
**GCSE
STATISTICS
8382/1F**

FOUNDATION TIER PAPER 1

Mark scheme

2019

V1.0

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 meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting 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 the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting 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

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.

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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.

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 <i>a</i> and <i>b</i> 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(a)	Median	B1	
1(b)	Discrete	B1	
1(c)	Raw Data and Primary Data	B2	B1 for one correct, one incorrect
2(a)	Key represents 2 cakes	B1	
	5 circles for Chocolate	B1ft	ft their key
	$2\frac{1}{2}$ circles for Vanilla	B1ft	ft their key
	$\frac{1}{2}$ circle for Fruit	B1ft	ft their key
	Additional Guidance		
	If candidates use a key where 1 circle represents 1 cake then the maximum mark that can be awarded is B2 as they have made the question easier		
2(b)	should be denominator of 20 or should be $\frac{1}{4}$	B1	oe
3(a)	Numbers placed in order and an attempt made to find the middle number	M1	oe
	20.5	A1	SC1 20 and 21 indicated
	Additional Guidance		
	Crossing off from each side of a correctly ordered list		M1
Arrow between the 8th and 9th numbers of a correctly ordered list		M1	
Listing 9 numbers in order from either end		M1	
3(b)	Only one contained less than 20	B1	oe

Q	Answer	Mark	Comments
3(c)	At least 4 heights plotted correctly	M1	
	All heights correct and joined to axis with vertical lines	A1	
3(d)	(The mode is) the highest line	B1	oe
4(a)	0.2 and 1 and 0.95 circled	B2	B1 2 correct probabilities and 1 or 0 incorrect Allow any clear indication
4(b)	$\frac{1}{6}$	B1	oe
4(c)	Ticks no and explains that the forecast is only for today	B1	
5(a)	$6 + 4 + 9 + 9 + 5 + 4 + 6 + 9$ or 52	M1	Condone one error or omission
	their $52 \div 8$	M1	
	6.5	A1	SC1 44.125
5(b)	7×8	M1	
	56	A1	
5(c)	Paul as his mean is higher or Paul as his total score is higher	B1ft	oe ft their parts (a) and (b)

Q	Answer	Mark	Comments
6(a)	Sight of one five bar gate	B1	
	Tallies 4, 7, 9	B1	
	All 3 frequencies correct	B1ft	ft their tallies
	Additional Guidance		
	Frequencies can either be correct for the data or correct for their tallies Correct frequencies are 4, 7, 9		
6(b)	Mode as the data is non-numerical	B2	B1 for Mode with invalid or no reason oe
	Additional Guidance		
	Candidates must have written mode as their average to score any marks on this part of the question Candidates can score the second B1 by explaining why it cannot be mean or median		
6(c)	1 angle correct or 1 sector drawn within tolerance	M1	May be seen next to the table $\pm 2^\circ$
	Fully correct angles drawn	A1	All sectors must be within $\pm 2^\circ$
	Fully labelled	B1	Must be in proportion
	Additional Guidance		
	Correct angles are 135° for white, 45° for pink and 180° for grey Labelling mark can be awarded for any pie chart with 3 sectors only, in descending order of size labelled Grey, White, Pink Accept W, P and G for the labels but not 30, 10 and 40		

Q	Answer	Mark	Comments
7(a)	Carry out a check that values are consistent i.e. within the possible values for a % and/or are similar to other values in the table.	B1	oe
7(b)	115 circled and 15 stated	B1	oe
7(c)	18 (%)	B1	
7(d)	Grey	B1	Accept Other
7(e)	It decreased (in 2009) and then increased (every year)	B1	
7(f)	0.08 or 84.1 (million)	M1	for 0.08 accept 0.075 – 0.085 for 84.1 accept 84.05 – 84.15 (million)
	0.08×84.1 (million)	M1dep	using their values in range
	6.728 (million)	A1	6.30375 – 7.15275 (million)
	6.3 – 7.2 (million) (to 2 sf)	B1ft	ft their answer rounded to the nearest 100,000
8(a)	Any suitable question	B1	“What brand mobile phone do you have?”
8(b)	Ticks no	B1	
	States that the second highest frequency is 3 less than the mode	B1	oe

Q	Answer	Mark	Comments
8(c)	Any appropriate title with the diagram named and axes labelled and appropriate scales used	B1	
	All 7 pieces of data plotted correctly	B3	B2 for one error B1 for two errors
8(d)	$\frac{6}{30}$ or 0.2 or 20%	M1	
	Samantha's results are less than the national results	A1ft	oe
8(e)	Any named sampling method	B1	oe
	One correct advantage given	B1	oe
8(f)(i)	Any appropriate calculation named correctly	B1	
8(g)	Check that she had addressed the question in context.	B1	oe
8(h)	Any suitable variable	B1	eg monthly cost, cost of handset, number of texts, data allowance etc

Q	Answer	Mark	Comments
9(a)	Instant response or feedback can be given or questions can be explained or the respondent can ask questions	B1	oe
9(b)	(Very) expensive or (Too) time consuming	B1	oe
9(c)	It's a leading question	B1	
10(a)	0.3	B1	oe
10(b)	their 0.3 × their 0.3	M1	ft their part (a) only if it's between 0 and 1 exclusive
	0.09	A1ft	oe ft their part (a) only if it's between 0 and 1 exclusive SC1 0.9
10(c)	1 – 0.3 – 0.18	M1	oe
	0.52	A1	oe
10(d)	No, we don't know the probability of it being windy if it's raining	B1	Oe we do not know whether rain and wind are independent

Q	Answer	Mark	Comments
11(a)	Any value from 60 to 80 inclusive	B1	
11(b)	Pre-high	B1	
11(c)	22 does take it to ideal but actually only needs to fall by 12 or more	B2	B1 John is correct, it falls to ideal or Only needs to fall by 12
11(d)	Ticks No and States that the (top reading) blood pressure would need to fall by (at least) 21 or $141 - 17 = 124$ which is pre-high	B1	oe Allow 20 for 21
12	$\frac{1}{36}$	B1	Any indication
13(a)	The birth rate is higher than the death rate (so more are being born in the town than are dying in the town)	B1	oe
	Additional Guidance		
13(b)	More people might have moved out of the town (than the extra born)	B1	oe
	Additional Guidance		

Q	Answer	Mark	Comments
14	All three sampling methods correctly named	B3	A – Quota B – Systematic C – Random B2 – two methods named correctly B1 – one method named correctly
	In A every gym is represented whereas in B and C this might not be the case.	M1	oe
	In C every trainer has an equal chance of being selected which is not true of A and B	M1	oe
	B is somewhat easier to carry out than C (A depends on the choice of selection chosen by the management)	M1	oe
	Reasoned choice of one of the methods	A1	
Additional Guidance			

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