CAMBRIDGE
International Education

Cambridge O Level

STATISTICS **4040/22**

Paper 2 **October/November 2025**

MARK SCHEME

Maximum Mark: 100

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.

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.

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
	Correct item
	Incorrect item
M1	M0, M1, M2 Method marks awarded
A1	A0, A1, A2 Accuracy marks awarded
B1	B0, B1, B2 Independent marks awarded
SC	Special case
FT	Correct follow through
ISW	Ignore subsequent working
BOD	Benefit of doubt
MR	Misread
TE	Transcription error
^	Essential element of answer/working missing
XP	Incorrect process
SEEN	Working seen but no credit awarded; blank page checked
Highlight	Use anywhere it is helpful to clarify the marking

NOTES FOR MARKERS

Awarding marks

M marks are for method and are not lost for purely numerical errors.
A marks are for accuracy and depend on a correct method.
B marks are independent of method.

Once an acceptable answer is seen, ignore subsequent working, except where such working illustrates a conceptual misunderstanding.

No response

If there is any attempt at a solution award 0 marks not NR. "-" or "?" constitute no attempt at a solution.

Abbreviations

AG answer given (on question paper)
awrt answer which rounds to
cao correct answer only
dep mark depends on earlier, asterisked (*), mark
ft follow through (from earlier error)
oe or equivalent
SC special case
soi seen or implied
nfww not from wrong working

Question	Answer	Marks	Partial Marks
1	<table><tr><th></th><th>Lower class boundary</th><th>Upper class boundary</th><th>Mid-point</th><th>Class width</th></tr><tr><td>No of visitors</td><td>9.5</td><td>19.5</td><td>14.5</td><td>10</td></tr><tr><td>Age</td><td>10</td><td>20</td><td>15</td><td>10</td></tr><tr><td>Time</td><td>9.5</td><td>19.5</td><td>14.5</td><td>10</td></tr></table> ***B1*** *for each correct pair of boundaries* ***and*** ***B3*** *for all correct mid-points and class widths* ***or*** ***B2*** *for 4 or 5 correct mid-points and class widths* ***or*** ***B1*** *for 2 or 3 correct mid-points and/or class widths*	**6**	B6

Question	Answer	Marks	Partial Marks
2(a)(i)	32 – 14	**2**	M1
	18		A1
2(a)(ii)	$\left(\frac{28-12}{48}\right)[\times 100]$	**2**	M1
	33.3[%]		A1
2(b)(i)	A comment referencing <u>proportions</u> e.g.: [He appears correct/is correct because] • the proportion of adults using TV & Radio is smaller than the proportion of children using TV & Radio • 25% of adults and 31(.25)% of children use TV & Radio • 12/48 adults and 10/32 children use TV & Radio	**2**	B1
	A comment about the <u>sample</u> e.g.: [He may not be correct/the conclusion may be unreliable/he is not correct because] • the children from his class may not be a representative sample • the parents/carers may not be typical of all adults • the sample is small		B1
2(b)(ii)	Percentage sectional bar chart **or** pie chart(s) **or** comparative pie chart(s)	**1**	B1

Question	Answer	Marks	Partial Marks
3(a)	**EITHER** 5 +	**3**	M1
	(50 – 37)/25 × (7.5 – 5)		M1
	OR 7.5 –		(M1
	(62 – 50)/25 × (7.5 – 5)		M1)
	OR (5 × (62 – 50) + 7.5 × (50 – 37))/25		(M2)
	6.3		A1
3(b)	[$] 10.70	**1**	B1
3(c)	2/5 × 8 **or** 3/5 × 8 **oe**	**3**	M1*
	2/5 × 8 + 2 **oe**		M1dep
	5		A1

Question	Answer	Marks	Partial Marks
4(a)	Independent events: *A* and *C*, *A* and *D*, *B* and *C*, *B* and *D* ***B1*** *for two or three from above and no others or for all four from above and one other*	**3**	B2
	Mutually exclusive events: *A* and *B*		B1
4(b)	Use of P(*B* and *C*) = P(*B*) × P(*C*)	**4**	M1
	P(*B* and *C*) = 0.18		A1
	Use of P(*B* or *C*) = P(*B*) + P(*C*) – 'P(*B* and *C*)'		M1
	P(*B* or *C*) = 0.72		A1
4(c)	5	**1**	B1

