

Mark Scheme (Results)

Summer 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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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 ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PAPER: AST10_01					
		Working	Answer	Mark	Notes
1	(a)		8	1	B1 cao
	(b)(i)		16	2	B1 for 16 or ft their 'key'
	(ii)		20		B1 for 20 or ft their 'key'
	(c)		Three and a half cars drawn	1	B1 for Three and a half cars drawn or ft their 'key'
2	(a)		4	1	B1 cao
	(b)		Cat	1	B1 cao
	(c)		Bar drawn to frequency of 7	1	B1 Bar drawn to frequency of 7
	(d)		27	1	B1 cao
3	(a)		1.8	1	B1 cao
	(b)		Grapes	1	B1 cao
	(c)		Bananas	1	B1 cao
	(d)		Apricots and Cranberries	1	B1 for Apricots and Cranberries
4	(a)		Impossible	1	B1 cao
	(b)		Cross marked at 0.5	1	B1 for Cross marked at 0.5
	(c)		Cross marked at 0.25	1	B1 for Cross marked at 0.25

PAPER: AST10_01						
		Working	Answer		Mark	Notes
5	(a)		20		1	B1 cao
	(b)		Berlin		1	B1 cao
	(c)		New York		1	B1 cao
6			Types	Tally/frequency	2	M1 for data collection sheet with column/row labelled types (of books) or a list of at least 2 types of books A1 for column/row labelled tally or frequency oe
7	(a)		16		1	B1 cao
	(b)		Don		1	B1 cao
	(c)		6		1	B1 cao
	(d)		Bars Mathematics 7 English 12		2	M1 for two bars at the correct heights A1 cao
8		(B,4) (B,6) (A,2) (A,4) (A,6) (T,2) (T,4) (T,6)	8 correct outcomes		2	B2 for 8 correct outcomes (no extras) (B1 for at least 4 correct outcomes Ignore repeats)

PAPER: AST10_01					
		Working	Answer	Mark	Notes
9	(a)		7/10	1	B1 for 7/10 oe
	(b)		59/100	1	B1 for 59/100 oe
	(c)		Experiment 2 More trials	2	B1 for Experiment 2 – accept part b B1 for More trials oe
10	(a)	2,2,2,3,3,4,5,7,8	3	2	M1 for correctly ordering the number of people A1 cao
	(b)		4	2	M1 for at least three of (3+2+4+5+2+2+8+3+7)/9 or 36/9 A1 cao
	(c)		6	2	M1 for identifying 8 and 2 A1 cao
	(d)		Mean in 1913 is greater than mean in 2013 Range in 1913 is greater than the range in 2013	2	B1 for Mean in 1913 is greater (than mean in 2013) or ft '4' oe B1 for Range in 1913 is greater (than the range in 2013) or ft '6' oe
11	(a)(i)		5/30	4	M1 for X/30 where X < 30 A1 for 5/30 oe
	(ii)		19/30		M1 for (8 + 11)/30 A1 for 19/30 oe
	(b)		0.63	2	M1 for 1 - 0.37 A1 for 0.63 oe

PAPER: AST10_01					
		Working	Answer	Mark	Notes
12	(a)		6, 8, 5, 5, 6	3	M1 for using tallies or at least one correct frequency A1 for 3 correct frequencies or tallies A1 cao
	(b)		2	1	B1 for 2 or ft their table
	(c)		87	2	M1 for $(1 \times '6' + 2 \times '8' + 3 \times '5' + 4 \times '5' + 5 \times '6')$ or ft A1 cao
13	(a)		27	1	B1 cao
	(b)		37	2	M1 for $44 - 7$ SC for 7 to 44 oe A1 cao
	(c)		3/25	2	M1 for $a/25$ for $a < 25$ or $3/b$ for $b > 3$ A1 for 3/25 oe
14			3 aspects identified	3	B3 for 3 aspects from <ul style="list-style-type: none"> 1. Non linear scale (on vertical axis) 2. Bars different sizes 3. Missing label for horizontal axis/vertical axis or both 4. No zero 5. Missing label for bar 6. No Title 7. The arrow on the animal axis is not needed (B2 for two correct aspects B1 for one correct aspect)

PAPER: AST10_01					
		Working	Answer	Mark	Notes
15	(a)		17	1	B1 cao
	(b)		25,9 8,16,41 25	3	B3 cao (B2 for 9 or 16 correct) (B1 for 8 or 25 or 41 correct)
16			2 aspects	2	B2 for 2 correct aspects from 1. No zero box option or No box for more than 15 2. Overlapping 3. No time frame
17	(i)		0.35	2	M1 for 0.10 + 0.25 A1 for 0.35 oe
	(ii)		0.2	2	M1 for $1 - ('0.35' + 0.45)$ or $1 - (0.10 + 0.25 + 0.45)$ A1 for 0.2 oe
18	(a)		3 points plotted correctly	2	B2 for correctly plotting points at (63,107), (70,110) and (78,117) (B1 for correctly plotting one point at (63,107) OR (70,110) OR (78,117))
	(b)		Positive	1	B1 for positive (accept as the number of pages increases so does the weight)
	(c)		108.5	1	B1 for answer in the range 107 - 110 exclusive

PAPER: AST10_01					
		Working	Answer	Mark	Notes
19	(a)		Upwards	1	B1 for upwards oe
	(b)		23	2	M1 for 28 – 5 A1 cao
	(c)		29 - 40	1	B1 for answer in the range 29 - 40
20		Angles 90,108 and 162	Correct pie chart	3	M1 for pie chart with at least one correct angle calculated or drawn A1 for all angles correctly drawn A1 for correct labels in 3 sectors and no other sectors NB Angles on the pie chart do not constitute labels.

