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General Certificate of Secondary Education
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Mathematics 43603F

Unit 3 Foundation tier

Final

Mark Scheme

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all examiners participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for standardisation each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, examiners encounter unusual answers which have not been raised they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

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

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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.

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.
Q	Marks awarded for Quality of Written Communication
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 etc
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 candidate has used an incorrect method to obtain an answer, as a general principle, the benefit of doubt must be given to the candidate. In cases where there is no doubt that the answer has come from incorrect working then the candidate should be penalised.

Questions which ask candidates to show working

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

Questions which do not ask candidates to show working

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

Misread or miscopy

Candidates often copy values from a question incorrectly. If the examiner thinks that the candidate 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.

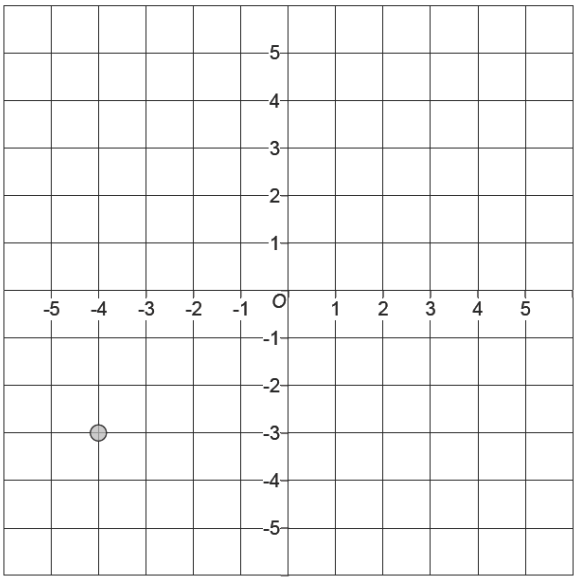
Premature approximation

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

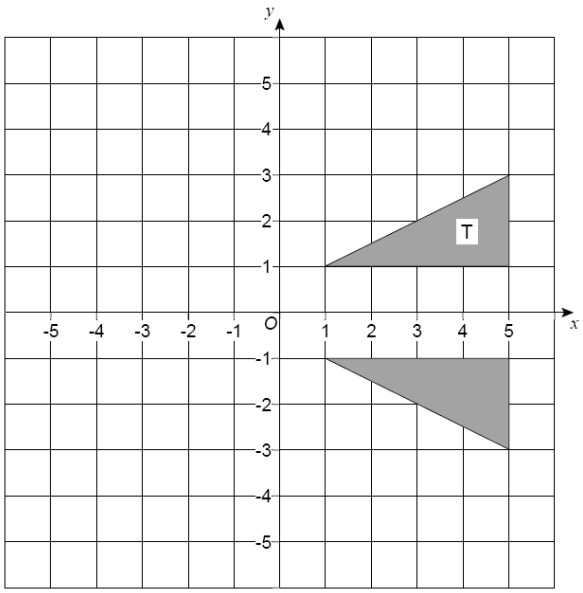
Unit 3 Foundation Tier

Q	Answer	Mark	Comments
1a	24	B1	Do not accept −24
1b	their 24 × 1.2 or their 24 × 120	M1	
	(£) 28.80	Q1	Strand (i) 28.8 implies M1Q0
2	[4.9, 5.1] seen or [2.9, 3.1] seen	M1	
	their (5 + 3 + 5 + 3)	M1	
	16	A1	[15.6, 16.4] Do not ignore further work if using a clearly incorrect method seen for final answer
3	2 2 0 or none 2 1 1	B4	B3 for 4 or 5 correct B2 for 2 or 3 correct B1 for 1 correct
4a	*F*	B1	
4b	*C* and *D*	B1	either order
5a	Tuesday or Tues	B1	Do not accept T
5b	4 (hours) seen	M1	oe eg 4.00
	3 (hours)	A1	oe eg 3.00

Q	Answer	Mark	Comments
6a	Valid explanation	B1	eg Should be 6.2 Goes up in (point) twos 6.2 seen on scale
6b	1000 grams = 1 kg or 1.2 × 1000 or 1200 seen or 1.2 ÷ 6 or 0.2 seen	B1	Seen or implied
	1.2 × 1000 ÷ 6 or 1200 ÷ 6 or 0.2 × 1000 or 1.2 × their 1000 ÷ 6 or 0.2 × their 1000	M1	
	200	A1ft	
7a	200 ÷ 35	M1	5 × 35 or 6 × 35 oe
	5.(7 …)	A1	175 or 210
	6	Q1 ft	Strand (i) ft for rounding up
7b	200 ÷ 40	M1	
	5 and No seen or implied or 1 fewer needed	A1ft	ft their answer from (a) for the conclusion
8a	East or E	B1	
8b	$\frac{90}{360}$	M1	oe
	$\frac{1}{4}$	A1	SC1 for $\frac{3}{4}$
9	5 × 4	M1	
	their 20 × 1500	M1 dep	
	(£) 30 000	A1	Do not ignore further working

