

Cambridge Lower Secondary Sample Test
For use with curriculum published in
September 2020

Mathematics Paper 1
Mark Scheme
Stage 8

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
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	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)
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	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
$x^3 - 2$; $3 \times x - 2$	$3x + -2$ 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	108	1		
2	0.6	1		Accept equivalents e.g. 60%, $\frac{3}{5}$
3(a)	Two angles less than 90° with the same value	1		
3(b)	Alternate ringed	1		Accept any unambiguous indication.
4	12 and -12	1		
5(a)	Enlargement	1		
5(b)	3	1		
6(a)	$\frac{n}{2}$	1		Accept $n \div 2$ Accept follow through after error
6(b)	$\frac{n}{2} + 4$	1	<i>their (a) + 4</i>	Provided an expression in terms of n . Accept $n \div 2 + 4$
6(c)	$2n + 4$	2	Award 1 mark for $n + \frac{n}{2} + \frac{n}{2} + 4$ or <i>their (a) + their (b) + n</i>	
7(a)	Eva has not used the correct order of operations	1		Accept any equivalent explanation e.g. she has not used BIDMAS. Accept correct working shown instead of an explanation.
7(b)	7	2	Award 1 mark for $\sqrt{94 - 45}$ or better.	Accept without the square root sign for 1 mark.

Question	Answer	Mark	Part Marks	Guidance								
8(a)	$4(3x - 10)$	1										
8(b)	$17y(y + 2)$	2	Award 1 mark for sight of a partial factorisation i.e. $y(17y + 34)$ or $17(y^2 + 2y)$									
9	729	1										
10(a)	(3.5, 4)	1		Accept equivalents for 3.5								
10(b)	12 and 11	2	Award 1 mark for one correct.	Order must be correct.								
11	1	1										
12	16 : 3	2	Award 1 mark for any partially simplified ratio 240 : 45, 80 : 15, 48 : 9, 16cm : 3cm or converting both to the same units e.g. 2.4 (m) : 0.45 (m)									
13(a)	070 (°)	1		Do not accept 70 (°), must be 3 figures.								
13(b)	250 (°)	1										
14(a)	<table style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">True</td> <td style="text-align: center;">False</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table>	True	False	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1		
True	False											
<input type="checkbox"/>	<input checked="" type="checkbox"/>											
<input type="checkbox"/>	<input checked="" type="checkbox"/>											
<input checked="" type="checkbox"/>	<input type="checkbox"/>											
14(b)	Two lines of the form $y = k$ and $y = c$	1		$k \neq c \neq 4$								
14(c)	gradient = -3 y-intercept = 5	1		Accept (0, 5)								

Question	Answer	Mark	Part Marks	Guidance								
15(a)	$\frac{16}{9} \times \frac{3}{4}$ $\frac{9}{16} \times \frac{4}{3}$ $\frac{9}{4} \times \frac{1}{3}$ $\frac{16}{9} \times \frac{4}{3}$ $\frac{3}{4} \times \frac{1}{1}$ $\frac{3}{8} \times \frac{2}{1}$	2	Award 1 mark for at least two correct and none incorrect or three correct and one incorrect.									
15(b)	$5\frac{1}{2}$ correct answer only	2	Award 1 mark for $\frac{33}{6}$ or $\frac{11}{2}$ or equivalent.	Or equivalent e.g. $5\frac{3}{6}$, 5.5 for 1 mark.								
16(a)	<table border="1" style="border-collapse: collapse; margin-left: 20px;"> <tr><td style="padding: 2px 10px;">1</td><td style="padding: 2px 10px;">0 7 7 9</td></tr> <tr><td style="padding: 2px 10px;">2</td><td style="padding: 2px 10px;">3 4 8</td></tr> <tr><td style="padding: 2px 10px;">3</td><td style="padding: 2px 10px;">1 6</td></tr> <tr><td style="padding: 2px 10px;">4</td><td style="padding: 2px 10px;">2 5</td></tr> </table> <p style="margin-left: 20px;">Key 1 0 represents 10 goals scored</p>	1	0 7 7 9	2	3 4 8	3	1 6	4	2 5	3	Award 1 mark for correct leaves but not in order or for one error or omission in a correctly ordered stem-and-leaf diagram and Award 1 mark for correct key.	For 3 marks the stem-and leaf diagram must include all 11 numbers in correct numerical order and a correct key. Any appropriate numbers may be used in the key (does not have to be 1 and 0) e.g. 4 8 = 48
1	0 7 7 9											
2	3 4 8											
3	1 6											
4	2 5											
16(b)	24 35	2	Award 1 mark for either 24 or 35 correctly placed.	Follow through from ordered stem-and-leaf diagram in (a) allowing 1 missing or 1 extra value.								

