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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.

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. Note that in some cases a correct answer alone will not score marks unless supported by working; these situations are made clear in the mark scheme. Examiners should 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 award marks for the quality of written communication (QWC). 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 labelling 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.
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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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.
Partial answers shown (usually indicated in the ms by brackets) can be awarded the method mark associated with it (implied).
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks; transcription errors may also gain some credit. Send any such responses to review for the Team Leader to consider.
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.

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.

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.

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 (embedded answers).

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)

14 The detailed notes in the mark scheme, and in practice/training material for examiners, should be taken as precedents over the above notes.

<table>
<thead>
<tr>
<th>Guidance on the use of codes within this mark scheme</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1 – method mark for appropriate method in the context of the question</td>
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<tr>
<td>A1 – accuracy mark</td>
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<tr>
<td>B1 – Working mark</td>
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<tr>
<td>C1 – communication mark</td>
</tr>
<tr>
<td>QWC – quality of written communication</td>
</tr>
<tr>
<td>oe – or equivalent</td>
</tr>
<tr>
<td>cao – correct answer only</td>
</tr>
<tr>
<td>ft – follow through</td>
</tr>
<tr>
<td>sc – special case</td>
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<tr>
<td>dep – dependent (on a previous mark or conclusion)</td>
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<tr>
<td>indep – independent</td>
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<tr>
<td>isw – ignore subsequent working</td>
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<tr>
<td>Question</td>
</tr>
<tr>
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<tr>
<td>1 (a)</td>
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<td>3 (a)</td>
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<td>4 (a)</td>
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<tr>
<td>Question</td>
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</tbody>
</table>
| 5        |         | 32.35  | 3    | M1 for \(109 \times \frac{15}{100} (=16.35)\) or 0.85 oe  
M1 (dep M1) for \(109 - 16.35\) or \(109 \times \frac{85}{100} (=92.65)\) or 125 – “92.65”  
A1 cao |
| 6 (a)    |         | 0 8 9 1 4 7 8 8 2 0 1 1 2 2 5 6 3 0 3 20 | 3    | B2 for a fully correct ordered stem and leaf diagram  
[B1 for a complete unordered diagram or for an ordered diagram with at most 2 errors]  
B1 (indep) key |
| 6 (b)    |         | 2.4    | 3    | M1 for \(36 ÷ (5 + 4) (=4)\)  
A1 cao |
| 7 (a)    |         | 1      | 1    | B1 cao |
| 7 (b)    |         | 2.4    | 3    | M1 for \(\Sigma (\text{number of books} \times \text{frequency}) (=60)\)  
M1 for “60” ÷ “25”  
A1 cao  
SC B2 for an answer of 2.48 |
| 7 (c)    |         | 3.15   | 3    | M1 for \(15 \times 4.4 (=66)\)  
M1 for a complete method eg (“60” + “66”) ÷ (15 + “25”)  
A1 cao |
<table>
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<th>Answer</th>
<th>Mark</th>
<th>Notes</th>
</tr>
</thead>
</table>
| **8**    | BS Bank | Correct decision with evidence | 4    | M1 for $\frac{40000 \times 3}{100}$ oe (=1200) or 41200  
M1 for evidence of a compound interest method  
eg '41200$\times \left(\frac{103}{100}\right)$ or \(\left(\frac{103}{100}\right)^2 \times 40000\)  
A1 for 2436 or 42436  
C1 (dep at least M1) for correct decision ft for either Bank or Building Society  
OR  
M1 for 1.03  
M1 for $1.03^2$ (= 1.0609) and \(\frac{2550}{40000}\) oe  
A1 for 1.0609 and 1.06375  
C1 (dep at least M1) for correct decision ft for either Bank or Building Society |
| 9 (a)    |         | 43     | 1    | B1 42 – 44 |
| (b)      |         | 90     | 2    | M1 for evidence of reading in the range 48 - 52  
A1 88 – 92 |
| *(c)*    | Medians B 50 G 43  
Q1, B 40 G 22  
Q3, B 30 G 56  
IQRs B 30 G 34  
Allow ±1 in figs. | Comparison | 4    | B1 for boys' median = 50  
B1 for boys' IQR = 30 or girls' IQR= 34  
C1 for comparison of medians or quartiles or IQR (only if stated)  
C1 for comparison of medians and IQR with all values correct and with context |
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>10</td>
<td></td>
<td>Explanation 20</td>
<td>1</td>
<td>B1 eg One where the proportions of the strata in the sample are the same as in the population M1 for $\frac{73}{45+78+73+25} \times 60$ or $\frac{73}{221} \times 60$ oe (=19.819…) A1 cao</td>
</tr>
<tr>
<td>11</td>
<td>A: $y = 2^x$ B: $y = 10 - 2x$ C: $y = 8x - 2x^2$</td>
<td>3</td>
<td>B1cao B1cao B1cao</td>
<td></td>
</tr>
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</table>
| 12 (a)   | Probability tree | 3 | B1 for $\frac{2}{8}$ in the correct place  
B1 for $\frac{5}{7}, \frac{2}{7}, \frac{6}{7}, \frac{1}{7}$ in the correct place on a probability tree  
B1 complete probability tree with labelling eg A, B etc. |
| (b)      | $\frac{30}{56}$ | 2 | M1 $\frac{6}{8} \times \frac{5}{7}$  
A1 oe eg 0.5357... or $\frac{15}{28}$ |
| (c)      | $\frac{54}{56}$ | 3 | M1 for $\frac{6}{8} \times \frac{5}{7}$ or $\frac{6}{8} \times \frac{2}{7}$ or $\frac{2}{8} \times \frac{6}{7}$ oe eg 0.5357... or 0.214...  
M1 for $\frac{6}{8} \times \frac{5}{7} + \frac{6}{8} \times \frac{2}{7} + \frac{2}{8} \times \frac{6}{7}$ or $1 - \left(\frac{2}{8} \times \frac{1}{7}\right)$  
A1 oe eg 0.964... or $\frac{27}{28}$ |
| 13       | F  
90  
126  
144  
120  
60  
54 | 345 | 5 | M1 for use of $F = FD \times \text{Int width}$  
A1 for any 3 Fs correct  
M1 for $\frac{60}{100} \times (90 + 126 + 144 + 120) \quad (=288)$ or $\frac{60}{100} \times 480 \quad (=288)$  
M1 $\frac{1}{2} \times (60 + 54) \quad (=57)$ or $\frac{1}{2} \times 114 \quad (=57)$  
A1 cao |
**Modifications to the mark scheme for Modified Large Print (MLP) papers.**

