Cambridge Assessment International Education

Cambridge Lower Secondary Sample Test

For use with curriculum published in September 2020

Mathematics Paper 2

Mark Scheme

Stage 8

M_S8_02_MS/8RP

General guidance on marking

Difference in printing

It is suggested that schools check their printed copies for differences in printing that may affect the answers to the questions, for example in measurement questions.

Brackets in mark scheme

When brackets appear in the mark scheme this indicates extra information that is not required but may be given.

For example:

Question	Answer	Mark	Part marks	Guidance
5	19.7 or 19.6(58)	1		

This means that 19.6 is an acceptable truncated answer even though it is not the correct rounded answer.
The … means you can ignore any numbers that follow this; you do not need to check them.

Accept
- any correct rounding of the numbers in the brackets, e.g. 19.66,
- truncations beyond the brackets, e.g. 19.65

Do not accept
- 19.68 (since the numbers in brackets do not have to be present but if they are they should be correct).

These tables give general guidelines on marking learner responses that are not specifically mentioned in the mark scheme. Any guidance specifically given in the mark scheme supersedes this guidance.

Number and place value

The table shows various general rules in terms of acceptable decimal answers.

Accept
Accept omission of leading zero if answer is clearly shown, e.g. **.675**
Accept tailing zeros, unless the question has asked for a specific number of decimal places or significant figures, e.g. **0.7000**
Accept a comma as a decimal point if that is the convention that you have taught the learners, e.g. **0,638**

Units

For questions involving quantities, e.g. length, mass, money, duration or time, correct units must be given in the answer. Units are provided on the answer line unless finding the units is part of what is being assessed.

The table shows acceptable and unacceptable versions of the answer 1.85 m.

	Accept	**Do not accept**
If the unit is given on the answer line, e.g. ..... m	Correct conversions, provided the unit is stated unambiguously, e.g. .....185 cm..... m (this is unambiguous since the unit cm comes straight after the answer, voiding the m which is now not next to the answer)	.....185..... m .....1850.... m etc.
If the question states the unit that the answer should be given in, e.g. 'Give your answer in metres'	1.85 1 m 85 cm	185; 1850 Any conversions to other units, e.g. 185 cm

Money

In addition to the rules for units, the table below gives guidance for answers involving money. The table shows acceptable and unacceptable versions of the answer $0.30

	Accept	**Do not accept**
If the amount is in dollars and cents, the answer should be given to two decimal places	$0.30 For an integer number of dollars it is acceptable not to give any decimal places, e.g. $9 or $9.00	$0.3 $09 or $09.00
If units are not given on the answer line	Any unambiguous indication of the correct amount, e.g. 30 cents; 30 c $0.30; $0-30; $0=30; $00:30	30 or 0.30 without a unit $30; 0.30 cents Ambiguous answers, e.g. $30 cents; $0.30 c; $0.30 cents (as you do not know which unit applies because there are units either side of the number)
If $ is shown on the answer line	All unambiguous indications, e.g. $.....0.30....., $.....0-30....., $.....0=30....., $.....00:30.....	$.....30..... Ambiguous answers, e.g. $.....30 cents....., $.....0.30 cents..... **unless** units on the answer line have been deleted, e.g. ~~$~~.....30 cents.....
If cents is shown on the answer line	.....30.....cents	.....0.30.....cents Ambiguous answers, e.g. .....$30 .....cents; .....$0.30 .....cents **unless** units on the answer line have been deleted, e.g. .....$0.30.....~~cents~~

Duration

In addition to the rules for units, the table below gives guidance for answers involving time durations. The table shows acceptable and unacceptable versions of the answer 2 hours and 30 minutes.

