CAMBRIDGE
International Education

Cambridge International AS & A Level

MATHEMATICS **9709/53**

Paper 5 Probability & Statistics 1 **October/November 2025**

MARK SCHEME

Maximum Mark: 50

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the October/November 2025 series for most Cambridge IGCSE, Cambridge International A and AS Level components, and some Cambridge O Level components.

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Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptions for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:
Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:
Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:
Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:
Rules must be applied consistently, e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

GENERIC MARKING PRINCIPLE 5:
Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).

GENERIC MARKING PRINCIPLE 6:
Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

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Mathematics-Specific Marking Principles

1 Unless a particular method has been specified in the question, full marks may be awarded for any correct method. However, if a calculation is required then no marks will be awarded for a scale drawing.

2 Unless specified in the question, non-integer answers may be given as fractions, decimals or in standard form. Ignore superfluous zeros, provided that the degree of accuracy is not affected.

3 Allow alternative conventions for notation if used consistently throughout the paper, e.g. commas being used as decimal points.

4 Unless otherwise indicated, marks once gained cannot subsequently be lost, e.g. wrong working following a correct form of answer is ignored (isw).

5 Where a candidate has misread a number or sign in the question and used that value consistently throughout, provided that number does not alter the difficulty or the method required, award all marks earned and deduct just 1 A or B mark for the misread.

6 Recovery within working is allowed, e.g. a notation error in the working where the following line of working makes the candidate's intent clear.

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Annotations guidance for centres

Examiners use a system of annotations as a shorthand for communicating their marking decisions to one another. Examiners are trained during the standardisation process on how and when to use annotations. The purpose of annotations is to inform the standardisation and monitoring processes and guide the supervising examiners when they are checking the work of examiners within their team. The meaning of annotations and how they are used is specific to each component and is understood by all examiners who mark the component.

We publish annotations in our mark schemes to help centres understand the annotations they may see on copies of scripts. Note that there may not be a direct correlation between the number of annotations on a script and the mark awarded. Similarly, the use of an annotation may not be an indication of the quality of the response.

The annotations listed below were available to examiners marking this component in this series.

Annotations

Annotation	Meaning
	More information required
	Accuracy mark awarded zero
	Accuracy mark awarded one
	Independent accuracy mark awarded zero
	Independent accuracy mark awarded one
	Independent accuracy mark awarded two
	Benefit of the doubt
	Blank Page
	Incorrect
Dep	Used to indicate DM0 or DM1

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Annotation	Meaning
DM1	Dependent on the previous M1 mark(s)
FT	Follow through
	Indicate working that is right or wrong
Highlighter	Highlight a key point in the working
ISW	Ignore subsequent work
J	Judgement
JU	Judgement
M0	Method mark awarded zero
M1	Method mark awarded one
M2	Method mark awarded two
MR	Misread
O	Omission or Other solution
Off-page comment	Allows comments to be entered at the bottom of the RM marking window and then displayed when the associated question item is navigated to.
On-page comment	Allows comments to be entered in speech bubbles on the candidate response.
PE	Judgment made by the PE
Pre	Premature approximation
SC	Special case
SEEN	Indicates that work/page has been seen

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Annotation	Meaning
SF	Error in number of significant figures
✓	Correct
TE	Transcription error
XP	Correct answer from incorrect working

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Mark Scheme Notes

The following notes are intended to aid interpretation of mark schemes in general, but individual mark schemes may include marks awarded for specific reasons outside the scope of these notes.

Types of mark

M Method mark, awarded for a valid method applied to the problem. Method marks are not lost for numerical errors, algebraic slips or errors in units. However, it is not usually sufficient for a candidate just to indicate an intention of using some method or just to quote a formula; the formula or idea must be applied to the specific problem in hand, e.g. by substituting the relevant quantities into the formula. Correct application of a formula without the formula being quoted obviously earns the M mark and in some cases an M mark can be implied from a correct answer.

A Accuracy mark, awarded for a correct answer or intermediate step correctly obtained. Accuracy marks cannot be given unless the associated method mark is earned (or implied).

B Mark for a correct result or statement independent of method marks.

DM or **DB** When a part of a question has two or more 'method' steps, the M marks are generally independent unless the scheme specifically says otherwise; and similarly, when there are several B marks allocated. The notation DM or DB is used to indicate that a particular M or B mark is dependent on an earlier M or B (asterisked) mark in the scheme. When two or more steps are run together by the candidate, the earlier marks are implied and full credit is given.

