# Mark Scheme (Results)

# January 2016

Pearson Edexcel Level 1 Award
in Statistical Methods (AST10)

PEARSON

**Edexcel and BTEC Qualifications**

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

**Pearson: helping people progress, everywhere**

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

**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

| PAPER: AST10_01 | | | | | |
|---|---|---|---|---|---|
| | | Working | Answer | Mark | Notes |
| 1 | (a) | | 12 | 1 | B1 for 12 |
| | (b) | | 13 | 2 | M1 for 23 −10<br>A1 for cao |
| | (c) | | Four and quarter squares drawn | 1 | B1 for four and quarter squares drawn |
| 2 | (a) | | (6), 6, 3, 9 | 3 | M1 (for using tallies or) at least one correct frequency<br>A1 for 2 correct frequencies (or tallies)<br>A1 for cao |
| | (b) | | Correct line graph | 2 | M1 for at least 2 correct lines ft their table<br>A1 for fully correct lines ft their table |
| 3 | (a)(i)<br>(ii) | | | 2 | B1 for four numbers less than 10<br>B1 for four odd numbers |
| | (b) | | Cross marked at 0.5 | 1 | B1 for cross marked at 0.5 |

| PAPER: AST10_01 | | | | | |
|---|---|---|---|---|---|
| | | **Working** | **Answer** | **Mark** | **Notes** |
| 4 | (a) | | 80 | 2 | M1 for '2+2+3+4+.......' <br> A1 for cao |
| | (b) | (3+4)/80 | $^7/_{80}$ | 2 | M1 for (3+4) / '80' <br> A1 for $^7/_{80}$ oe |
| | (c) | <table><tr><td></td><td>Food</td><td>Clothes</td></tr><tr><td>Mode</td><td>7</td><td>8</td></tr><tr><td>Range</td><td>8</td><td>6</td></tr></table> | Two correct statements | 2 | B1 for mode of food department is less than the mode of clothes department <br> B1 for range of food department is greater than the range of clothes department |
| 5 | (a) | | 23 | 1 | B1 for 23 |
| | (b) | | 5 | 1 | B1 for 5 |
| | (c) | | Correct bar chart | 2 | M1 for 2 or 3 or 4 correct height of lines at '5', 10, 12, '7', 3 ft their answers from (a) and (b) <br> A1 for fully correct height of lines at 5, 10, 12, 7, 3 |

| | | Working | Answer | Mark | Notes |
|---|---|---|---|---|---|
| 6 | (a) | | 30 | 1 | B1 for 30 |
| | (b) | | Anglia | 1 | B1 for Anglia |
| | (c) | | Mendip | 1 | B1 for Mendip |
| | (d) | | Modern and Essex | 1 | B1 for Modern and Essex |
| | (e) | | 0.96 | 2 | M1 for 1−0.04<br>A1 for 0.96 oe |
| 7 | (a) | | 29 | 1 | B1 cao |
| | (b) | | 15,13,57<br>12,29<br>42 | 3 | B3 cao<br>(B2 for 29 or 13 correct)<br>(B1 for 15 or 12 or 42 or 57 correct) |
| | (c) | | 2 aspects | 2 | B2 for 2 correct aspects from<br>1. No box for 16+<br>2. Overlapping<br>3. No time frame |

| PAPER: AST10_01 | | | | | |
|---|---|---|---|---|---|
| | | **Working** | **Answer** | **Mark** | **Notes** |
| 8 | | | 3 aspects | 3 | B3 for 3 aspects from<br>  1. Missing label on horizontal axis<br>  2. No zero<br>  3. Break in y-axis<br>  4. No Title<br>  5. Line is too thick<br> (B2 for two correct aspects<br>B1 for one correct aspect) |
| 9 | (a) | | 0 | 1 | B1 for cao |
| | (b) | | $^{10}/_{30}$ | 2 | M1 for $^{X}/_{30}$ where X < 30 or $^{10}/_{Y}$ where Y > 10<br>A1 for $^{10}/_{30}$ oe |
| | (c) | (0×10)+(1×4)+<br>(2×5)+(3×7)+<br>(4×3)+(5×1) | 52 | 2 | M1 for (0×10)+(1×4)+ (2×5)+(3×7)+ (4×3)+(5×1)<br>A1 for cao |
| 10 | | (S, D), (S, G)<br>(E, P), (E, D), (E, G)<br>(C, P), (C, D), (C,G) | 8 correct outcomes | 2 | B2 for correct outcomes listed (No repeats)<br>(B1 for 4, 5, 6 or 7 outcomes listed, ignore extras and repeats) |