Question	Answer	Marks	Partial Marks
5(a)	[±] $\frac{21-23}{6}$ **oe** **or** [±] $\frac{x-30}{9}$ **or** $\frac{21-23}{6}=\frac{x-30}{9}$ **oe**	**2**	M1
	27		A1
5(b)	$\frac{x-23}{6}=\frac{x-30}{9}$ **oe**	**2**	M1
	9		A1
5(c)	$\frac{43-23}{6}=\frac{80-45}{s}$ **oe**	**2**	M1
	10.5		A1

Question	Answer	Marks	Partial Marks
6(a)	248, …	**2**	M1
	248, 074, 153, 128		A1
6(b)(i)	49, 08, 42, 53, 61, 27 *For B2 and for B1 they must have exactly six values (which may include 08 twice) in the range 00 to 71, with only one value in the range 36 to 47.* ***B2** for one independent error* ***B1** for two independent errors*	**3**	B3*
6(b)(ii)	Attempts to list or count the Diesel cars (those in range 48 to 71) in their sample 49, 53, 61 **or** 3 cars	**3**	M1*
	24/72 × 6 = 2		M1*
	So not representative		A1dep

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Partial Marks</th></tr>
<tr><td>7(a)</td><td>10% in 1960 and 17% in 2020

B2 for 10 in 1960 and 17 in 2020 or for 10% and 17%
or for 10% in 1960 or for 17% in 2020
B1 for 10 and 17 or for 10% or for 17%
or for 10 in 1960 or 17 in 2020</td><td>3</td><td>B3</td></tr>
<tr><td>7(b)(i)</td><td><table><tr><td></td><td>1960</td><td>2020</td></tr><tr><td>Median</td><td>10%</td><td>39%</td></tr><tr><td>Range</td><td>44%</td><td>54%</td></tr></table>
B2 for 3 correct entries
B1 for 1 or 2 correct entries

SC1 for 1.0%, 3.9%, 4.4% and 5.4%.</td><td>3</td><td>B3</td></tr>
<tr><td>7(b)(ii)</td><td>Median: appropriate as not affected by the extreme value/47[%]
and
Range: not appropriate as affected by the extreme value/47[%]

B1 for 1 correct statement

If B0 scored, SC1 for median is appropriate and range is not appropriate with incomplete reasons</td><td>2</td><td>B2</td></tr>
<tr><td>7(c)</td><td>No with a correct reason, e.g.
• it does not show paired data
• we do not know which country each piece of data is for
• we do not know which piece of data from 1960 corresponds to which piece of data from 2020
• 47% in 1960 might be from the same country as 39% in 2020 (any specific e.g. of a decrease)
• the highest value in 1960/47% might have decreased
• 18% might have decreased</td><td>1</td><td>B1</td></tr>
<tr><td rowspan="4">7(d)</td><td>$4/11 \times 3/10 \times 7/9 \times 3$

Product of three probabilities $\times$ 3</td><td rowspan="4">4</td><td>M1</td></tr>
<tr><td>$n \times (n - 1) \times (n - 2)$ in denominator</td><td>M1</td></tr>
<tr><td>4 and 7 in numerator of a product of three probabilities</td><td>M1</td></tr>
<tr><td>14/55 oe</td><td>A1</td></tr>
</table>

Question	Answer	Marks	Partial Marks
8(a)	100s in 2022 column	**5**	B1
	371/350 [× 100]		M1
	Buildings in 2023 = 106		A1
	Bills in 2023 = 103.5		B1
	Food in 2023 = 100 **ft**		B1ft
8(b)	{Decrease in the price/cost} {of 1.5%} {between 2022 and 2023} ***B1*** *for any two correct components*	**2**	B2
8(c)	(12 × '106' + 6 × '103.5' + 5 × '100' + 3 × 98.5	**3**	M1*
	/(12 + 6 + 5 + 3)		M1dep
	103.4		A1
8(d)(i)	9100 × '103.4'/100	**2**	M1
	9410 **cao**		A1
8(d)(ii)	Any two correct reasons in the context of the hotel, e.g. • There may have been more/fewer repairs needed. • The amount of electricity used may have changed. • The amount of food bought may have changed. ***B1*** *for one correct reason*	**2**	B2
8(e)	Changed because the total/sum of the weights has changed **oe** or Increased because the total of the weights is less [in 2024] **oe** or Changed because 5/26 ≠ 5/23 **oe**	**1**	B1