FT Implies that the A or B mark indicated is allowed for work correctly following on from previously incorrect results. Otherwise, A or B marks are given for correct work only.

- A or B marks are given for correct work only (not for results obtained from incorrect working) unless follow through is allowed (see abbreviation FT above).
- For a numerical answer, allow the A or B mark if the answer is correct to 3 significant figures or would be correct to 3 significant figures if rounded (1 decimal place for angles in degrees).
- The total number of marks available for each question is shown at the bottom of the Marks column.
- Wrong or missing units in an answer should not result in loss of marks unless the guidance indicates otherwise.
- Square brackets [ ] around text or numbers show extra information not needed for the mark to be awarded.

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Abbreviations

AEF/OE	Any Equivalent Form (of answer is equally acceptable) / Or Equivalent
AG	Answer Given on the question paper (so extra checking is needed to ensure that the detailed working leading to the result is valid)
CAO	Correct Answer Only (emphasising that no 'follow through' from a previous error is allowed)
CWO	Correct Working Only
ISW	Ignore Subsequent Working
SOI	Seen Or Implied
SC	Special Case (detailing the mark to be given for a specific wrong solution, or a case where some standard marking practice is to be varied in the light of a particular circumstance)
WWW	Without Wrong Working
AWRT	Answer Which Rounds To

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Question	Answer	Marks	Guidance
1(a)	$[(0.6)^3 =] 0.216, \frac{27}{125}$	**B1**	OE.
		1	
1(b)	**Method 1**		
	$[P(X < 9) = 1 - P(9, 10, 11) =] 1 - \{^{11}C_9(0.75)^9 (0.25)^2 + {}^{11}C_{10}(0.75)^{10} (0.25) + (0.75)^{11}\}$ $[= 1 - (0.258104 + 0.154862 + 0.042235)]$	**M1**	One term of form $^{11}C_x \left(p\right)^x \left(1-p\right)^{11-x}$ with $0 < p < 1, x \neq 0$ or 11.
		A1	Correct un-simplified expression, no terms omitted leading to final answer. Condone omission of final bracket '}' If other brackets omitted, allow recovery if 1 – 0.455 (or better) seen. Accept $\sum_9^{11} {}^{11}C_x \left(p\right)^x \left(1-p\right)^{11-x}$ with p = 0.75.
	= 0.545	**B1**	$0.5445 < p \leqslant 0.545$.
	Method 2		
	$[P(X < 9) = P(0,1,2,3,4,5,6,7,8) =] (0.25)^{11} + {}^{11}C_1(0.75)(0.25)^{10} + \ldots + {}^{11}C_7(0.75)^7(0.25)^4 + {}^{11}C_8(0.75)^8(0.25)^3$	**M1**	One term of form $^{11}C_x \left(p\right)^x \left(1-p\right)^{11-x}$ with $0 < p < 1, x \neq 0$ or 11.
		A1	Correct un-simplified expression, no more than 6 'middle' terms omitted leading to final answer. Accept $\sum_0^8 {}^{11}C_x \left(p\right)^x \left(1-p\right)^{11-x}$ with p = 0.75.
	= 0.545	**B1**	$0.5445 < p \leq 0.545$.
		3	

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<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td rowspan="5">2</td><td>
<table>
<tr><td>Scenario</td><td>S(16) D(10)</td><td></td><td></td></tr>
<tr><td>SSSSDD</td><td>4 2</td><td>$^{16}C_4 \times {}^{10}C_2$</td><td>[81900]</td></tr>
<tr><td>SSSDDD</td><td>3 3</td><td>$^{16}C_3 \times {}^{10}C_3$</td><td>[67200]</td></tr>
<tr><td>SSDDDD</td><td>2 4</td><td>$^{16}C_2 \times {}^{10}C_4$</td><td>[25200]</td></tr>
</table>
</td><td>B1</td><td>Expression of the form $^{16}C_x \times {}^{10}C_y$ with $x+y=6$ linked to a correct identified scenario.</td></tr>
<tr><td></td><td>M1</td><td>Two identified outcomes evaluated accurately, accept un-simplified.
Identification can be implied by un-simplified expression.
Condone consistent use of permutations.</td></tr>
<tr><td></td><td>M1</td><td>Sum of their values of 3 correct identified scenarios, no incorrect/repeated scenarios.
Identification can be implied by un-simplified expression.</td></tr>
<tr><td>Total = 174 300</td><td>A1</td><td>If either or both Ms not awarded, SCB1 for 174 300 WWW.</td></tr>
<tr><td></td><td>4</td><td></td></tr>
</table>

