

Cambridge Lower Secondary Sample Test

**For use with curriculum published in
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Mathematics Paper 2

Mark Scheme

Stage 9

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 trailing 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..... m1850..... 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 line30.....cents0.30.....cents Ambiguous answers, e.g.\$30cents;\$0.30cents 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
<p>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</p> <p>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</p>	<p>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)</p> <p>02:30 (as this is a 24-hour clock time, not a time interval)</p> <p>2.5; 150</p>

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	<p>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</p>	<p>7:30 7:30 am 7 h 30 m 7:3 730 7.30 pm 073 07.3</p>
If the answer is required in 12-hour format	<p>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</p> <p>7.30 in the morning</p> <p>Half past seven (o'clock) in the morning</p> <p>Accept am or a.m.</p>	<p>Absence of am or pm 1930 am 7 h 30 m 7:3 730 7.30 pm</p>

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

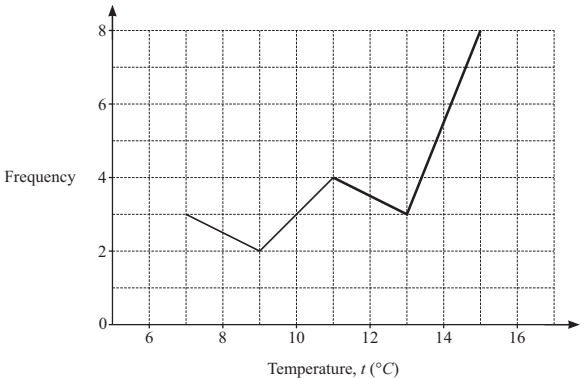
Plotting points

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	A horizontal line and vertical line from the axes meeting at the required point
The graph line passing through a point implies the point even though there is no cross	

Question	Answer	Mark	Part Marks	Guidance
1	x^9	1		
2	-2 <input checked="" type="checkbox"/>	1		
3	24.5 or $24\frac{1}{2}$ and 25.5 or $25\frac{1}{2}$	2	Award 1 mark for one correct.	Accept 25.49
4	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	1		Both boxes ticked and no others.
5(a)	108(°)	2	Award 1 mark for $\frac{360}{5}$ or 72 or for $(5 - 2) \times 180$ or 540	
5(b)	2 5 (6)	1		
6	2309(.07...) (cm ³)	2	Award 1 mark for $\pi \times 7^2 \times 15$	Accept answers between 2307.9 and 2309.4 Accept 2310

Question	Answer	Mark	Part Marks	Guidance														
7(a)	<table border="1"> <tr> <td>-3</td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td> </tr> <tr> <td>5</td><td>0</td><td>-3</td><td>-4</td><td>-3</td><td>0</td><td>5</td> </tr> </table>	-3	-2	-1	0	1	2	3	5	0	-3	-4	-3	0	5	1		
-3	-2	-1	0	1	2	3												
5	0	-3	-4	-3	0	5												
7(b)		2	Award 1 mark for plotting six or seven of their points correctly.															

Question	Answer	Mark	Part Marks	Guidance
8(a)		1		
8(b)	$12 \leq t < 14$	1		
8(c)	10 or 9.9(99...)(°C)	1		
9(a)	$y = x + 2$ $y = 2x - 3$ $2y = x - 3$ $x = 2$	1		
9(b)	Both lines cross the y-axis at 1 or Both have a y-intercept of 1	1		Accept correct alternatives, e.g. They have the same y-intercept. They both have a positive y-intercept.
10(a)	3	1		
10(b)	(0, 0)	1		
11	63.2 or 63.2...(cm)	3	<p>Award 2 marks for $\frac{2 \times \pi \times 12.3}{2}$ (+ 12.3×2) or equivalent</p> <p>or</p> <p>Award 1 mark for $2 \times \pi \times 12.3$</p>	<p>Accept answer of 63 with correct working for 3 marks implied by $\frac{123\pi}{10}$ or 38.6...</p> <p>implied by $\frac{123\pi}{5}$ or 77.2 to 77.3</p>

Question	Answer	Mark	Part Marks	Guidance
12	125 (minutes)	2	Award 1 mark for $300 \times \frac{5}{12}$ or for $300 \times 5 (= 1500)$	
13	Ticks A and gives supporting figures 728 and 722	3	Award 2 marks for 650×1.12 or $650 + 650 \times 0.12$ or 728 and 760×0.95 or $760 - 760 \times 0.05$ or 722 or Award 1 mark for 650×1.12 or $650 + 650 \times 0.12$ or 728 or 760×0.95 or $760 - 760 \times 0.05$ or 722	Accept equivalent methods for finding the percentage increase or decrease.
14	2	3	Award 2 marks for $(1^2 - 7) + (2^2 - 7) + (3^2 - 7) + (4^2 - 7)$ or better Award 1 mark for either $(a =) 29 - 36$ or -7 or $(1^2 + \textit{their } a) + (2^2 + \textit{their } a) + (3^2 + \textit{their } a) + (4^2 + \textit{their } a)$	their a can be any non-zero number.