| PAPER: AST10_01 | | | | | |
|---|---|---|---|---|---|
| | | Working | Answer | Mark | Notes |
| 11 | (a) | | 0 | 1 | B1 for 0 |
| | (b) | | $^{11}/_{19}$ | 2 | M1 for $^{X}/_{19}$ where X < 19 or $^{11}/_{Y}$ where Y > 11 <br> A1 for $^{11}/_{19}$ |
| | (c) | | $^{14}/_{19}$ | 2 | M1 for (6+8)/19 or 1- (5/19) <br> A1 for $^{14}/_{19}$ oe |
| 12 | | | <table><tr><td>Types</td><td>Tally/frequency</td></tr><tr><td></td><td></td></tr></table> | 2 | M1 for data collection sheet with column/row labelled types (of animals) or at list of at least 3 types of animals <br> A1 for column/row labelled tally/frequency oe |
| 13 | (a) | | $^{7}/_{10}$ | 1 | B1 for $^{7}/_{10}$ oe |
| | (b) | | Not enough trials | 1 | B1 for not enough trials oe |
| 14 | (a) | | 2 | 1 | B1 for 2 cao |
| | (b) | | 32 | 1 | B1 for 32 cao |
| | (c) | | 48 | 2 | M1 for 48−0 <br> A1 for cao |

**PAPER: AST10_01**

| | | Working | Answer | Mark | Notes |
|---|---|---|---|---|---|
| 15 | (i) | | 0.49 | 4 | M1 for 0.32 + 0.17 |
| | | | | | A1 for 0.49 oe |
| | (ii) | | 0.51 | | M1 for 1 – '0.49' or 1 – (0.32 + 0.17) |
| | | | | | A1 for 0.51 oe |
| 16 | (a) | | 7 | 1 | B1 for cao |
| | (b) | | 5 | 2 | M1 $^{(11+1)}/_2$ term |
| | | | | | A1 for cao |
| | (c) | Mean = $\dfrac{2+2+4+4+5+5+7+7+7+8+11}{11}$ $=\dfrac{62}{11}=5.64$ | $^{62}/_{11}$ or 5.64 | 2 | M1 for $^{(2+2+4+...)}/_{11}$ A1 for $^{62}/_{11}$ oe |
| | (d) | | 9 | 2 | M1 for 11and 2 seen together |
| | | | | | A1 for cao |
| 17 | (a) | | 66 and 78 | 1 | B1 for 66 and 78 |
| | (b) | | Positive | 1 | B1 for positive or accept as the length increases so does the weight |

| PAPER: AST10_01 | | | | | |
|---|---|---|---|---|---|
| | | **Working** | **Answer** | **Mark** | **Notes** |
| 18 | (a) | Angles 81, 90, 135 and 54 | Correct pie chart | 3 | M1 for pie chart with at least one correct angle calculated or drawn<br>A1 for all angles correctly drawn<br>A1 for correct labels in 3 sectors only<br><br>NB Angles given do not count as labels |
| | (b) | | 9 | 2 | M1 for $\frac{12}{80} \times 60$<br>A1 for 9 |
| 19 | (a) | | Four points plotted correctly | 2 | B2 for (1,330), (2,400), (3,440) and (4,380) plotted correctly<br>(B1 for plotting at least 2 points correctly) |
| | (b) | | Upwards | 1 | B1 for upwards oe |
| | (c) | | 1040 | 2 | M1 for 260 + 340 + '440'<br>A1 for 1040 |