

Mark Scheme (Results)

January 2014

Pearson Edexcel Level 1 Award
In Statistical Methods (AST10)

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NOTES ON MARKING PRINCIPLES

- 1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- 2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- 3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- 4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- 5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.
- 6 Mark schemes will indicate within the table where QWC is being assessed. The strands are as follows:
 - i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labeling conventions.
 - ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.
 - iii) *organise information clearly and coherently, using specialist vocabulary when appropriate.*
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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 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.

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

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 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.

8 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.

9 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: e.g. incorrect canceling 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 e.g. algebra.

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

10 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.

11 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.

12 Parts of questions

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

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only cso – correct solution only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PAPER: AST10_01					
Question		Working	Answer	Mark	Notes
1	(a)		6	1	B1 cao
	(b)		Saturday	1	B1 for sat(urday)
	(c)		bar drawn	1	B1 for bar with height 10
2	(a)		$\begin{array}{ c c } \hline \square & \square \\ \hline \end{array}$	1	B1 cao
	(b)		48	1	B1 cao
	(c)		6	2	M1 for correct method, eg $36 - 30$ or $12 \div 2$ A1 cao
3	(a)		impossible	1	B1 cao
	(b)		cross marked	1	B1 for cross marked between 0.5 and 1 (not including 0.5 and 1)
	(c)		cross marked	1	B1 for cross marked between 0.1 and 0.25
	(d)		0.5	1	B1 for 0.5 oe accept evens
4	(a)		20	1	B1 cao
	(b)		3	1	B1 cao
	(c)		lime	1	B1 cao

PAPER: AST10_01				
Question	Working	Answer	Mark	Notes
5	(a)	1.8	1	B1 cao
	(b)	Nissan	1	B1 cao
	(c)	Mercedes Ford	1	B1 cao
	(d)	1.8	2	M1 for correctly ordering engine sizes A1 cao
6	(a)	5	1	B1 cao
	(b)	14	2	M1 for 2+3+4+3+2 A1 cao
	(c)	comparisons	2	B2 for 2 correct comparisons, eg more boy absences on Friday OR the numbers of boy absences increases throughout the week but the number of girl absences increases than decreases oe (B1 for 1 correct comparison)
7		AC, AD, BC, BD, CD	2	B2 for all 5 correct combinations, ignore repeats (B1 for 3 or 4 correct combinations, ignore repeats)
8		35	2	M1 for $100 - 65 (=35)$ oe A1 cao
9	(a)	data collection sheet	3	B1 for 1 2 3 4 5 6 B1 for space for tallies and labelled Tally oe B1 for space for frequencies and labelled Frequency oe
	(b)	reason		B1 for correct reason, eg too few rolls (to be reliable)

PAPER: AST10_01					
Question	Working	Answer	Mark	Notes	
10	(a)		27	2	M1 for 3 and 30 seen together A1 cao
	(b)		14.9	2	M1 for adding all ten numbers A1 cao
	(c)	18.5×10 or $185 - 149$	Comparison	2	B1 for 185 or 36 B1 ft for correct comparison of their totals, eg greater (total) in 2013 (SC B1 for they scored more points per game oe)
11	(a)		$\frac{4}{9}$	2	M1 for $\frac{4}{n}$ where $n > 4$ or $\frac{m}{9}$ where $m < 9$ A1 for $\frac{4}{9}$ oe
	(b)		1	1	B1 for 1 oe
12			Three things identified	3	B3 for three correct things identified from: 1 missing tree label 2 missing frequency label/ title 3 irregular frequency axis 4 line drawn between 3 and 4 (B2 for two correct things identified B1 for one correct thing identified)
13	(a)		5, 11, 8, 6	2	M1 for using tallies or at least one correct frequency A1 for correct tallies or correct frequencies
	(b)		2	1	B1 for 2 or ft their frequency table
	(c)		75	2	M1 for $5 \times 1 + 11 \times 2 + 8 \times 3 + 6 \times 4$ oe or ft their frequency table A1 for 75 or ft their frequency table

PAPER: AST10_01																								
Question	Working	Answer	Mark	Notes																				
14		$\frac{17}{50}$	1	B1 for $\frac{17}{50}$ oe																				
15	(a)	24	1	B1 cao																				
	(b)	<table border="1"> <tr> <td></td> <td>o</td> <td>l</td> <td>m</td> <td>T</td> </tr> <tr> <td>m</td> <td>15</td> <td>17</td> <td>19</td> <td>51</td> </tr> <tr> <td>f</td> <td>24</td> <td>25</td> <td>30</td> <td>79</td> </tr> <tr> <td>T</td> <td>39</td> <td>42</td> <td>49</td> <td>13 0</td> </tr> </table>		o	l	m	T	m	15	17	19	51	f	24	25	30	79	T	39	42	49	13 0	3	B3 cao (B2 for 4 or 5 correct B1 for 2 or 3 correct)
	o	l	m	T																				
m	15	17	19	51																				
f	24	25	30	79																				
T	39	42	49	13 0																				
	(c)(i)	$\frac{39}{130}$	2	B1 for $\frac{39}{130}$ oe																				
	(c)(ii)	$\frac{19}{130}$		B1 for $\frac{19}{130}$ oe																				
16		Two correct things identified	2	B2 for two correct things identified from 1 no zero oe 2 no time frame 3 five not included (B1 for one correct thing identified)																				
17	(a)	Downwards	1	B1 for downwards oe																				
	(b)	70	2	M1 for 23 + 24 + 15 + 8 A1 cao																				
	(c)	Estimate	1	B1 for whole number in range 1 – 13																				

PAPER: AST10_01							
Question		Working	Answer			Mark	Notes
18	(a)		5			1	B1 cao
	(b)		26			1	B1 cao
	(c)		34			2	M1 for 52 – 18 A1 cao
19	(a)		0.45			2	M1 for 0.35 + 0.10 A1 for 0.45 oe
	(b)		0.75			2	M1 for 1 – 0.25 A1 for 0.75 oe
	(c)		0.3			2	M1 for 1 – (0.35 + 0.1 + 0.25) oe A1 0.3 oe
20	(a)		8	18	22	2	B2 for all 6 correct (B1 for 3 or 4 or 5 correct)
			14	16	19		
	(b)		points plotted at (42, 42), (29, 25), (17, 20), (36, 33)			2	B2 for all points plotted correctly (B1 for one point plotted correctly)
(c)		positive correlation			1	B1 for positive (correlation) or the greater the French mark the greater the Spanish mark oe	

PAPER: AST10_01							
Question		Working			Answer	Mark	Notes
21		tv	f	angle	pie chart	3	M1 for correct method, eg $\frac{34}{144} \times 360 (=85)$ or $\frac{35}{14} \times 34 (=85)$ A1 for at least two correct angles calculated or at least one correct sector drawn A1 for fully correct pie chart including labels (not angles)
		N	14	(35)			
		Sp	34	85			
		D	20	50			
		So	48	120			
		C	28	70			