Q	Answer	Mark	Comments
10a	*A*	B1	
10b	$\frac{1}{2} \times 3 \times 3$ or $3 + 0.5 + 0.5 + 0.5$	M1	oe
	4.5	A1	oe SC1 for Area A = 3 or Area C = 4
	cm^2	B1	
11a	$x + 3$ or $3 + x$	B1	
11b	$2x$ or $2 \times x$ or $x \times 2$ or $x + x$	B1	Do not accept $x2$
11c	their $(x + 3) + 4$ or $x + 7$ or their $2x - 4$ seen	M1	oe Must be expressions in x
	their $2x$ = their $(x + 3) + 4$	M1	oe
	7	A1	SC2 for 7 and 10 and 14 identified
12a	(–2, 3)	B1	
12b	Point plotted at (–4, –3)	B1	
12c	(–4, –3)	B1 ft	ft their plotted point eg (6, –3) if used (*ABDC*)

Q	Answer	Mark	Comments
13a	64 × 2 or 0.64 × 2	M1	oe
	1.28	A1	
13b	64 × 3 or 1.99 ÷ 3 (× 2) or 64 × 6 and 1.99 × 2	M1	oe Attempt to compare equal quantities
	(£) 1.92 or (£) 0.66(…) or (£) 1.32 or (£) 1.33 or (£) 3.84 and (£) 3.98	A1	Correct values for their comparison
	Small	Q1 ft	Strand (iii) Correct conclusion for their values Must compare equal quantities
14	180 – (87 + 32)	M1	oe Condone absence of brackets
	61	A1	
15	60 ÷ 2 (= 30) or 90 seen or 210 seen or 12 (parts) seen	M1	360 ÷ (2 + 3 + 7)
	60 ÷ 2 × 12 or 60 + 90 + 210	M1	oe 360 ÷ 12 (= 30)
	360	A1	2 × 30 = 60

Q	Answer	Mark	Comments
16a	Correct reflection drawn	B1	
16b	Any 180° rotation drawn	M1	
	Correct rotation drawn	A1	
17	[5.9, 6.1] seen	B1	
	[4.9, 5.1] seen	B1	
	48 ÷ their 6	M1	
	their 5 × their 8 × 250	M1dep	
	10 000	A1	Condone 22000 as further working
18a	$2 \times \pi \times 9.4$ or $18.8 \times \pi$	M1	oe
	[59, 59.1] or 18.8π or $\frac{94\pi}{5}$	A1	
18b	their 59 ÷ 2 + 9.4 + 9.4	M1	oe
	48.3 or $9.4\pi + 18.8$ or $\frac{47\pi}{5} + 18.8$	A1ft	[48.3, 48.4]

Q	Answer	Mark	Comments
19a	$A = w^2$ or $A = w \times w$ or $\sqrt{A} = w$	B1	Do not ignore further working
19b	$V = w^3$ or $V = w \times w \times w$ or $V = w^2 \times w$ or $\sqrt[3]{V} = w$	B1	Do not ignore further working
19c	$\sqrt{20}$ seen	M1	oe eg decimals
	their $\left(\sqrt{20}\right)^3$ or 20 × their $\sqrt{20}$	M1dep	oe eg decimals Accept $40 \times \sqrt{5}$
	[89.3, 91.2] or $40\sqrt{5}$ or $\sqrt{8000}$	A1	Accept $20\sqrt{20}$
20a	4	B1	
	–4	B1	
20b	their 7 points plotted correctly	B2 ft	$\pm\frac{1}{2}$ square B1 ft for their 5 or 6 points plotted correctly
	Smooth curve	B1 ft	through their 7 points $\pm\frac{1}{2}$ square Must be a U shape
20c	[2.2, 2.4] or $\sqrt{5}$	B1 ft	ft their graph $\pm\frac{1}{2}$ square
	[–2.2, –2.4] or $-\sqrt{5}$	B1 ft	ft their graph $\pm\frac{1}{2}$ square
21a	$\frac{1}{2}$ (6.5 + 8.3) 3.2	M1	
	23.68 or 23.7	A1	
21b	their 23.68 × 200	M1	
	4736 or 4740	A1 ft	

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