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# Mark Scheme (Results)

January 2018

Pearson Edexcel Level 1 Award  
In Statistical Methods (AST10)

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## 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

isw – ignore subsequent working

oe – or equivalent (and appropriate)

indep - independent

ft – follow through

SC: special case

dep – dependent

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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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

**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: e.g. 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 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.

**7 Parts of questions**

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

**8 Use of ranges for answers**

If an answer is within a range this is inclusive, unless otherwise stated.

**9 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.

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Question	Working	Answer	Mark	Notes
1 (a)		4	1	B1 cao
(b)		9	1	B1 cao
(c)			1	B1 for 1 and $\frac{3}{4}$ squares drawn
2		3 correct reasons	3	B1 for No numbers (on the vertical axis) B1 for (2) boxes have no labels B1 for Flies bar is a different width
3		2 correct reasons	2	B2 for any 2 from the following <ul style="list-style-type: none"><li>• No time frame</li><li>• Options overlap</li><li>• No option for more than 12</li></ul> (B1 for any one correct reason)

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Question	Working	Answer	Mark	Notes												
4 (a)		<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 2px;">(12)</td> <td style="padding: 2px;"><b>16</b></td> <td style="padding: 2px;">(10)</td> <td style="padding: 2px;"><b>38</b></td> </tr> <tr> <td style="padding: 2px;"><b>5</b></td> <td style="padding: 2px;">(4)</td> <td style="padding: 2px;"><b>8</b></td> <td style="padding: 2px;">(17)</td> </tr> <tr> <td style="padding: 2px;">(17)</td> <td style="padding: 2px;"><b>20</b></td> <td style="padding: 2px;"><b>18</b></td> <td style="padding: 2px;">(55)</td> </tr> </table>	(12)	<b>16</b>	(10)	<b>38</b>	<b>5</b>	(4)	<b>8</b>	(17)	(17)	<b>20</b>	<b>18</b>	(55)	3	B1 for 5 <b>or</b> 38 in the correct place B1 for 8 <b>or</b> 16 in the correct place B1 for 18 <b>and</b> 20 in the correct place
(12)	<b>16</b>	(10)	<b>38</b>													
<b>5</b>	(4)	<b>8</b>	(17)													
(17)	<b>20</b>	<b>18</b>	(55)													
		$\frac{17}{55}$	4	B1 for $\frac{17}{55}$ oe												
		$\frac{4}{55}$		B1 for $\frac{4}{55}$ oe												
		$\frac{22}{55}$		M1 for $\frac{(12+10)}{55}$ A1 for $\frac{22}{55}$ oe												
5 (a)		27	1	B1 cao												
(b)		E	1	B1 cao												
(c)		A and D	1	B1 for A <b>and</b> D in either order												
(d)	200 + 40 + 180 + 180 + 80	680	2	M1 for 200 + 40 + 180 + 180 + 80 (= 680) A1 cao												

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Question	Working	Answer	Mark	Notes				
6		<table border="1"> <tr> <td>Type of Fruit</td> <td>Tally/Frequency</td> </tr> <tr> <td></td> <td></td> </tr> </table>	Type of Fruit	Tally/Frequency			2	B1 for column/row labelled (type of) fruit <b>or</b> at least 3 types of fruit listed B1 for column/row labelled tally/frequency
Type of Fruit	Tally/Frequency							
7		(X, R) (X, B) (X, P) (X, G) (Y, R) (Y, B) (Y, P) (Y, G) (Z, R) (Z, B) (Z, P) (Z, G)	2	B2 Fully correct (ignore (X, R) repeated). Do not allow any extras or repeats. B1 for 8 or 9 or 10 correct outcomes listed Ignore any repeats or extras.				
8	(a)	Italian 2 Fish and chips 3 Greek 1	2	B2 All 3 correct (B1 for 2 correct)				
	(b)	Greek	1	B1 cao				
	(c)	categorical	1	B1 cao				
9	(a)	Evens	1	B1 for Evens indicated				
	(b)	(×) marked at 0	1	B1 cao				
	(c)	(×) marked between 0 and 0.25	1	B1 for (×) marked between 0 and 0.25				
	(d)	$\frac{3}{8}$	1	B1 for $\frac{3}{8}$ oe				