Accept	Do not accept
Any unambiguous indication using any reasonable abbreviations of hours (h, hr, hrs), minutes (m, min, mins) and seconds (s, sec, secs), e.g. 2 hours 30 minutes; 2 h 30 m; 02 h 30 m Any correct conversion with appropriate units, e.g. 2.5 hours; 150 mins **unless** the question specifically asks for time given in hours and minutes	Incorrect or ambiguous formats, e.g. 2.30; 2.3; 2.30 hours; 2.30 min; 2 h 3; 2.3 h (this is because this indicates 0.3 of an hour (i.e.18 minutes) rather than 30 minutes) 02:30 (as this is a 24-hour clock time, not a time interval) 2.5; 150

Time

The table below gives guidance for answers involving time.

The table shows acceptable and unacceptable versions of the answer 07:30

	Accept	Do not accept
If the answer is required in 24-hour format	Any unambiguous indication of correct answer in numbers, words or a combination of the two, e.g. 07:30 with any separator in place of the colon, e.g. 07 30; 07,30; 07-30; 0730	7:30 7:30 am 7 h 30 m 7:3 730 7.30 pm 073 07.3
If the answer is required in 12-hour format	Any unambiguous indication of correct answer in numbers, words or a combination of the two, e.g. 7:30 am with any separator in place of the colon, e.g. 7 30 am; 7.30 am; 7-30 am 7.30 in the morning Half past seven (o'clock) in the morning Accept am or a.m.	Absence of am or pm 1930 am 7 h 30 m 7:3 730 7.30 pm

Algebra

The table shows acceptable and unacceptable versions of the answer $3x - 2$

Accept	Do not accept
$x3 - 2$; $3 \times x - 2$	$3x + -2$ if it is supposed to be in simplest form
Case change in letters	
Changes in letters as long as there is no ambiguity	

Accept extra brackets when factorising, e.g. $5(x + (3 + y))$
Teachers must mark the final answer given. If a correct answer is seen in working but final answer is given incorrectly then the final answer must be marked. If no answer is given on the answer line then the final line of the working can be taken to be the final answer.

Inequalities

The table shows acceptable and unacceptable versions of various answers.

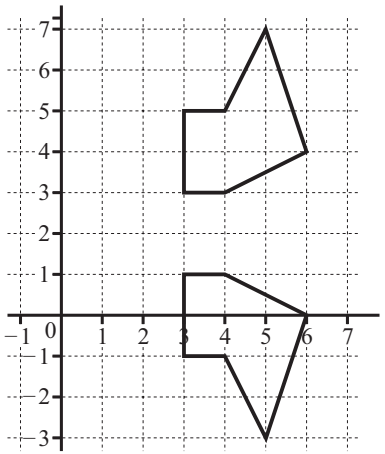
For the following	Accept	Do not accept
For $6 \leq x < 8$	[6, 8)	$< x <$
For $x \leq -2$	$(-\infty,-2]$	$x < -2$
For $x > 3$	$(3, \infty)$ $3 < x$	Just '3' written on the answer line, even if $x > 3$ appears in the working

Plotting points

The table shows acceptable and unacceptable ways to plot points.

Accept	Do not accept
Crosses or dots plotted within $\pm\frac{1}{2}$ square of the correct answer The graph line passing through a point implies the point even though there is no cross	A horizontal line and vertical line from the axes meeting at the required point

Question	Answer	Mark	Part Marks	Guidance
1	57	**2**	Award 1 mark for $304 \div (3 + 8 + 5)$ or better.	1 mark implied by 19
2	48 (km)	**1**		**Accept** answers in the range 48 – 48.3
3(a)	Ticks not correct and gives correct explanation e.g. There are 2 out of 5 outcomes with the letter b so the correct probability is $\frac{2}{5}$	**1**		**Accept** the shorter explanations: • 2 out of 5 outcomes have the letter b • it should be $\frac{2}{5}$
3(b)	6248, 6284, 6428, 6482, 6842, 6824	**2**	Award 1 mark for **one** missing or repeated or for 248, 284, 428, 482, 842, 824	Must be no repeats for 2 marks
4	($) 74 100	**2**	Award 1 mark for 78 000 × 0.95 or equivalent **or** for 3900 seen	Implied by final answer of 81 900
5	(m =) $3p$	**1**		
6	$\frac{1}{3}$ $\frac{1}{5}$ $\frac{1}{7}$ $\frac{1}{8}$	**1**		
7	(x =) 1	**1**		
8(a)	11	**1**		
8(b)	$5n - 4$ or equivalent	**2**	Award 1 mark for $5n + c$ or $kn - 4$ **or** for $n = 5n - 4$	c can be 0 but k ≠ 0
9	x is a variable 5 is a constant 3 is the coefficient of x $3x$ is a term	**1**		Must be in correct order.

