Mark Scheme (Results)

January 2015

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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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

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
awrt – answer which rounds to

PAPER: AST10_01					
		Working	**Answer**	**Mark**	**Notes**
1	(a)		Eggs in nest → discrete Child's favourite colour → categorical Time taken → continuous	2	B2 for all 3 matched correctly (B1 for 2 matched correctly)
	(b)		Red 6 Blue 5 Pink 3 Green 4	2	B2 for all 4 numbers or tallies correct (B1 for 2 or 3 numbers or tallies correct)
2	(a)		Two correct bars: 6 and 2 with correct shading	2	B2 for both bars drawn at the correct height with correct shading (B1 for both bars no shading or either bar with correct shading)
	(b)		14	1	B1 cao
	(c)		4	1	B1 cao
	(d)	10 + 2 + 8 + 2 + 6	28	2	M1 for 10 + 2 + 8 + 2 + 6 A1 cao
3	(a) (i)		Impossible	2	B2 for all 3 correct (B1 for any 2 correct)
	(a) (ii)		Even		
	(a) (iii)		Likely		
	(b)		(x) marked at $\frac{1}{4}$	1	B1 for a (x) marked at $\frac{1}{4}$

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		Working	**Answer**	**Mark**	**Notes**

4			2 reasons	2	B2 for two correct reasons from
					    • No time frame
					    • Boxes overlap
					    • There is no option for 0
					(B1 for any one correct reason)

5	(a)		4	1	B1 cao
	(b)		Pictogram drawn with a key	3	M1 for diagram that splits up the months A1 for pictures that represent the correct totals (total for one month) B1 for a key matching one month
6	(a)		(J, F) J, C P, F P, C M, F M, C	2	B2 for all 5 combinations and no extras, ignore repeats (B1 for 3 or 4 combinations, ignore extras and repeats)
	(b)		$\frac{2}{6}$	1	B1 for $\frac{2}{6}$ oe or ft their part (a)
	(c)		$\frac{3}{6}$	1	B1 for $\frac{3}{6}$ oe or ft their part (a)
7			Vertical lines drawn at 2, 3, 4, 5 with heights 8, 5, 3, 2	2	B2 for all vertical lines drawn to the correct heights. (B1 for 2 or 3 vertical lines drawn to the correct heights)

		Working	Answer	Mark	Notes
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8	(a)		9500	1	B1 cao
	(b)		Harley and Suzuki	1	B1 for Harley and Suzuki in any order
	(c)		Yamaha	1	B1 cao
	(d)		6	1	B1 cao
	(e)		23200	2	M1 for 26000 and 2800 seen together A1 cao
	(f)		7500	1	B1 cao
9	(a)		Points plotted at (178, 126), (176, 126), (175, 125), (172, 121), (170, 120), (166, 110), (160, 100)	2	B2 for all points plotted correctly (B1 for 3 or 4 or 5 or 6 points plotted correctly)
	(b)		Positive	1	B1 cao
10	(a)		$\dfrac{17}{120}$	1	B1 for $\dfrac{17}{120}$ oe
	(b)		Yes with a correct reason **or** No with a correct reason	1	B1 for yes and a correct reason e.g. all the frequencies are similar in value oe **or** No and a correct reason e.g there is a chance that those frequencies could occur with a biased dice.
	(c)		Roll the dice more times as 20 times is not enough.	2	B1 for Roll the dice more times oe B1 20 times is not enough

			Working	Answer	Mark	Notes
11	(a)			47	1	B1 cao
	(b)		64 – 22	42	2	M1 for 64 – 22 A1 cao
	(c)			$\dfrac{4}{21}$	1	B1 for $\dfrac{4}{21}$ oe
12				2 correct reasons	2	B2 for two correct reasons from • Bars are 3D • Quarters are missing from the horizontal axis • No label on either axis • No title (B1 for one correct reason)
13				Types Tally Frequency	2	M1 for a data collection sheet with column/row labelled types (of music) or a list of at least 3 types of music A1 for column/row labelled tally/frequency oe
14	(a)			120	1	B1 cao
	(b)		$\dfrac{1680}{12}$	140	3	M1 for 120 + 130 + … + 126 + 175 (=1680) M1 for $\dfrac{'1680'}{12}$ A1 cao
	(c)			$\dfrac{3}{12}$	1	B1 for $\dfrac{3}{12}$ oe

		Working	Answer	Mark	Notes
15	(a)			3	B3 cao (B2 for 7 or 12 or 39 B1 for 5 or 10 or 15 or 13 or 150)
	(b)		150	1	B1 for 150 or ft from their table
	(c) (i)		$\dfrac{15}{150}$	1	B1 for $\dfrac{15}{'b'}$ oe
	(c)(ii)		$\dfrac{78}{150}$	2	M1 for 45 + 33 (=78) A1 for $\dfrac{78}{'b'}$ oe
16	(a)		Points plotted at (2004, 50), (2005, 80), (2006, 100), (2007, 145), (2008, 180), (2009, 185), (2010, 240), (2011, 270) and joined up with line segments	3	M1 for points plotted at all 8 years M1 for points plotted to correct heights A1 fully correct
	(b)		Upward	1	B1 for upward oe

The table in 15(a):

	Small	Medium	Large	Extra-Large	Total
Red	**5**	6	7	4	22
Blue	10	**12**	**15**	8	45
Green	**7**	8	8	**10**	33
Yellow	12	**13**	15	10	50
Total	34	**39**	45	32	**150**

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		Working	Answer	Mark	Notes
17	(a)		Pepperoni	1	B1 cao
	(b)		10	2	B2 cao (B1 for 9 or 11)
18	(a) (i)	0.25 + 0.2	0.45	2	M1 for 0.25 + 0.2 A1 for 0.45 oe
	(a) (ii)	1 – (0.45 + 0.25)	0.3	2	M1 for 1 – ('0.45' + 0.25) A1 for 0.3 oe
	(b)	1 – 0.25	0.75	2	M1 for 1 – 0.25 or 0.25 + 0.2 + '0.3' A1 for 0.75 oe
19	(a)	15.3 15.8 16.4 16.8 17.5 17.7 18.4 18.6 18.8 19.3 20.3	17.7	2	M1 for ordering the data A1 cao
	(b) (i)		Comparison of medians	1	B1 for comparison of median e.g. boys median < girls median
	(b) (ii)		Range for girls = 5 and a comparison	2	B1 for range (for girls) = 5 B1 for comparison of range e.g. boys range < girls range

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		Working	**Answer**	**Mark**	**Notes**
20		Angles 80, 50, 100, 70, 60	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 all 5 sectors NB Angles given do not count as labels