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Partial Marks</th></tr>
<tr><td>9(a)</td><td>0.6</td><td>1</td><td>B1</td></tr>
<tr><td rowspan="4">9(b)(i)</td><td>‘0.6’ × ‘0.6’</td><td rowspan="4">5</td><td>M1</td></tr>
<tr><td>0.25 + ‘0.6’ × 0.25 (= 0.4) or 0.15 + ‘0.6’ × 0.15 (= 0.24)

M1 for ‘0.6’ × 0.25 (= 0.15) or ‘0.6’ × 0.15 (= 0.09)</td><td>M2</td></tr>
<tr><td>A table with three amounts 0, 1 and 2 and each with a single probability</td><td>M1</td></tr>
<tr><td><table><tr><td>Amount ($)</td><td>0</td><td>1</td><td>2</td></tr><tr><td>Probability</td><td>0.36</td><td>0.4</td><td>0.24</td></tr></table></td><td>A1</td></tr>
<tr><td>9(b)(ii)</td><td>That the throws are independent/probabilities remain the same oe</td><td>1</td><td>B1</td></tr>
<tr><td rowspan="2">9(b)(iii)</td><td>$\sum('x' \times 'P(x)') =$ [‘0’ × ‘0.36’] + [‘1’ ×] ‘0.4’ + ‘2’ × ‘0.24’</td><td rowspan="2">2</td><td>M1</td></tr>
<tr><td>0.88</td><td>A1</td></tr>
<tr><td rowspan="5">9(c)(i)</td><td>(P($2) =) 0.65 × 0.65 (= 0.4225)</td><td rowspan="5">5</td><td>B1</td></tr>
<tr><td>(P($3) =) 0.65 × 0.35 (= 0.2275)
and
(P($3) =) 0.35 × 0.25 (= 0.0875)</td><td>B1</td></tr>
<tr><td>(P($4) =) 0.35 × 0.75 (= 0.2625)</td><td>B1</td></tr>
<tr><td>2 × ‘0.4225’ + 3 × (‘0.2275’ + ‘0.0875’) + 4 × ‘0.2625’ oe
(= 0.845 + 0.945 + 1.05)</td><td>M1</td></tr>
<tr><td>2.84</td><td>A1</td></tr>
<tr><td rowspan="2">9(c)(ii)</td><td>[±] 20 × (3 – ‘2.84’) oe</td><td rowspan="2">2</td><td>M1</td></tr>
<tr><td>Profit of $3.20 ft

No ft for ‘2.84’ = 3</td><td>A1ft</td></tr>
</table>

Question	Answer	Marks	Partial Marks
10(a)	{Discrete} {Quantitative} ***B1*** *for 1 correct word*	**2**	B2
10(b)	x = 1952	**3**	B1
	y = 2479		B1
	z = 2488.5		B1
10(c)	[±] (1750 – 2463.5) **or** [±] (1758 – 2507.25) **or** [±] (1750 + 1758 – (2463.5 + 2507.25))	**3**	M1
	[±] ('–713.5' + '–749.25')/2 **oe**		M1
	–731(.375)		A1
10(d)	6 correct plots horizontally and vertically **ft** ***B1ft*** *for 5 correct plots horizontally and vertically* ***or*** *6 correct plots horizontally* ***or*** *6 correct plots vertically*	**3**	B2ft
	Appropriate trend line **ft**		B1ft
10(e)	Their trend line reading at 2025 Q2 + 215 e.g. 2565 + 215	**2**	M1
	Answer in range 2760 to 2805 with correct working shown		A1
10(f)	A correct explanation e.g.: • We do not know the numbers of [domestic] flights • There might be a lot more domestic flights in total • We do not know the trend/trend line [for domestic flights] • The seasonal component only tells us how far above or below the trend line the number of flights is, (on average) • The trend line (or moving average) values might be much greater for domestic flights	**1**	B1

