

Edexcel GCSE

Statistics 1389

Paper 1F

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Mark Scheme

## NOTES ON MARKING PRINCIPLES

### 1 Types of mark

M marks: method marks

A marks: accuracy marks

B marks: unconditional accuracy marks (independent of M marks)

### 2 Abbreviations

cao - correct answer only

ft - follow through

isw - ignore subsequent working

SC: special case

oe - or equivalent (and appropriate)

dep - dependent

indep - independent

### 3 No working

If no working is shown then correct answers normally score full marks

If no working is shown then incorrect (even though nearly correct) answers score no marks.

### 4 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.

If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.

Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader. If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.

If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

If there is no answer on the answer line then check the working for an obvious answer.

### 5 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.

Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

**6 Ignoring subsequent work**

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: eg. incorrect cancelling of a fraction that would otherwise be correct

It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect eg algebra.

Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

**7 Probability**

Probability answers must be given as fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).

Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.

If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.

If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

**8 Linear equations**

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

**9 Parts of questions**

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

1389 / 1F - SECTION A

No	Working	Answer	Mark	Notes
1 (a)		A at 0.5 (7 cm from beginning of line - line 14 cm long)	1	B1
(b) (i)		B at 0.14 approx. (over part of red line space on overlay)		B1
(ii)		C at 0.71 approx. (over part of red line space on overlay)	2	B1
2 (a)		2 bars correct height (LH £130 000 & RH £160 000)	2	B1 B1
(b)		EITHER: These are the most expensive types. OR They are more expensive in Bristol than Newcastle. (or equivalent) OR: Average in Newcastle is £260,000 and in Bristol is £312,000. (allow £310,000 to 320,000)	1	B1
(c)		EITHER Flat and terrace. OR: Flat OR: Terrace	1	B1
3 (a)		EITHER: Vertical scale does not start at zero o.e. OR Poor vertical scale.	1	B1
(b)		EITHER: No proper labels to the axes. OR: The line is very thick. OR: The horizontal axis scale is poor. OR: Not clear where years start. (or equivalents)	1	B1
4 (a)		EITHER: Positive correlation OR: The greater the waist size the greater the percentage body fat.	1	B1
(b)	(110, 32) and (85, 13) above line and (85, 7) and (110, 25) below line.	Reasonable straight line with points as shown in method column.	1	B1
(c)		Any number between 18% and 22%	1	B1

## 1389 / 1F - SECTION A

No	Working	Answer	Mark	Notes
(d)		Yes EITHER: The bigger the waist size the greater the % of body fat. OR: As waist size increases so does the % body fat. ( or equivalent) OR: graph shows positive correlation	2	B1  B1
5 (a)		EITHER: The whole population is used. OR: It will give unbiased results. OR: It will give accurate results. (or equivalent)	1	B1
(b)		EITHER: Answers are easy to put into (Accept any one of) tables, graphs or pictures. OR: The answers are easy to understand. OR: The questions are easy to understand. OR: The questions are easy to answer. ( or equivalent)	1	B1
(c)		EITHER: Do a pilot. OR: Test it. OR: Trial it. ( or equivalent)	1	B1
(d)		EITHER: Do you agree or disagree that the proposed pension scheme should be compulsory. <input type="checkbox"/> Agree <input type="checkbox"/> Disagree OR: Should the proposed pension scheme be compulsory. Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know <input type="checkbox"/> (or equivalent)	2	B1 B1 (Second B for boxes)

1389 / 1F - SECTION A				
No	Working	Answer	Mark	Notes
6 (a)		Qualitative		B1
(i)		Quantitative	2	B1
(b)		<u>C</u> Plus EITHER: It will give a more representative sample OR: It will cover more hours. (or equivalents)	1	B1
(c)		<u>Z</u> Plus EITHER: A tally is quick to use. OR: It is easy to work out totals for a tally. (or equivalents)	1	B1
7 (a)		50, 50 (B1) 27, 73 (B1)	2	B1 B1
(b)		EITHER: $\frac{13}{100}$ OR: 0.13 OR: 13%		B1
(i)		EITHER: $\frac{9}{25}$ OR: 0.36 OR 36% OR equivalents		B1
(ii)		EITHER: $\frac{73}{100}$ OR: 0.73 OR 73% allow follow through from table	3	B1√
(iii)				

