AQA Qualifications

GCSE
MATHEMATICS

Unit 1 43601F
Mark Scheme

43601F

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Mark schemes are prepared by the Lead Assessment Writer 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 associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same correct way. As preparation for standardisation each associate analyses a number of students' scripts: alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Assessment Writer.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' 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

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, 3.149.
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.

Q	Answer	Mark	Comments
1(a)	Three bars with heights 6, 5, 1 in the correct positions, with the correct widths and with diagonal stripes	B2	B1 for two bars of correct height
1(b)	Frank	B1	Accept any unambiguous indication eg F
1(c)	Hamza	B1	Accept any unambiguous indication of Hamza, eg H
2(a)	Writes the numbers in order of size: 20 21 23 23 24 (25 25 25 31) or 31 25 25 25 24 (23 23 21 20)	M1	Allow one error/omission/extra
	24	A1	
2(b)	25	B1	
3(a)	Certain	B1	
3(b)	Evens	B1	
4	12 (goldfish) seen or implied	B1	
	25 – (their 12 + 4) or 9	M1	oe Condone 0 goldfish Can be implied if Cats + Dogs = 9
	Their 9 ÷ 3	M1	Accept embedded eg 3 × 3 = 9
	3 6	A1	SC2 for 10, 5 (from 6 goldfish) SC2 for 14, 7 (from 0 goldfish) SC3 for 6, 3 SC3 for 7, 14 (from 0 goldfish) SC3 for 5, 10 (from 6 goldfish)

Q	Answer	Mark	Comments
5(a)	7 + 8 or 15	M1	
	$\frac{15}{20}$	A1	May be implied
	$\frac{3}{4}$	B1ft	ft their fraction simplified to lowest terms
5(b)	8 + 1 or 9 seen or implied	M1	
	$\frac{9}{20}$	A1	oe SC1 $\frac{11}{20}$ oe
6(a)	(CB) CL CW HB HL HW PB PL PW	B3	B2 for 5, 6 or 7 new combinations. B1 for 2, 3 or 4 new combinations. Accept any unambiguous representations of each sandwich or drink. For B1 and B2 ignore any repeats.
6(b)	$\frac{1}{9}$	B1ft	oe ft their combinations if at least 1 HW

Q	Answer	Mark	Comments
7(a)	21 + 20 + 29 + 22 + 24 or 116	M1	Allow one error or omission
	their total ÷ 5	M1	Condone 21 + 20 + 29 + 22 + 24 ÷ 5
	23.2	A1	May be implied
	23	B1ft	ft any decimal seen that is correctly rounded
7(b)	9	B1	
7(c)	Agrees **and** Chris' mean is 23 or Agrees **and** Chris' total is 116 and Tommy's total is 150 or Correct **comparative** comment on means or total runs	Q1ft	Strand (iii) eg Tommy scored 150 runs which is more than Chris eg True as all Chris' scores are under 30 ft their mean or total from (a)
7(d)	Agrees and Chris' range is 9 or Correct **comparative** comment about the range	Q1ft	Strand (iii) eg Chris had a lower range so he was more consistent ft their range from (b)

Q	Answer	Mark	Comments
8(a)	$\frac{90}{360}$ (× 100) or 360 ÷ 90 = 4	M1	oe
	25	A1	
8(b)	Correct comparison of England with one or more countries	Q1	Strand (ii) eg Sales in England were the same as (total) sales in Northern Ireland, Scotland and Wales Sales in England were twice sales in Scotland Sales in England were three time sales in Wales
8(c)	(Wales =) 60(°) or $\frac{1}{6}$ or 1(°) = 500 or 10(°) = 5000 or (NI =) 15 000 or (Scot =) 45 000 or (Eng =) 90 000	B1	Allow ± 2° May be implied Values may be on pie chart
	360 ÷ their 60 × 30 000 or 6 × 30 000 or 45 000 × 4 or their 15 000 + their 45 000 + their 90 000 (+ 30 000) or (15 000 + 30 000 + 45 000) (× 2)	M1	oe NI + Scot + Eng with **two** of NI, Scot or Eng correct (condone Wales missing) (Doubles) (NI + Wales + Scot) with NI **and** Scot correct
	180 000	A1	Accept integer in range [174 194, 186 206] from angle [58, 62] If 60° used must have 180 000

Q	Answer	Mark	Comments
9	At least one product attempted or one correct value (not 6)	M1	1×6 2×10 or 20 3×22 or 66 4×9 or 36 5×3
	their 6 + their 20 + their 66 + their 36 + their 15	M1dep	5 products attempted and added
	143	A1	
10(a)	5 points plotted correctly	B2	Allow $\pm\frac{1}{2}$ square B1 for 3 or 4 correct plots
10(b)	One straight line through both gates (90, 8.5-9.5) and (130, 13-14)	B1	
10(c)	11.3	B1 ft	ft their straight line of best fit Allow [11.0, 11.6] if B0 awarded in (b)
11(a)	$\frac{152}{200} \times 100$ or $\frac{48}{200} \times 100$ or $\frac{76}{100}$ or $\frac{24}{100}$	M1	76 or 24 seen or implied
	76 and 24 seen or implied	A1	
	Bar drawn in correct position and shaded (Shop at the bottom) with correct height, division and width	B1ft	$\pm\frac{1}{2}$ small square ft their 76 or 24 but bar must total 100% SC2 bar wrong way round
11(b)	1 : 4	B2	B1 for 20 : 80 oe B1 a : b with its correct simplest form SC1 4 : 1
12(a)	13	B1	
12(b)	Cannot tell	B1	
12(c)	$20 < x \leq 30$	B1	

Q	Answer	Mark	Comments
13	**Alternative method 1**		
	100 – (25 + 35 + 30) or 10	M1	oe May be seen in table
	Valid attempt to find 1%, 100% or 5% or 50% 150 ÷ 25 or 6 (1%) or 150 ÷ 0.25 or 150 × 4 or 600 (100%) or 150 ÷ 5 or 30 (5%) or 150 × 2 or 300 (50%)	M1	oe
	their 10 × their 6 or their 10 ÷ 100 × their 600 or (their 10 ÷ 5) × their 30 or (their 10 ÷ 50) × their 300	M1dep	dep on previous M oe 150 ÷ 2.5 or 150 × 0.4 scores M2
	60	A1	
	Alternative method 2		
	150 ÷ 0.25 or 150 × 4 or 600 (100%)	M1	oe
	0.35 × their 600 or 210 **and** 0.3 × their 600 or 180	M1dep	oe
	their 600 – (150 + their 210 + their 180)	M1dep	oe
	60	A1	

Q	Answer	Mark	Comments
	Alternative method 3		
	150 ÷ 25 or 6 (1%)	M1	oe
	35 × their 6 or 210 **and** 3 × their 6 or 180	M1dep	oe
	their 6 × 100 – (150 + their 210 + their 180)	M1dep	oe
	60	A1	

SP/12/13