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:

Angles: ±5°

Measurements of length: ±5 mm

<table>
<thead>
<tr>
<th>PAPER: 5MB1H_01</th>
<th>Question</th>
<th>Modification</th>
<th>Notes</th>
</tr>
</thead>
</table>
| Q2 (a)          | 2 graphs provided, one for ‘sandy soil’ and one for ‘clay soil’.  
Sandy soil graph line goes through (10, 25) and (20, 45)  
Clay soil graph line goes through (15, 20) and (25, 30)  
Points are moved to fit in with the new graph lines.  
Parts (b) and (c) have been reversed and relabelled. | B1 description eg ’Taller trees are older. Accept positive correlation. |
| Q2 (b)          | 2 graphs provided, one for ‘sandy soil’ and one for ‘clay soil’.  
Sandy soil graph line goes through (10, 25) and (20, 45)  
Clay soil graph line goes through (15, 20) and (25, 30)  
Points are moved to fit in with the new graph lines.  
Parts (b) and (c) have been reversed and relabelled. | B1 19 – 21 |
| Q2 (c)          | 2 graphs provided, one for ‘sandy soil’ and one for ‘clay soil’.  
Sandy soil graph line goes through (10, 25) and (20, 45)  
Clay soil graph line goes through (15, 20) and (25, 30)  
Points are moved to fit in with the new graph lines.  
Parts (b) and (c) have been reversed and relabelled.  
18 years has been changed to 15 years. | M1 for evidence of taking readings at two points from Sandy line, or increase excluding start eg 24÷10, 14÷5  
A1 for answer 1.8 to 2.2 within given tolerance and adjusted appropriately. |
<table>
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</table>
| Q2       | (d) 2 graphs provided, one for ‘sandy soil’ and one for ‘clay soil’.
Sandy soil graph line goes through (10, 25) and (20, 45)
Clay soil graph line goes through (15, 20) and (25, 30)
Points are moved to fit in with the new graph lines.
Parts (b) and (c) have been reversed and relabelled. | B2 for a complete explanation e.g. Trees grow at approximately **twice the rate** on sandy soil
(B1 for a partial explanation e.g. Trees grow faster on sandy soil) |
| Q3       | (a) Question for questionnaire moved to the Diagram Book. | B1 e.g. people coming from the market are more likely to have used it. |
| Q3       | (b) Question for questionnaire moved to the Diagram Book. | B1 e.g. it's a leading question, “cheap” not defined, etc. |
| Q3       | (c) Question for questionnaire moved to the Diagram Book. | B1 for a suitable question e.g. How far have you travelled to get to the market?
B1 for a set of at least 3 exhaustive, non-overlapping boxes with units, with no inequality symbols. |
| Q6       | (a) Bottom line has been drawn on the stem and leaf diagram. | B2 for a fully correct ordered stem and leaf diagram
[B1 for a complete unordered diagram or for an ordered diagram with at most 2 errors]
B1 (indep) key |
| Q6       | (b) Bottom line has been drawn on the stem and leaf diagram. | M1 for $36 \div (5 + 4) = 4$
A1 cao |
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<tr>
<td>Q7</td>
<td>(a) Frequency column on the table has been extended to allow room for working.</td>
<td>B1 cao</td>
</tr>
<tr>
<td>Q7</td>
<td>(b) Frequency column on the table has been extended to allow room for working.</td>
<td>M1 for $\Sigma$(number of books $\times$ frequency) (=60) M1 for “60” ÷ “25” A1 cao SC B2 for an answer of 2.48</td>
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<tr>
<td>Q7</td>
<td>(c) Frequency column on the table has been extended to allow room for working.</td>
<td>M1 for $15 \times 4.4$ (=66) M1 for a complete method eg (“60” + “66”) ÷ (15 + “25”) A1 cao</td>
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