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Question	Answer	Marks	Guidance
3(a)	**Method 1** Total arrangements with Ds at ends – arrangements with Ds at ends and Fs together		
	$\frac{7!}{2!} - 6!$ [= 2520 – 720]	**M1**	$\frac{7!}{2!}$ seen alone, not multiplied or divided in a calculation nor subtracted from another value.
		M1	$\frac{l!}{m!} - 6!,\ l = 7, 8 \text{ or } 9,\ m = 1 \text{ or } 2$
	= 1800	**A1**	
	Method 2 D ^ ^ ^ ^ ^ D, Fs inserted not next to each other		
	$5! \times \frac{6 \times 5}{2}$	**M1**	$5! \times a,\ 1 \leqslant a \leqslant 30$ 1 can be implied, a is an integer. No other terms added or subtracted.
		M1	$b! \times \frac{6 \times 5}{2}$ *or* $b! \times {}^{6}C_{2}$ *or* $b! \times \frac{6P2}{2!}$. Where $b = 5, 6 \text{ or } 7$.
	= 1800	**A1**	
		3	

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Question	Answer	Marks	Guidance
3(b)	**Method 1**		
	[Number of outcomes with 4 letters between Ds (D ^ ^ ^ ^ D ^ ^ ^)] $\frac{7!}{2!}\times 4$ [= 10080]	**M1**	Accept $\frac{7!}{2}\times 4$ or 10080 alone or as the numerator or denominator of a fraction.
	[Total number of arrangements =] $\frac{9!}{2!2!}$ [= 90720] seen as denominator in a fraction	**M1**	Accept 90720 as denominator in a fraction.
	$\left[\text{Probability} =\right] \frac{10080}{90720}, \frac{1}{9}$, 0.111	**A1**	WWW.
	Method 2		
	[Total number of outcomes with 4 letters between Ds (D_1 ^ ^ ^ ^ D_2 ^ ^ ^)] 7! × 4 × 2! [= 40320]	**M1**	Accept 7! × 4 × 2! or 40320 alone or as the numerator or denominator of a fraction.
	[Total number of arrangements of $D_1AF_1F_2OD_2ILS$ =] 9! [=362880] seen as denominator in a fraction.	**M1**	Accept 362880 as denominator in a fraction.
	$\left[\text{Probability} =\right] \frac{40320}{362880}, \frac{1}{9}$, 0.111	**A1**	WWW.

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Question	Answer	Marks	Guidance
3(b)	**Method 3**		
	[When 2 F's are not part of the 4 letters between the D's] $\frac{5P4 \times 4!}{2!}$ or $\frac{5! \times 4!}{2!}$ [= 1440] [When 1F is part of the 4 letters between the D's] ${}^5C_3 \times 4! \times 4!$ [=5760] [When 2F's are part of the 4 letters between the D's] $\frac{5C2 \times 4!}{2!} \times 4!$ [=2880] [1440 + 5760 + 2880] = 10080	**M1**	Accept 10080 alone or as the numerator or denominator of a fraction.
	[Total number of arrangements =] $\frac{9!}{2!2!}$ [= 90720] seen as denominator in a fraction	**M1**	Accept 90720 as denominator in a fraction.
	$\left[\text{Probability} =\right] \frac{10080}{90720}, \frac{1}{9}, 0.111$	**A1**	WWW.
		3	

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<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td rowspan="3">4(a)</td><td rowspan="3"><table>
<tr><td>x</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td></tr>
<tr><td>P($X = x$)</td><td>$\frac{3}{16}$</td><td>$\frac{1}{16}$</td><td>$\frac{3}{16}$</td><td>$\frac{5}{16}$</td><td>$\frac{4}{16}$</td></tr>
<tr><td></td><td>0.1875</td><td>0.0625</td><td>0.1875</td><td>0.3125</td><td>0.25</td></tr>
<tr><td>Accept</td><td>0.188</td><td>0.0625</td><td>0.188</td><td>0.313</td><td>0.25</td></tr>
</table></td><td>B1</td><td>Table with correct x values and one correct probability.</td></tr>
<tr><td>B1</td><td>2 more probabilities correct linked to the correct x value, need not be in table, accept un-simplified.</td></tr>
<tr><td>B1</td><td>5 correct probabilities linked with correct outcomes.

