SPECIMEN MATERIAL

GCSE
STATISTICS
8382/2F

FOUNDATION TIER PAPER 2

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 *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	0.5	B1	
2	4	B1	
3	It is less than 100	B1	
4	–1	B1	
5(a)	Numerator identified as 6	B1	
	$\frac{6}{8}$	B1	oe
	Additional Guidance		
	SC1 $\frac{3}{8}$		
5(b)	$\frac{6}{8} \times 100$	B1	
	Additional Guidance		
5(c)(i)	Not valid as only based on one box	B1	oe
5(c)(ii)	Use a larger sample	B1	oe
	Additional Guidance		

Q	Answer	Mark	Comments
6(a)	Mean is affected / influenced by the two largest values, making it unrepresentative.	B1	oe
	Additional Guidance		
6(b)	8th value (indicated)	M1	Accept 21 circled on the stem and leaf diagram
	21	A1	
	Additional Guidance		
6(c)	28 or 15	B1	
	28 – 15	M1	
	13	A1	
	Additional Guidance		
6(d)	Prices in France are generally cheaper as France has a lower median	B2ft	oe ft their median B1ft France has a cheaper median ft their median
	Prices in France are more consistent as the interquartile range is smaller or Prices in France are more consistent as range (35) is smaller	B2ft	oe ft their interquartile range B1 Prices in France are more consistent (ft their interquartile range)
	Additional Guidance		

Q	Answer	Mark	Comments
7(a)	$\frac{6}{15}$	B1	
	Additional Guidance		
7(b)	$\frac{11}{20}$	M1	oe
	$\frac{24}{60}$ and $\frac{33}{60}$	A1ft	oe Correct conversion of $\frac{11}{20}$ and their answer to part (a) to equivalent fractions or decimals
	Additional Guidance		
7(c)	$\frac{6}{15} \times \frac{11}{20}$	M1	ft their answer to part (a) and their probability in part (b)
	$\frac{66}{300}$	A1ft	oe ft their answer to part (a) and their probability in part (b)
	Additional Guidance		
8(a)	3264 (000)	B1	
	Additional Guidance		
8(b)	4069 (000)	B1	
	Additional Guidance		

Q	Answer	Mark	Comments
8(c)	Numbers decrease	B1	oe
	Additional Guidance		
9(a)	All four points plotted	B2	B1 2 or 3 points plotted correctly
	Additional Guidance		
9(b)	positive	B1	
	Additional Guidance		
9(c)	explanatory	B1	
	Additional Guidance		
9(d)	1.5 + 1.8 + 2 + 2 + 2.3 + 2.5 + 2.8 + 3.2 + 3.3 + 3.6 or 25	M1	
	Their 25 ÷ 10	M1	
	2.5	A1	
	Additional Guidance		
9(e)	Double mean point plotted	M1	
	Line through double mean point	A1	
	Additional Guidance		

Q	Answer	Mark	Comments
9(f)	Read off from 210 miles	B1ft	ft their line of best fit
	Additional Guidance		
9(g)	Read off from 3.7 gallons	B1ft	ft their line of best fit
	Additional Guidance		
9(h)	Part (f) ticked and interpolation	B1	oe
	Additional Guidance		
10(a)	A hypothesis stated.	B1	eg Girls receive more pocket money than boys.
	Additional Guidance		
10(b)	All the boys and girls in her year group (at her school)	B1	
	Additional Guidance		
10(c)(i)	Convenience or opportunity (sampling)	B1	
	Additional Guidance		

Q	Answer	Mark	Comments
10(c)(ii)	No ticked With a valid reason given indicating a lack of representation	B1	eg No The first 10 boys and girls may all have paper rounds because they don't get much pocket money
	Additional Guidance		
10(d)	Complete description	B2	eg Give each/every boy or girl a number, use a random number generator to select those for the sample. B1 Partial description eg Give each boy a number eg Use a random number generator to select those who are in the sample.
	Additional Guidance		
10(e)	Personal	B1	oe
	No time frame	B1	oe
10(f)	She is wrong she also needs to collect gender information	B1ft	oe ft from hypothesis in part (a) eg could reference age, family income (oe)
	Additional Guidance		
10(g)	One valid solution to improving response rate	B1	eg provide an incentive eg collect in questionnaires
	Additional Guidance		

Q	Answer	Mark	Comments
10(h)	A small scale version of the main study	B1	oe
	Additional Guidance		
11(a)	Secondary	B1	
	Additional Guidance		
11(b)	Yes ticked **and** The graph for men is above the graph for women at each age group except for 21-29	B1	oe
	Additional Guidance		
11(c)	Generally men making trips by train are older than women making trips by train as the peak for men is at a higher age group than for women.	B2	oe B1 Partial explanation involving either an interpretation with no link to the frequency polygon or an indication of what the frequency polygon shows without a clear interpretation in context. eg the peak for men is at a higher age group than for women.
	Additional Guidance		
11(d)	The graph shows percentages of each age group, not frequencies	B1	oe
	Additional Guidance		

Q	Answer	Mark	Comments
11(e)	Two distinct comparisons made	B2	B1 one comparison made eg The percentage of women with driving licences has increased far more than men since 1975/76 eg Both men and women have a greater percentage with driving licences at age 40-49 than any other age group. eg The age group which has the smallest percentage of people with driving licences is 17-20 for both men and women.
	Additional Guidance		
12(a)	£0 up to £199.99	B1	oe
12(b)	Read median for shop A from 75	M1	
	(median =) (£)370	A1	
	Read LQ and UQ for shop A	M1	
	(730 – 180 =) (£)550 for IQR	A1	
	Shop B is more expensive on average	B1ft	oe ft their median
	Shop B has less varied prices	B1ft	oe ft their IQR
	Additional Guidance		
12(c)	No, the measures may not compare the same TVs	B1	oe
	Additional Guidance		

Q	Answer	Mark	Comments
13(a)	Convenience (sample)	B1	
	Additional Guidance		
13(b)	(As list is in order) only samples / includes the cheapest / highest house prices	B1	
	Additional Guidance		
13(c)	A fully described sampling method that would be likely to produce a more representative sample	B2	eg a full description of (simple) random sampling, systematic sampling B1 A partially described sampling method that would be likely to produce a more representative sample
	Correctly named	B1	
	A reason why their chosen method would be likely to give a more representative sample	B1	eg random sample - all house prices have an (equal) chance of being included
	Additional Guidance		
13(d)	Medians and spread of distributions can be seen	B2	B1 either medians or spread referenced.
	Cornwall greater median than Cumbria median	B1	oe
	Additional Guidance		

Q	Answer	Mark	Comments
13(e)	Yes, as the box is larger for Cornwall	B1	oe
	Additional Guidance		
13(f)	Full interpretation of the mean in context	B2	eg House prices are higher in Cumbria, as the mean is higher B1 Observation based on the mean eg The mean house price is higher in Cumbria
	Full interpretation of the range in context	B2	eg House prices are more consistent in Cumbria, as the range is lower B1 An observation based on the range eg The range of the house prices is smaller in Cumbria
	Additional Guidance		
13(g)	Any other appropriate value	B1	eg size of garden, number of bathrooms, whether the house has or does not have any one of the following: central heating, double glazing, a garage, etc
	Additional Guidance		