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<b>Question</b>	<b>Working</b>	<b>Answer</b>	<b>Mark</b>	<b>Notes</b>
10 (a)		Bar drawn to the correct height	1	B1 for a bar drawn to a height of 4
(b)		6	1	B1 cao
(c)		tulip	1	B1 cao
(d)		rose and iris	1	B1 for rose and iris in either order
11 (a)		45	1	B1 cao
(b)	47 – 28	19	2	M1 for 47 and 28 seen together A1 cao
(c)		$\frac{4}{15}$	1	B1 for $\frac{4}{15}$ oe
12 (a)		$\frac{4}{20}$	1	B1 for $\frac{4}{20}$ oe
(b)		$\frac{30}{200}$	1	B1 for $\frac{30}{200}$ oe
(c)		Sarah + correct reason	2	B2 for Sarah (allow she) + correct reason e.g. she rolled it more times  (B1 for correct reason with incorrect/no conclusion)



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<b>Question</b>	<b>Working</b>	<b>Answer</b>	<b>Mark</b>	<b>Notes</b>
13 (a)		14	1	B1 cao
(b)		All 4 points plotted correctly and joined with line segments	2	B2 for all 4 points plotted and joined with line segments  (B1 for either 4 points correctly plotted but not joined/joined with non-line segments <b>or</b> 3 points plotted correctly and joined with line segments)
(c)		upwards	1	B1 for upwards oe
14 (a)(i)		Scatter diagram drawn correctly	2	B1 for scatter diagram showing positive correlation
(ii)		Scatter diagram drawn correctly		B1 for scatter diagram showing negative correlation
(b)		No correlation	1	B1 cao

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<b>Question</b>	<b>Working</b>	<b>Answer</b>	<b>Mark</b>	<b>Notes</b>
15 (a)	100, 104, 104, 108, 112, 113, 115, 116, 118	112	2	M1 for ordering the numbers A1 cao
(b)	$(100 + \dots + 118) / 9$	110	2	M1 for $(100 + \dots + 118) / 9$ (must be 9 numbers) A1 cao
(c)	118 – 100	18	2	M1 for 118 – 100 A1 cao
(d)		Correct comparison of means Correct comparison of range	2	B1 ft for comparison of means e.g. mean for Fred < mean for Sally  B1 ft for comparison of range e.g. range for Fred > range for Sally

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Question	Working	Answer	Mark	Notes
16 (a)		2 correct comparisons	2	B2 for any 2 correct <b>comparisons</b> from <ul style="list-style-type: none"> <li>• More females preferred Europe/less males preferred Europe</li> <li>• More males preferred Asia/less females preferred Asia</li> <li>• More females preferred Africa/less males preferred Africa</li> <li>• More females preferred North America/less males preferred North America</li> </ul> (B1 for any 1 correct <b>comparison</b> )
(b)	$18 \times 4 \times 2$	144	3	M1 for $18 \times 4 (= 72)$ M1 for " $72$ " $\times 2$ A1 cao
17 (i)	$0.10 + 0.25$	0.35	4	M1 for $0.10 + 0.25$ A1 for 0.35 oe
(ii)	$1 - (0.10 + 0.25)$	0.65		M1 $1 - "(0.10 + 0.25)"$ A1 for 0.65 oe

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<b>Question</b>	<b>Working</b>	<b>Answer</b>	<b>Mark</b>	<b>Notes</b>
18 (a)		$1 \rightarrow 2$ $2 \rightarrow 5$ $3 \rightarrow 7$ $4 \rightarrow 4$ $5 \rightarrow 2$	2	B2 for 5 correct frequencies/tallies (B1 for 4 correct frequencies/tallies)
(b)	$(1 \times 2 + 2 \times 5 + 3 \times 7 + 4 \times 4 + 5 \times 2)$	59	2	M1 for $(1 \times 2 + 2 \times 5 + 3 \times 7 + 4 \times 4 + 5 \times 2)$ A1 cao fit the table
19 (a)		$\frac{2}{11}$	1	B1 for $\frac{2}{11}$ oe
(b)		$\frac{9}{11}$	1	B1 for $\frac{9}{11}$ oe
(c)		$\frac{3}{11}$	1	B1 for $\frac{3}{11}$ oe

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<b>Question</b>	<b>Working</b>	<b>Answer</b>	<b>Mark</b>	<b>Notes</b>
20 (a)		9	1	B1 cao
(b)		2 correct bars drawn with correct shading	2	B2 for 2 bars drawn at the correct height <b>and</b> shaded correctly (B1 for either 2 bars drawn at the correct height with no/incorrect shading <b>or</b> 1 bar drawn at the correct height with correct shading)
(c)		4	1	B1 cao
(d)		Wednesday	1	B1 cao