SCB1 5 non-zero probabilities (not all 1/5) summing to 1 placed in a probability distribution table with correct x values if only one of the first two B marks are scored.</td></tr>
<tr><td></td><td></td><td>3</td><td></td></tr>
</table>

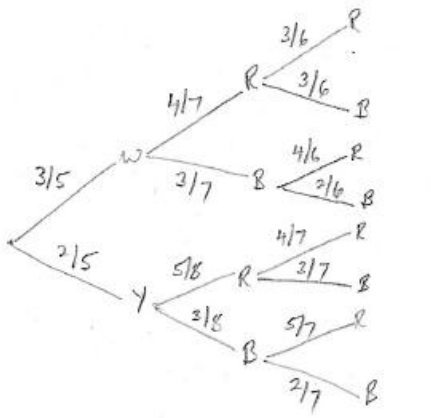
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Question	Answer	Marks	Guidance
4(b)	$[\mathrm{E}(X) =]\ [0]+1\times\frac{1}{16}+2\times\frac{3}{16}+3\times\frac{5}{16}+4\times\frac{4}{16}$ $\left[=\frac{[0]+1+6+15+16}{16}\right]$ $\left[=\frac{38}{16}=\frac{19}{8}\right]$	**M1FT**	Accept un-simplified or bold expression with probabilities ($0 < p < 1$) that add to 1. May be calculated in variance. **FT** *their* table with 4 or 5 probabilities adding to 1.
	$\mathrm{Var}(X) = \frac{1+3\times2^2+5\times3^2+4\times4^2}{16}-\left(\frac{19}{8}\right)^2$ $\left[=\frac{1+3\times4+5\times9+4\times16}{16}-\frac{361}{64}\right]$ $\left[=\frac{122}{16}-\left(\frac{19}{8}\right)^2\right]$	**M1FT**	Appropriate variance formula using *their* $(\mathrm{E}(X))^2$ value. **FT** *their* table with 4 or more probabilities ($0 < p < 1$) which need not sum to 1 or with an expression no more evaluated than shown.
	$=\frac{127}{64}, 1\frac{63}{64}, 1.98$	**A1**	Accept 1.984375 to 3 or more SF. **SCB1** for 1.98 if **M0 M1** scored.
		3	

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Question	Answer	Marks	Guidance
4(c)	**Method 1**		
	$1-\left(\frac{3}{4}\right)^7$	**M1**	$1-\left(\frac{3}{4}\right)^n$ with n = 6, 7, 8.
	= 0.867	**A1**	= 0.8665 to 4SF.
	Method 2		
	[P(X < 8) =] $\frac{1}{4}+\left(\frac{3}{4}\right)\left(\frac{1}{4}\right)+\left(\frac{3}{4}\right)^2\left(\frac{1}{4}\right)+\left(\frac{3}{4}\right)^3\left(\frac{1}{4}\right)+\left(\frac{3}{4}\right)^4\left(\frac{1}{4}\right)+\left(\frac{3}{4}\right)^5\left(\frac{1}{4}\right)+\left(\frac{3}{4}\right)^6\left(\frac{1}{4}\right)$	**M1**	Condone extra term $\left(\frac{3}{4}\right)^7\left(\frac{1}{4}\right)$ *or* the term $\left(\frac{3}{4}\right)^6\left(\frac{1}{4}\right)$ missing.
	= 0.867	**A1**	
		2	

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Question	Answer	Marks	Guidance
5(a)		**B1**	Correct tree diagram structure. (3 tiers).
		B1	Counter and first marble probabilities correct with outcomes labelled.
		B1	Second marble probabilities correct with outcomes labelled.
		3	

