CAMBRIDGE
International Education

Cambridge International AS & A Level

THINKING SKILLS **9694/12**

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.

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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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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

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

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Question	Answer	Marks
1(a)	6	**1**
1(b)	18	**1**

Question	Answer	Marks
2(a)	$17	**1**
2(b)	13:45 **[1]** 17:30 **[1]**	**2**

Question	Answer	Marks
3(a)	$59.25 P: 8 × $3 = $24 O: 1 × $2.50 = $2.50 G: 1 × $10 = $10 St: 6 × $2.25 = $13.50 B: 5 × $1.50 = $7.50 Su: 1 × $1.75 = $1.75 *1 mark for any 4 ingredient costs correct OR for all quantities correct* *SC: 1 mark for final answer of $58.90*	**2**
3(b)	Separately they will pay $3 + $4.50 each, so in total $15 Together they will pay $4.50 + $6.75 = $11.25 *1 mark for either* *OR for saving $1.50 + $2.25* Total saving = $15 – $11.25 = $3.75	**2**
3(c)	$1.50	**1**

Question	Answer	Marks
4	Old rate: 3600 ÷ 40 = 90 items per hour, 90 × 25¢ = $22.50 per hour New rate: 3600 ÷ 30 = 120 items per hour, 120 × 25¢ = $30.00 per hour *1 mark for either old or new pay rate correct* $7.50 extra per hour 420 ÷ $7.50 = 56 hours OR $420 ÷ $0.25 = 1680 items to check 1680 × 30seconds = 14 **[1]** hours 14 ÷ ¼ = 14 × 4 = 56 hours	**2**

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Question	Answer	Marks
5(a)(i)	$3	**1**
5(a)(ii)	$5	**1**
5(b)	1-hour hires could start at 08:00, 09:20, 10:40, 12:00, 13:20, 14:40, 16:00, **[1]** but there would not be time for a boat to be hired at 17:20. One of the hires can be extended to 2 hours. $6 \times \$8 + 1 \times \$11 = \$59$.	**2**

Question	Answer	Marks
6	Roy has scored 40% of 60% = 24% of all the goals scored.**[1]** Then **either**: 208 divides in the ratio 5 : 3 **[1]** to give Paul – 130 goals and Roy – 78 goals **or**: 208 is 64% of all the goals scored, so 1% is 3.25 **[1]** and therefore the total number of goals scored is 325 of which 40% and 24% give Paul – 130 goals and Roy – 78 goals. OR A search attempt, correctly calculated, involving 40% of an amount and 40% of the remaining 60% **[1]** A second attempt with the totals closer to 208 **[1]** Paul – 130 goals and Roy – 78 goals $0.4x + 0.6(0.4x) = 208$ **[1]** $X = 325$ **[1]** Paul – 130 goals and Roy – 78 goals	**3**

Question	Answer	Marks
7(a)	For example, Adele leaves at 10:10, catches 10:20 to Roville arriving 10:55, then 11:15 to Tupa **[1]** arriving 11:55, then 15-minute walk, so arrives at 12:10 This is shortest since minimises first walk and all buses are at 30-minute intervals. Shortest journey time is 2 hours OR The second bus can be caught no earlier than 65 minutes after leaving her house **[1]** A further 55 minutes gives a total of 2 hours	**2**
7(b)	Adele must arrive at Tupa by 15:05, so catches 14:05 bus from Roville **[1]** Catches 13:20 from Ocken, so must leave home by 13:10	**2**
7(c)	Adele arrives at Roville at 10:55 and Ed arrives at 11:25, so Adele arrives first by 30 minutes.	**1**

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Question	Answer	Marks
8(a)(i)	Only $35 divides into $560 16 books	**1**
8(a)(ii)	($1785 – 560 =) $1225 for (81 – 16 =) 65 books for the two books **[1]** *1 mark for any search with $1225 or 65 books AND more $15 books than $25 books* 40 of the $15 and 25 of the $25 OR Algebraic approach: ($1785 – 560 =) $1225 for (81 – 16 =) 65 books for the two books **[1]** $x + y = 65$ AND $15x + 25y = 1225$ **oe [1]** 40 of the $15 and 25 of the $25	**3**
8(b)	162 books bought with special offer 54 sets bought **[1]** $0.8 \times \$75 \times 54 =$ $3240	**2**

Question	Answer	Marks
9(a)	1 August **[1]** and 2 August **[1]**	**2**
9(b)	20 days **[1]**, beginning on either 25 July **[1]** or 31 August **[1]**	**3**

Question	Answer	Marks
10(a)	83	**1**
10(b)	18	**1**

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Question	Answer	Marks
11	If all 300 were delivered intact, Swiftpost would have been paid \$9, which is \$1.35 **[1]** more than they were paid. Each broken egg reduces their payment by 9c **[1]** \$1.35/9 = 15 eggs were broken, so 285 delivered intact. OR A search attempt, correctly calculated, with a total of 300 eggs and a minimum of 201 unbroken eggs **[1]** A second attempt with number of unbroken eggs closer to 285 **[1]** 285 OR $x + y = 300$ and $3x - 6y = 765$ **oe [2]** 285	**3**

Question	Answer	Marks
12(a)	24×8 **[1]** 48×16 **[1]**	**2**
12(b)	24×16 **[1]** 36×24 **[1]**	**2**
12(c)	30×20 Award 1 mark for 42×28 OR 54×36	**2**

Question	Answer	Marks
13(a)	The slowest runner will complete 16/20 **[1]** of the 100 m in the time the fastest runner runs 100 m. $4/20 \times 100 =$ 20 m (100/16 – 100/20 =) 1.25 **[1]** $1.25 \times 16 =$ 20	**2**
13(b)	When the winner crosses the finish line, the second-placed runner is 15/18 **[1]** of the 90 m they have to run. $15/18 \times 90 =$ 7 5m, so 15 m behind the winner. OR The second-placed runner runs 90 m in 18 s, so at 5 m/s **[1]**. In 15 seconds this runner runs 75 m, so is 15 m from the finish line.	**2**

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