1389 / 1F - SECTION B				
No	Working	Answer	Mark	Notes
1 (a)		23.39	1	B1
(b) (i)		EITHER: Petroleum OR Petrol		B1
(ii)		EITHER: Natural gas OR Gas	2	B1
(c)		They are decreasing over time	1	B1
2 (a)	EITHER: $\frac{86000}{70000} \times 100$ OR: $(\frac{16000}{70000} \times 100) + 100$ See 122.8 gives M1	123	2	M1 A1
(b) (i)		114%		B1
(ii)	$\frac{214 \times 70000}{100}$ or (14% of 70000) + 70000	£149800	3	M1 A1
3 (a)		59	1	B1
(b)	Put in order 51,55,58,59,59,65,73,76,86,87,93,96	M1 for ordering 69 (69 with no working gets both marks)	2	M1 A1
(c)	858 or their sum/12	71.5 (71.5 with no working gets both marks)	2	M1 A1
(d)		The mean	1	B1

1389 / 1F - SECTION B				
No	Working	Answer	Mark	Notes
3 (e)		Range/ Spread/sd/variance/variation/IQR oe	1	B1
4 (a)	Some suggestion of adding to accumulate shown. (M1)	23, 58,82,94,99,100 (Correct list with no working gets 2 marks)	2	M1 A1
(b)		Plotting points.(allow ½ square tolerance and follow through from a) Joining points with curve or lines starting at (0,0)	2	B1√ B1√
(c)	Some indication of using the graph such as an appropriate line. (M1) Must have cf graph	1.7 to 1.8 (Correct answer with no working gets 2 marks) No marks for this part if not cf graph.	2	M1√ A1
(d)		EITHER: It did well OR: It was never officially late. oe	1	B1
5 (a)		M1 for 0.1 or $\frac{1}{10}$ in correct position first branch Second branch 0.9, 0.1, 0.9, 0.1 (A1)	2	M1 A1
(b)	$0.9 \times 0.9$ or $\frac{9}{10} \times \frac{9}{10}$	0.81 or $\frac{81}{100}$ (Allow follow through from tree diagram for M1 Correct answer without working gets both marks)	2	M1√ A1
(c)	$(0.9 \times 0.1) + (0.9 \times 0.1)$ or $(\frac{9}{10} \times \frac{1}{10}) + (\frac{9}{10} \times \frac{1}{10})$ .	M1 for 0.9 x 0.1 (follow through) M1 for addition A1 for correct answer 0.18 or 18/100 or 9/50 (Correct answer without working gets 3 marks)	3	M1√ M1 A1



1389 / 1F - SECTION B

No	Working	Answer	Mark	Notes
6 (a) (i)		0.37 OR 37		B1
(ii)		0.45 OR 45	2	B1
(b)		Q1, Q2, Q3 plotted. (0.37, 0.40, 0.45) (follow through from a)		B1√
		Tails at correct places. (0.27, 0.54)	3	B1
(c)		A properly drawn box plot.		B1
		ANY TWO FROM: The second sample had a slightly lower median. The second sample had a much wider range. The second sample had a greater spread. The second sample had a greater IQR. ( or equivalent)	2	B1 B1
7 (a)		ANY TWO FROM: It is quicker. It is cheaper. There is less data to handle. Easier	2	B1B1
(b)		3, 5, 8, 10, 10	1	B1
(c)	10/360 x 360 or (360 -(30 +50 + 80))/2 or any correct method (M1)	100°, 100° (both put in table)	2	M1 A1
		(Correct answers in table without working gets both marks)		
(d)		EITHER: All Angles correct +/-2° tolerance (B1 B1). OR: Three angles correct (B1). PLUS All sections labelled (B1).	3	B1 B1 B1

## 1389 / 1F - SECTION B

No	Working	Answer	Mark	Notes
(e)		EITHER: Good idea - A lot of cycles in motorised traffic. OR: Not a good idea as only 12 lorries an hour. OR: Not a good idea as the traffic is generally light. OR: any equivalent sensible answer.	1	B1
8 (a)		Trend line - (between (1996,190) and (1997, 190) at one end and (2002, 270) and (2003, 270) at other. The line must at least cover 1998 to 2002	1	B1
(b)		It is rising. (or equivalent)	1	B1
(c)		Anything between 280 - 290 Allow mark for digits 280 and 290 e.g.280000 Ignore units	1	B1
(d)		EITHER: It goes <b>outside the range</b> of the data. OR: It involves <b>extrapolation</b> . oe	1	B1
(e)		No. £273 000 million is well below the trend OR Any other sensible answer.	2	B1 B1