Question	Answer	Mark	Part Marks	Guidance
10(a)	3 200 000	**1**		**Accept** 3.2 million or 3.2×10^6
10(b)(i)	2009	**1**		
10(b)(ii)	2016 and 2017	**1**		
10(c)	900 (%)	**1**		
11(a)(i)		**2**	Award 1 mark for any of these • line $y = 2$ drawn • for 5 correct vertices on the image • for correct reflection in the line $x = 2$	
11(a)(ii)	$\begin{pmatrix} 6 \\ -3 \end{pmatrix}$	**1**		
11(b)	$\begin{pmatrix} 11 \\ 14 \end{pmatrix}$	**1**		
12	$17x - 6x^2$ **or** $-6x^2 + 17x$	**2**	Award 1 mark for correct expansion $12x - 6x^2$	

Question	Answer	Mark	Part Marks	Guidance
13(a)	Any two coordinate pairs where the *y* coordinate is double the x coordinate	**1**		**Accept** (0,0)
13(b)	(1, 3) (0, 3) (–3, –1) (0, –2) (–2, 0) (0, 0)	**2**	Award 1 mark for **three** or **four** correct answers.	
14(a)	8 (cm^2)	**2**	Award 1 mark for finding missing side 7 or 2	May be on diagram.
14(b)	59.4 (cm^2)	**2**	Award 1 mark for a correct method e.g. $\frac{1}{2} \times 5.4 \times (7.5 + 14.5)$	**Accept** in stages if split into rectangle and triangles.
15	20	**1**		
16(a)	x (–1) 0 (3) y –3 (–1) 5	**2**	Award 1 mark for **one** or **two** correct.	
16(b)	Correct ruled graph extending at least between (–1, –3) and (3, 5)	**2**	Award 1 mark for correct plotting of *their* three points from part (a).	
17	193	**3**	Award 2 marks for $\frac{400 \times 100}{2 \times \pi \times 33}$ or equivalent **or** Award 1 mark for $2 \times \pi \times 33$ or equivalent **or** $\frac{400 \times 100}{\pi \times k}$	implied by 192.8 to 193.3 implied by 207 to 207.4
18	C	**1**		

Question	Answer	Mark	Part Marks	Guidance
19	44 correct answer only	**4**	Award 3 marks for fully correct method e.g. $(\frac{1}{2} \times 10 \times 7.5 \times 16.5) \div 2.4^3$ **or** Award 2 marks for correct method to find volume of prism e.g. $\frac{1}{2} \times 10 \times 7.5 \times 16.5$ **or** Award 1 mark for correct method for • volume of the cube 2.4^3 • area of the triangle $\frac{1}{2} \times 10 \times 7.5$ • Volume of the rectangle prism $10 \times 7.5 \times 16.5$	3 marks implied by answer 45 or 44.759 (or better) 2 marks implied by 618.75 1 mark implied by 13.824 37.5 1237.5
20(a)	Two out of: 90, 100 and 100 **or** 90, 70 and 130 **or** 90, 90 and 110	**2**	Award 1 mark for one correct set.	Angles in any order. Second set must be different numbers, not just different order.
20(b)	x + 50 (°)	**1**		
21(a)	He needs to collect more data.	**1**		Any correct comment about needing more data.

Question	Answer	Mark	Part Marks	Guidance
21(b)	True ☐ False ✓ ☐ ✓ ✓ ☐	1		

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