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<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td rowspan="3">5(b)</td><td>
<table>
<tr><td>P(WRB)</td><td>$\frac{3}{5}\times\frac{4}{7}\times\frac{3}{6}$</td><td>$\left[\frac{6}{35}\right]$</td><td>0.171(4)</td></tr>
<tr><td>P(WBR)</td><td>$\frac{3}{5}\times\frac{3}{7}\times\frac{4}{6}$</td><td>$\left[\frac{6}{35}\right]$</td><td>0.171(4)</td></tr>
<tr><td>P(YRB)</td><td>$\frac{2}{5}\times\frac{5}{8}\times\frac{3}{7}$</td><td>$\left[\frac{3}{28}\right]$</td><td>0.107(1)</td></tr>
<tr><td>P(YBR)</td><td>$\frac{2}{5}\times\frac{3}{8}\times\frac{5}{7}$</td><td>$\left[\frac{3}{28}\right]$</td><td>0.107(1)</td></tr>
<tr><td></td><td>[Total</td><td>$\frac{39}{70}$]</td><td>0.557</td></tr>
</table>
</td><td>M1</td><td>At least 2 correct 3-term products linked to correct scenarios.
May be clearly identified on tree diagram.
FT from a 3-tier tree.</td></tr>
<tr><td></td><td>M1</td><td>4 correct identified scenarios added.
May be clearly identified on the tree diagram, condone identification by correct (or FT) un-simplified products.</td></tr>
<tr><td>$=\frac{39}{70}$, 0.557</td><td>A1</td><td>SCB1 for $\frac{39}{70}$ if one or both M marks not scored WWW.</td></tr>
<tr><td></td><td>3</td><td></td></tr>
</table>

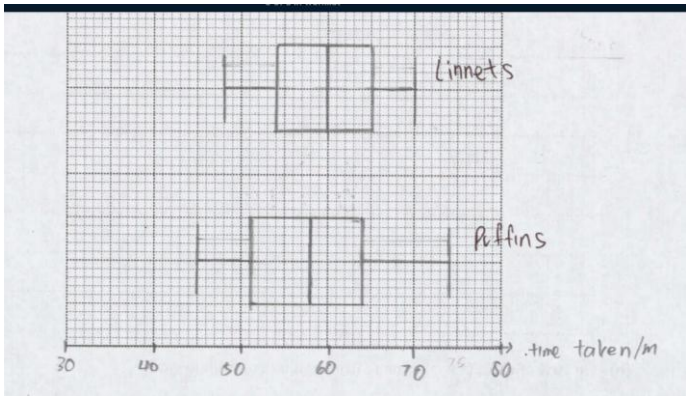
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Question	Answer	Marks	Guidance
5(c)	$\text{P(White}\mid\text{ (b))} = \dfrac{\frac{3}{5}\times\frac{4}{7}\times\frac{3}{6}+\frac{3}{5}\times\frac{3}{7}\times\frac{4}{6}}{\textit{their}\ \frac{39}{70}}\left[=\dfrac{\frac{36}{210}+\frac{36}{210}}{\textit{their}\ \frac{39}{70}}\right]$	**M1**	Correct formula for conditional probability using *their* probabilities from 3-tier tree with *their* (b) < 1 or correct in denominator. Condone $\dfrac{\frac{12}{35}\ \textit{or their}\ P(WRB)+P(WBR)\ \textit{from part b}}{\textit{their}\ \frac{39}{70}\ \textit{or unsimplified expression}}$.
	$= \frac{8}{13}$, 0.615	**A1**	
		2	

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Question	Answer	Marks	Guidance
6(a)	Linnets | Puffins 8 | 4 | 5 9 9 7 4 1 | 5 | 1 5 5 8 9 8 5 4 4 0 | 6 | 2 4 4 0 | 7 | 4 Key: 4|5|5 means 54 minutes for Linnets and 55 minutes for Puffins	**B1**	Correct stem, ignore extra values (not in reverse, not split) If a split stem-and-leaf plot is used (i.e. stem values are repeated) the remaining **B** marks are available.
		B1	Correct Linnets labelled on left, leaves in order from right to left and lined up vertically, no commas or other punctuation.
		B1	Correct Puffins labelled on same diagram, leaves in order and lined up vertically, no commas or other punctuation. Penalise each error only once in question (apart from omission of data) e.g. commas in both sets of data.
		B1	Correct non-symmetrical key, for their diagram, need both team names and 'mins' at least once here or in leaf headings (or title). If 2 separate diagrams drawn, max marks **B1** if both stems correct, **B1** if Linnets correct to the left of the stem, **B1** if both keys correct including 'mins' and team name.
		4	
6(b)	[IQR =] 65 – 54	**M1**	$64 \leqslant UQ \leqslant 68 - 51 \leqslant LQ \leqslant 57$ Implied if both quartile values are stated and an appropriate IQR calculated accurately. Condone 54 and 65 clearly identified in the table or their stem and leaf diagram.
	= 11	**A1**	
		2	

