

Cambridge International AS & A Level

THINKING SKILLS**9694/11**

Paper 1 Problem Solving

October/November 2024**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 2024 series for most Cambridge IGCSE, Cambridge International A and AS Level components, and some Cambridge O Level components.

This document consists of **8** printed pages.

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.

NOTES FOR MARKERS**Working**

Where a final answer is underlined in the mark scheme, full marks are awarded for a correct answer, regardless of whether there is any supporting working, unless an exception is noted in the mark scheme.

For partial credit, the evidence needed to award the mark will usually be shown on its own line in the mark scheme, or else will be defined in italic text.

For explanations and verbal justifications, apply the principle of ‘words to that effect’.

Units

Unless required by the question or mark scheme, units such as \$ do not need to be seen to award the marks.

No response

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

Abbreviations

The following abbreviations may be used in a mark scheme:

AG	answer given (on question paper)
awrt	answer which rounds to
dep	mark depends on earlier, asterisked (*), mark
ft	follow through (from earlier error)
oe	or equivalent
SC	special case
soi	seen or implied

Annotations

Where the answer is underlined in the mark scheme, and a candidate's correct final answer is both clear and clearly identified (encircled, underlined etc.), it is not necessary to annotate that item; nor is it necessary to annotate when there is No Response.

Where there is a response that scores 0, either SEEN should be used, or some other annotation(s) to indicate why no marks can be awarded (Caret, TE, NGE, Cross).

Partial credit should be indicated with a 1 (or, occasionally, a 2) at the point at which that mark has been earned.

The highlighter should be used anywhere it is helpful to clarify the marking.

	Correct item
	Incorrect item
	Individual mark of partial credit
	Double mark of partial credit
	Essential element of answer/working missing
	Judged to be not good enough to earn the relevant credit
	Benefit of doubt
	Correct follow through
	Transcription error
	Special case
	Working seen but no credit awarded; blank page checked
Highlight	Use anywhere it is helpful to clarify the marking

Question	Answer	Marks
1(a)	\$10	1
1(b)	\$10	1
1(c)	1	1

Question	Answer	Marks
2(a)	Dirac and Singh	1
2(b)	Nuts and Wheat	1
2(c)	Fisher Pie, Lamb Shrewsbury and Beaufort Cheese Eagle Eyes, Yale Trotters and Adam's Apple Pie	1

Question	Answer	Marks
3(a)	(Apple is the most expensive) $2.75 \times 0.25 = 0.6875$ [1] $275 \times 0.25 = \underline{\$68.75}$ <i>If 0 scored, award 1 mark for any soap calculated correctly</i>	2
3(b)	6 kg of Vanilla soap requires 60 g of scent oil 4 kg of Ginger soap requires 70 g of scent oil <i>1 mark for either</i> <u>130 g</u>	2

Question	Answer	Marks
4(a)	(From before 17) Dec 1965 to (at least 20) July 1969 [1] <u>44</u>	2
4(b)	July ('69 – 12 =) '57 earliest [1] Dec ('65 – 8 =) '57 is latest [1]	2

Question	Answer	Marks
5(a)	7	1
5(b)	A:10, C:12, O:8, S:6,	1

Question	Answer	Marks
6	<u>111</u> 1 mark for any of: Day 6 16 Day 7 25 Day 8 42 Day 9 68 SC: 1 mark for final answer 64 OR for final answer 99	2

Question	Answer	Marks
7(a)	Sight of 272 (children) and 136 (adults) [1] $(272 \times \$10) + (136 \times \$4) = \$3264$	2
7(b)	A search attempt, correctly calculated, involving 355 people, including at least 200 children, e.g. $((200 \times \$10) + (155 \times \$4) = \$2620$ [1] <u>240</u> children OR Algebraic approach: $c + a = 355$ AND $10c + 4a = 2860$ oe [1] <u>240</u> children	2
7(c)	Maximum income results from as close as possible to 4 children for every adult $408 \div 5$ [1] = 81 remainder 3, so there would be 82 adults and $81 \times 4 + 2 = 326$ children $(326 \times \$10) + (82 \times \$4) = \$3588$	2

Question	Answer	Marks
8(a)	08:32 [1] for 7 min [1]	2
8(b)	7 rooms [1] and 25 min [1]	2

Question	Answer	Marks
9	Week 1 profit = $45 \times (\$1.40 - \$1) = \$18$ [1] In week 2, 54 loaves sold at $\$1.40 = \75.60 , so cost = $\$75.60 - \$18 = \$57.60$ Number sold = $\$57.60/\0.90 or $\$57.60/\$0.80 = 64$ or 72 3 marks for both 64 and 72 and no others 2 marks for only one of them with no more than 1 incorrect	3

Question	Answer	Marks
10(a)	Jasmine and Fred	1
10(b)	Gemma v Jasmine [1] Ian v Kelly [1] <i>Award 1 mark for both correct and 1 extra</i>	2
10(c)	HI 4-2, HJ 5-4, HK 5-1 [1] As all lost to Harold their score should be the same as their number of goals, so Harold must have played <u>Jasmine</u>	2
10(d)	(When points from games against Fred are discarded:) Gemma would lose 4 points/will have 21 points Ian would lose 5 points/will have 20 points <i>1 mark for either 2 marks for both statements and 'Gemma'</i>	2

Question	Answer	Marks
11(a)	1 of each box requires 22 of each type of chocolate. [1] So 9 boxes can be made. Total cost is $9 \times \$ (12 + 19 + 29) =$ <u>\$540</u> .	2
11(b)	(10 of each type can be packed as a small and medium box for a total of \$31, which is better than the price of a large box for fewer chocolates,) so large boxes should not be packed. [1] 20 sets of 10 of each type would cost <u>\$620</u>	2

Question	Answer	Marks
12(a)	Maximum eggs from order = 84, up to 28 [1] can be duck Minimum duck eggs per bird per week = 3 AND minimum chicken eggs per bird per week = 1 [1] 10 ducks and 56 chickens OR 9 ducks and 57 chickens <u>66</u>	3

Question	Answer	Marks
12(b)	Minimum eggs used for orders = 60 Maximum duck eggs per bird per week = 7 Maximum chicken eggs per bird per week = 4 <i>1 mark for any two of the above</i> Maximum eggs = 372 [1] <u>312</u> <i>SC: 2 marks for final answer of 240 SC: 1 mark for 84D and 216C (= 300) seen</i>	3

Question	Answer	Marks
13	Andrew \$23 [1], Margaret \$3 [1] <i>1 mark for A owes D \$20, A owes M \$3, M owes D \$6</i>	2