Question	Answer	Mark	Part Marks	Guidance
15	$(t =) \frac{5(w+1)}{2}$ or equivalent	2	Award 1 mark for a correct first step of either $w + 1 = \frac{2t}{5}$ or $5w = 2t - 5$	Accept $(t =) \frac{w+1}{0.4}$ for 2 marks. Accept an unsimplified answer, e.g. $t = \frac{w+1}{\frac{2}{5}}$ scores 1 mark.
16	A complete demonstration showing correct expansion of both brackets, e.g. $20y - 36y^2 + 36y^2 - 6y$ and $14y$	2	Award 1 mark for $20y - 36y^2$ or for $36y^2 - 6y$ or for $20y - 6y$	
17	70°	3	Award 1 mark for $(ABC \text{ or } ADC =) \frac{360 - 78 - 38}{2}$ or 122° and Award 1 mark for $(\text{angle } EBC =) 180 - 90 - 38$ or 52° or $360 - 90 - \text{their } ADC - 78$	May be seen on diagram.

Question	Answer	Mark	Part Marks	Guidance
18	0.6 or 60% or $\frac{3}{5}$	2	<p>Award 1 mark for $0.25 + 0.05 + 0.1 (= 0.4)$</p> <p>or</p> <p>$25(\%) + 5(\%) + 10(\%) (= 40)$</p> <p>or</p> <p>$1 - \text{their } 0.4$</p>	<p>Accept equivalent fractions.</p> <p>For the award of 1 mark all probabilities should be expressed in a consistent form.</p> <p>Implied by the four numbers in their table adding up to 1</p>
19	42	3	<p>Award 1 mark for correct method to find number of counters Angelique gets from Bag A, e.g. $56 \times \frac{3}{3+5} (= 21)$</p> <p>Award 1 mark either for correct method to find the number of counters Hassan gets from Bag B, e.g. $(45 - \text{their } 21) \times \frac{3}{4}$ or 18</p> <p>or for correct method to find the total number of counters in Bag B, e.g. $(45 - \text{their } 21) \times \frac{3+4}{4}$</p>	

Question	Answer	Mark	Part Marks	Guidance
20	<p>A correct comparison of both the means and ranges in context, e.g.</p> <p>The boys jumped further (on average than the girls).</p> <p>and</p> <p>The distances jumped by the boys were more varied/ less consistent / more spread out.</p>	2	Award 1 mark for a correct comparison of either the means or the ranges in context.	<p>Answers should refer to distances or jumps.</p> <p>Accept equivalent answers, e.g. The girls (generally) jump shorter distances.</p> <p>Do not allow answers which do not give a contextual interpretation of mean or range, e.g.</p> <ul style="list-style-type: none"> • The distances jumped by the boys have a larger mean. • The girls' jumps have a smaller range.
21	<p>An answer that implies that children in the orchestra will not be representative of all children, e.g.</p> <ul style="list-style-type: none"> • She should also ask children not in the orchestra. • Children in the orchestra are more likely to like music. 	1		

Question	Answer	Mark	Part Marks	Guidance
22	411 (cm ²)	4	<p>Award 3 marks for $AF = 3.5$ cm and correct method to find shaded area, e.g. $24 \times 18 - 0.5 \times 3.5 \times 12$</p> <p>Award 2 marks for $AF = 3.5$ cm</p> <p>or</p> <p>Award 2 marks for a correct method to find shaded area using a value for AF found after attempting Pythagoras' theorem</p> <p>Award 1 mark for $AF^2 + (24/2)^2 = 12.5^2$</p> <p>or</p> <p>Award 1 mark for correct method to find shaded area using any value for AF</p>	<p>The shaded area could be divided into a rectangle and a trapezium.</p> $AF = \sqrt{12.5^2 - (24 \div 2)^2}$