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Question	Answer	Marks	Guidance
6(c)		**B1**	Single linear scale from 45 to 75, at least 3 equally spaces values marked, using a scale of 2cm = 10 or 20 minutes only. Label to include time and minutes/min/m. **SCB1** for 2 labelled box plots correct relative to each other and no scale is present. No further marks can be gained.
		B1FT	Correct plot labelled 'Linnets' with 5 key values using their linear scale. Daylight rule applied. Whiskers not at top/bottom of box or through box (penalise only once). Condone missing vertical lines on max/min values. LQ and UQ correct or **FT** *their* values from **6(b).**
		B1	Correct plot labelled 'Puffins' with 5 key values using the same linear scale as Linnets. Whiskers not at top/bottom of box or through box (penalise only once). Condone missing vertical lines on max/min values. **SCB1** for neither plot identified assuming Linnets at top of grid and both correct. **SCB1** for only one unidentified plot – mark as Linnets.
		3	

Linnets	48	54	60	65	70
Puffins	45	51	58	64	74

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Question	Answer	Marks	Guidance
6(d)	Acceptable comment about spread/central tendency e.g. the times taken by the Puffins are more spread out/less consistent than those of the Linnets, the times taken by the Linnets are less varied/more consistent than for the Puffins, Linnets are slower [on average], Linnets have slower times Puffins are faster [on average], Puffins have faster times	**B1**	Not just a comment comparing median or range. Ignore extra comment(s) if not contradicting a correct statement.
		1	

Question	Answer	Marks	Guidance
7(a)	$[\mathrm{P}(X > 15.6) = \mathrm{P}(Z >] \ \frac{15.6-14.8}{1.5})$	**M1**	Use of ± standardisation formula with 15.6, 14.8 and 1.5 substituted, condone σ^2, condone $\sqrt{\sigma}$, condone continuity correction of ± 0.05.
	$[= 1-\Phi(0.5333)]$ $= 1-0.7029$	**M1**	Calculating the appropriate probability area (leading to their final answer, expect < 0.5).
	$= 0.297$	**A1**	AWRT 0.297. If one or both **M** marks not awarded, **SCB1** for AWRT 0.297 WWW.
		3	

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Question	Answer	Marks	Guidance
7(b)	$[P(X > 15.6) = P(Z >)]$ $[P(Z > \frac{t-14.8}{1.5}) = 0.9]$ $\frac{t-14.8}{1.5} = -1.282$	**B1**	-1.282 or 1.282 seen, CAO – critical value.
		M1	Using ± standardisation formula with 14.8, 1.5 and t equating to a z-value (not 0.8159, 0.1841, 0.9, 0.1, 0.5398, 0.4602 …) not σ^2 , not $\sqrt{\sigma}$, no continuity correction.
	$t = 12.9$	**A1**	AWRT 12.9.
		3	

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Question	Answer	Marks	Guidance
7(c)	[P(X > 13.8) = P(Z >] $\left(\frac{13.8-14.8}{1.5}\right)$ and/or [P(X < 15.8) = P(Z <] $\left(\frac{15.8-14.8}{1.5}\right)$ **Or** [P(Z) >] $\left(\frac{-1}{1.5}\right)$ and/or [P(Z) <] $\left(\frac{1}{1.5}\right)$	**M1**	Substituting 14.8 and 1.5 and either 13.8 or 15.8 appropriately into one ±standardising formula, not σ^2 or $\sqrt{\sigma}$, no continuity correction. **SCM1** – Condone substituting 14.8 and 1.5 and either 14.3 or 15.3 appropriately into one ±standardising formula, not σ^2 or $\sqrt{\sigma}$, no continuity correction.
	[= 2 $\Phi(0.6667)-1$] $=2\times0.7477-1$ Or $2\times(0.7477-0.5)$ Or $0.7477-(1-0.7477)$ Or $0.7477-0.2523$	**M1**	Calculating the appropriate probability area (leading to their final answer, expect < 0.5) from their Z-values.
	= 0.495(4)	**A1**	AWRT 0.495. If one or both **M** marks not awarded, **SCB1** for AWRT 0.495 SOI.
	[Expected number of days =] 0.4954 × 5 × 45 = 111.465, so 111 days	**B1FT**	Strict **FT** *their* at least 4 figure probability × 225 (Check with calculator). One integer answer, expect 111 or 112. No indication of 'approximation', e.g. ≈, ≅, *about*, 3SF.
		4	

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