

Mark Scheme (Results)

Summer 2016

Pearson Edexcel Level 1 Award
in Statistical Methods (AST10)

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Publications Code AST10_01_1606_MS

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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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

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

awrt – answer which rounds to

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Question	Working	Answer	Mark	Notes
1 (a)		Dog 8 Hamster 4	2	B1 for 8 B1 for 4
(b)		Categorical	1	B1 cao
2 (a)		♡♡	1	B1 cao
(b)		9	1	B1 cao
(c)	24 + 9 + 15 + 12	60	2	M1 for 24 + 9 + 15 + 12 or 6 × 10 A1 cao
3 (a)		(1, A) (1, B) (1, C) (2, A) (2, B) (2, C) (3, A) (3, B) (3, C) (4, A) (4, B) (4, C)	2	B2 for all 12 possibilities and no repeats (B1 for 10 or 11 possibilities, ignore repeats)
(b)		${}^2/_{12}$	1	B1 for ${}^2/_{12}$ oe
4		2 correct reasons	2	B2 for 2 correct reasons e.g. <ul style="list-style-type: none"> • no time frame oe • response boxes are too vague oe • it doesn't cover all possibilities oe (B1 for 1 correct reason)

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Question	Working	Answer	Mark	Notes
5		2 comparisons	2	B2 for 2 correct comparisons (B1 for 1 correct comparison) e.g. <ul style="list-style-type: none"> • more males than females preferred computer games • The modal type of game for males is computer whilst the girls modal type of game is board
6 (a)		2 nd Statement – Likely 3 rd Statement – Certain 4 th Statement – Even	3	B3 for all 3 statements matched to correct likelihoods (B2 for 2 statements matched to correct likelihoods) (B1 for 1 statement matched to correct likelihood)
(b)		(x) marked in between 0 and 0.5	1	B1 for (x) marked in between 0 and 0.5

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Question	Working	Answer	Mark	Notes
7 (a)		1400	1	B1 cao
(b)		Indesit and Hoover	1	B1 cao
(c)		Candy	1	B1 cao
(d)		6	1	B1 cao
(e)	1.43 – 0.78	0.65	2	M1 for 1.43 – 0.78 A1 cao
(f)	335, 350, 400, 416, 450	400	2	M1 for ordering the prices A1 cao
8		A Negative (correlation) B No (correlation) C Positive (correlation)	2	B2 all 3 correct (B1 for 2 correct)
9 (a)		$\frac{3}{10}$	1	B1 for $\frac{3}{10}$ oe
(b)		$\frac{8}{10}$	1	B1 for $\frac{8}{10}$ oe
(c)		0	1	B1 cao
10 (a)		53	1	B1 cao
(b)	62 – 48	14	2	M1 for 62 and 48 seen together A1 cao

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Question	Working	Answer	Mark	Notes						
11		2 reasons	2	B2 for two correct reasons from <ul style="list-style-type: none"> • The frequencies do not go up by the same amounts. • One of the eye colour labels is missing. • The bars are different widths/sizes. • No Title. (B1 for one correct reason)						
12		<table border="1"> <thead> <tr> <th>Type</th> <th>Tally</th> <th>Frequency</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Type	Tally	Frequency				2	M1 for a data collection sheet with column/row labelled type/vegetable or a list of at least 3 types of vegetable A1 for column/row labelled tally/frequency oe
Type	Tally	Frequency								
13		<table border="1"> <thead> <tr> <th>Frequency</th> </tr> </thead> <tbody> <tr> <td>8</td> </tr> <tr> <td>10</td> </tr> <tr> <td>9</td> </tr> <tr> <td>3</td> </tr> </tbody> </table>	Frequency	8	10	9	3	2	B2 for all frequencies or tallies correct (B1 for 3 correct frequencies or tallies)	
Frequency										
8										
10										
9										
3										
(b)		2	1	B1 for 2 or ft from their table						
(c)	$1 \times 8 + 2 \times 10 + 3 \times 9 + 4 \times 3$	67	2	M1 for $1 \times '8' + 2 \times '10' + 3 \times '9' + 4 \times '3'$ A1 for 67 or ft from their table						
14										
(a)	$1 - 0.3$	0.7	2	M1 for $1 - 0.3$ A1 for 0.7 oe						
(b)	$1 - (0.5 + 0.3)$ $0.2 \div 2$	0.1	3	M1 for $1 - (0.5 + 0.3)$ (=0.2) (may be implied by 0.2) M1 for $0.2 \div 2$ A1 for 0.1 oe						

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Question		Working	Answer				Mark	Notes
15	(a)			Det	S-D	Ter	Tot	3 B1 for 8 and 3 B1 for 5 and 15 B1 for 2, 7 and 9
			2	(4)	(4)	8	(16)	
			3	(1)	2	(6)	9	
			4	3	(1)	(1)	5	
			Tot	(8)	7	15	(30)	
	(b)		Terraced				1	B1 cao
	(c)(i)		$\frac{1}{30}$				3	B1 for $\frac{1}{30}$ oe
	(ii)	$(8 + 7) \div 30$	$\frac{15}{30}$					M1 for $(8 + '7') \div 30$ A1 for $\frac{15}{30}$ oe
16	(a)		Points plotted at (S, 11 000) (W, 23 000) (S, 17 000) (W, 32 000) (S, 22 000) (W, 38 000) and joined by line segments				3	B3 for all 6 points plotted correctly and joined by line segments (B2 for 4 or 5 points plotted correctly) (B1 for 3 points plotted correctly)
	(b)		Upwards				1	B1 for upwards oe
17	(a)	Angles 96, 40, 136, 88	Pie chart drawn				3	M1 for pie chart with at least one correct angle calculated or drawn A1 for all angles correctly drawn B1 for correct labels in 4 sectors
	(b)	$3200 \div 4$	800				2	M1 for $3200 \div 4$ A1 cao

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Question		Working	Answer	Mark	Notes
18	(a)		2 bars at correct height with correct shading	2	B1 for 2 bars drawn at the correct heights B1 for correct shading on the bars
	(b)	$13 + 16 + 10 + 8 + 7 + 6$	60	2	M1 for $13 + 16 + 10 + 8 + 7 + 6$ A1 cao
	(c)		2 correct comparisons	2	B2 for 2 correct comparisons (B1 for 1 correct comparison) e.g. <ul style="list-style-type: none">• The number of adults asked and the number of children asked are the same.• More children than adults gave a rating of 4.• The modal rating for children was higher (4) than the modal rating for adults (2)
19	(a)	$(20 - 3) \div 20$	$\frac{17}{20}$	2	M1 for $(20 - 3) \div 20$ A1 for $\frac{17}{20}$
	(b)		Spin the coin more times as 20 times is not enough to give a reliable estimate	2	B1 for spin the coin more times B1 for 20 times is not enough to give a reliable estimate

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Question	Working	Answer	Mark	Notes
20 (a)	$(20 + 26 + \dots + 30) \div 12$	27.25	3	M1 for $20 + 25 + \dots + 22 (=327)$ M1 for $'327' \div 12$ A1 for 27.25 or 27.3 or 27 provided 1 st M1 awarded
(b)(i)		Correct comparison of means	1	B1 for the mean for travelling to work is (slightly) bigger than the mean for travelling from work. (ft from their mean)
...(ii)		Range = 13 and correct comparison of range	2	B1 for range = 13 B1 for the range for travelling to work is smaller than the range for travelling from work.

