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.
M dep	A method mark dependent on a previous method mark being awarded.
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.
B dep	A mark that can only be awarded if a previous independent mark has been awarded.
Q	Marks awarded for Quality of Written Communication
ft	Follow through marks. Marks awarded following a mistake in an earlier step.
SC	Special case. Marks awarded within the scheme for a common misinterpretation which has some mathematical worth.
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.

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

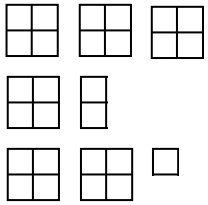
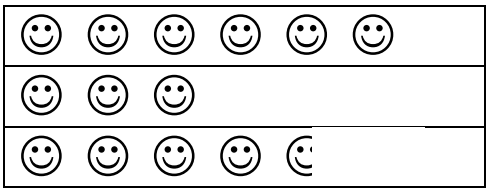
Erased or crossed out work that is still legible should be marked.

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)		B2	For each row allow the correct number of squares/rectangles B1 one or two correct rows SC1 
1(b)	(comedy =) 10 or (romance =) 5 or (Tuesday total =) 17	M1	
	27 + 10 + 2 + 5 or 12 + 6 + 9 + 10 + 2 + 5 or 44 or 12 + 10 or 6 + 9 + 2 + 5 or 22	M1	44 or 22 implies M2
	44 and 22 and Yes or 22 and 22 and Yes	Q1	Strand (ii) SC2 61 and 32 and No
2(a)	Evens	B1	
2(b)	Unlikely	B1	
3(a)	mode A = 6 **or** mode B = 4 or 6 (with 9) **and** 4 (with 12) chosen	M1	
	(mode A =) 6 **and** (mode B =) 4 **and** Yes	A1	

3(b)	(range A =) 7 – 2 or 5 **or** (range B =) 6 – 3 or 3	M1	
	(range A =) 5 **and** (range B =) 3 **and** Yes	A1	

4(a)	10 (ice creams) and 7 (lollies) chosen	B1	
	their 10 x 1.2(0) or 12(.00) or their 10 x 120 or 1200 **and** their 7 x 0.8(0) or 5.6(0) or their 7 x 80 or 560	M1	17.6 or 1760 or £17.60p implies B1 M1
	17.60	Q1ft	Strand (i) ft correct answer with correct money notation for their 10 and their 7 SC2 16.40 SC1 16.4 or 12 or 5.60

4(b)	10 + 7 + 15 + 18 or 50	M1	Allow 1 error
	80 – their 50 or 30	M1dep	Bars that total 30 or 80 – their 50
	Bars for 14 ice creams and 16 lollies	A1	SC1 Bars with two more lollies than ice creams with no M marks awarded

5(a)	11	B1	

5(b)	(purple classic =) 10	M1	May be implied by a numerator of 10 $\frac{10}{80}$ oe implies M1
	$\frac{1}{8}$	A1	SC1 fraction with denominator 80 fully simplified

5(c)	14	B1	

5(d)	17	B1	

6(a)	9 9 10 9 10 11 9 10 11 12	B1	

6(b)	7	B1ft	ft a completed table

6(c)	Denominator of 36 or Numerator of 5 (or their 5)	M1	36 choices identified
	$\frac{5}{36}$ or 0.138(...) or 0.139 or 13.8(...)% or 13.9%	A1ft	correct or ft their 8s from a **complete** table

7(a)	24 (million) – 15 (million)	M1	Subtraction with one value correct
	9	A1	Condone 9 000 000

7(b)	30	B1	Condone 30 000 000

7(c)	28(%) **and** 20 (million) chosen	B1	oe Implied by correct answer
	0.28 × their 20 **or** $20 \times \frac{\text{their } 28}{100}$	M1	oe their 20 can only be 15, 20, 24 or 26 their 28 can only be 12, 15, 28 or 45
	5.6	A1	Digits 56 on answer space implies B1M1 Accept rounding to 6 after a correct answer is seen. Condone 5600000 SC2 4.2 or 6.72 or 7.28

8(a)	15 and 10 in either order	B2	B1 15 with a number less than or equal to 15 **or** two numbers with a total of 25

8(b)	17 and 11 in either order	B2	B1 two numbers giving a range of 6 for set C or two numbers with a total of 28

9(a)	Yes she's asking people who own dogs so they prefer them	B1	oe Yes she should ask people who don't own dogs/ pets

9(b)	No preference = 6	B1	8, 16, 6 scores B3
	Cats = Dogs x 2	B1	
	Dogs + Cats + No preference = 30	B1	

10(a)			✓		B1	
			✓			

10(b)	101 × 65 or 6565 or 64 × 75 or 4800 or 25 × 85 or 2125 or 10 × 95 or 950 or 14 440	M1	Attempt at fx using one correct midpoint 3610 implies M1M0A0
	(their 6565 + their 4800 + their 2125 + their 950) ÷ 200	M1dep	Condone missing brackets eg 13494.75 implies M1M1A0
	72.2	A1	SC2 77.2 or 67.2 Accept 70 or 72 with fully correct working

10(c)	<table><tr><td>𝍸 𝍷</td><td>101</td></tr><tr><td>𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍷</td><td>66</td></tr><tr><td>𝍸 𝍸 𝍸 𝍸 𝍸 𝍷𝍷𝍷𝍷</td><td>29</td></tr><tr><td>𝍸 𝍸 𝍷𝍷𝍷𝍷</td><td>14</td></tr></table>	B2	B1 all frequencies correct or all tallies correct or two rows correct

10(d)	frequency polygon and histogram	B1	

11(a)	40	B1	

11(b)	Circles the outlier (58, 14)	B1	

11(c)	Links middle graph to strong positive correlation Links bottom graph to little or no correlation	B2	B1 for each

12(a)	(0).5 or 50% or $\frac{1}{2}$	B1	oe fraction

12(b)	Refers to number of trials eg Spin the spinner 60 times (and record the result)	B1	Accept 'lots' or a number of trials greater than or equal to 30
	Refers to theoretical probability eg Probability of each side = 1/10 if fair or Works out expected number for each score using number of trials eg (For 60 trials) it should land on each number (approximately) 6 times if fair	B1	oe eg Should be (approx) same frequency for each number if fair or If the relative frequencies or (experimental) probabilities are not (roughly) equal it is biased