + 0.2 \times 12570$ or $6300 + 2514$ or 8814	M1dep	
	44 070	A1	

Q	Answer	Mark	Comments
15(a)	$2x \leq 4 \times 3$ or $x \leq 4 \times \frac{3}{2}$ or $\frac{x}{3} \leq \frac{4}{2}$	M1	
	$x \leq 6$	A1	
	Additional Guidance		
	$x \leq 6$ in working lines and 6 on answer line		M1A1
15(b)	$x + 1 > 12 \div 4$ or $4x + 4 > 12$	M1	
	$x > 2$	A1	SC1 > 2 SC1 $x \geq 2$
	Additional Guidance		
	Working uses = but recovery to $x > 2$		M1A1
	$x > 2$ in working lines and 2 on answer line		M1A1
15(c)		B1ft	Correct or ft their two inequalities from **(a)** and **(b)** Condone dotted line

Q	Answer	Mark	Comments
16(a)	30	B1	
16(b)	No and valid reason	B2	eg No and not in opposite directions No and not in a straight line No and 3rd side shorter than the sum of the other 2 sides B1 No and incomplete reason
	Additional Guidance		
	If neither box ticked then no may be implied by statement		
16(c)	240 – 150 or 90 or 150 – 60 or 95	M1	May be on diagram
	Clare and 90 and 95	A1	Angles may be on diagram
17	**Alternative method 1**		
	5280 × 12 or 63 360	M1	
	their 63 360 × 2.54 or 160 934.(...)	M1	
	1609.(...) or 160 934.(...) and 160 000	A1	
	Alternative method 2		
	160 000 ÷ 2.54 or 62 992.(...)	M1	
	their 62 992 ÷ 12 (÷ 5280)	M1	
	5249.(...) which is approximately 5280 or 0.99...	A1	

Q	Answer	Mark	Comments
18	Correct scaling for any 1 of the 3 multi-pack options	M1	eg **Unit costs** Any 1 of Pack of 4 $= \frac{350}{4}$ or 87(.5p) or (£)0.87(5) 2 Packs of 4 $= \frac{650}{8}$ or 81(.25p) or (£)0.81(25) Packs of 6 $= \frac{500}{6}$ or 83(.33p) or (£)0.83(33) **Cost of 24 cans** Any 1 of Pack of 4 = 3.50 × 6 or (£)21 (6 packs) 2 Packs of 4 = 6.50 × 3 or (£)19.50 (3 × 2 packs) Pack of 6 = 5 × 4 or (£)20 (4 packs)
	Correct scaling for any 2 of the 3 multi-pack options	M1	eg **Unit costs** Any 2 of above **Cost of 24 cans** Any 2 of above
	Equivalent scalings for all 3 multi pack options and £1.20 or (21 × 1.20) or (£)28.80	M1dep	
	Chooses 3 × 2 packs of 4 with correct working and values for all packs seen	A1	

Q	Answer	Mark	Comments
19(a)	$\frac{4}{3} \times \pi \times 6^3$	M1	oe
	[903, 905] or $\frac{864}{3}\pi$	A1	
	Additional Guidance		
	$\frac{4}{3} \times 3(.1) \times 6^3$		M0
19(b)	6×2 or 12	M1	May be seen on diagram
	6×8 or their 12×4 or 48	M1	May be seen on diagram
	their $12 \times$ their $12 \times$ their 48	M1	oe
	6912	A1	SC2 864 (for using $6 \times 6 \times 24$)
20	**Alternative method 1**		
	$7.5 \div 0.005$ or $7500 \div 5$ or 1500	M1	oe
	their $1500 \div 5 \times 3$	M1	oe
	900	A1	SC1 90 or 9 000
	Alternative method 2		
	$7.5 \div 5 \times 3$ or 4.5	M1	oe eg 7.5 : 4.5
	their $4.5 \div 0.005$ or $4500 \div 5$	M1	oe
	900	A1	SC1 90 or 9 000
	Alternative method 3		
	$\frac{1000}{5} \div 5 \times 3$ or 120	M1	oe
	$7.5 \times$ their 120	M1	
	900	A1	SC1 90 or 9 000

Q	Answer	Mark	Comments
21	J and K and ASA	B2	oe B1 J and K with incorrect reason
22	Enlargement	B1	
	(scale factor) 3	B1	oe
	(centre) (3,0) or this point marked on grid	B1	oe