Question	Answer	Mark	Part Marks	Guidance												
16(c)	<p>Correct comparison of medians e.g. Players in Team A scored fewer goals on average</p> <p>and</p> <p>Correct comparison of ranges e.g. Players in Team A were more consistent (in the number of goals scored)</p>	2	<p>Award 1 mark for</p> <p>Correct comparison of medians e.g. Players in Team A scored fewer goals on average</p> <p>or</p> <p>Correct comparison of ranges e.g. Players in Team A were more consistent (in the number of goals scored).</p>	<p>Follow through <i>their</i> part (b).</p> <p>Do not accept comparison not in context e.g.</p> <ul style="list-style-type: none"> • Team A had a lower median • Team A had a median of 24 but Team B had a median of 32 <p>Do not accept comparison not in context e.g.</p> <ul style="list-style-type: none"> • Team A had a lower range • Team A had a range of 35 but Team B had a range of 42 												
17	<table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="padding: 5px; text-align: center;">True False</td> <td style="padding: 5px; text-align: center;">True False</td> </tr> <tr> <td style="padding: 5px; text-align: center;"><input type="checkbox"/> <input checked="" type="checkbox"/></td> <td style="padding: 5px; text-align: center;"><input checked="" type="checkbox"/> <input type="checkbox"/></td> </tr> <tr> <td style="padding: 5px; text-align: center;">True False</td> <td style="padding: 5px; text-align: center;">True False</td> </tr> <tr> <td style="padding: 5px; text-align: center;"><input type="checkbox"/> <input checked="" type="checkbox"/></td> <td style="padding: 5px; text-align: center;"><input checked="" type="checkbox"/> <input type="checkbox"/></td> </tr> <tr> <td style="padding: 5px; text-align: center;">True False</td> <td style="padding: 5px; text-align: center;">True False</td> </tr> <tr> <td style="padding: 5px; text-align: center;"><input checked="" type="checkbox"/> <input type="checkbox"/></td> <td style="padding: 5px; text-align: center;"><input checked="" type="checkbox"/> <input type="checkbox"/></td> </tr> </tbody> </table>	True False	True False	<input type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>	True False	True False	<input type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>	True False	True False	<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>	2	Award 1 mark for four or five correct.	
True False	True False															
<input type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>															
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True False	True False															
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Question	Answer	Mark	Part Marks	Guidance
18	$(x =) 11$	3	Award 1 mark for $6x - 15 = 2x + 29$ Award 1 mark for correctly collecting letters on one side and numbers on the other i.e. $6x - 2x = 15 + 29$ or better e.g. $4x = 44$	
19	$(m =) 4$ $(n =) 3$ $(p =) 7$	3	Award 1 mark for $(m =) 4$ and Award 1 mark for $(n =) 3$ and Award 1 mark for $(p =) 7$ or if $p = \textit{their m} + \textit{their n}$.	
20	1.161	2	Award 1 mark for correct method to work out 43×27 with at most one arithmetic error.	1 mark implied by answer figs 1161 e.g. $\begin{array}{r} 43 \\ \times 27 \\ \hline 301 \\ 860 \\ \hline 1161 \end{array}$ Accept with decimals for the method.

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