



**Cambridge Assessment
International Education**

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

Mathematics Paper 1
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
$x^3 - 2$; $3 \times x - 2$	$3x + -2$ 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

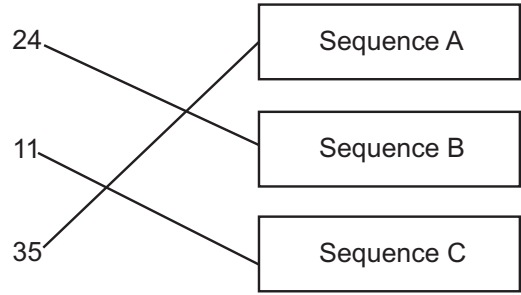
Plotting points

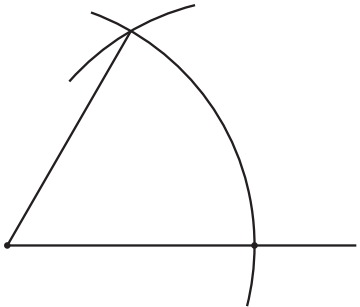
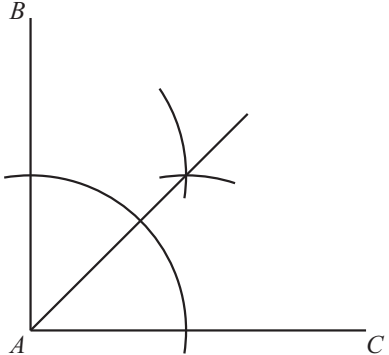
The table shows acceptable and unacceptable ways to plot points.

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	> =	1		Both symbols correct.				
2	<table border="1"> <tr> <td>Ratios equivalent to 2 : 3</td> <td>Ratios equivalent to 3 : 5</td> </tr> <tr> <td>C</td> <td>(A) B D</td> </tr> </table>	Ratios equivalent to 2 : 3	Ratios equivalent to 3 : 5	C	(A) B D	1		All entries correct.
Ratios equivalent to 2 : 3	Ratios equivalent to 3 : 5							
C	(A) B D							
3(a)	$\frac{5m}{2}$ or $2.5m$ or $\frac{5}{2}m$	1						
3(b)	$\frac{2n+6}{3}$ or $\frac{2n}{3}+2$	1		or equivalent simplified				
3(c)	$x^2 - 4$	1						
4	$x < 10$ or $10 > x$	2	Award 1 mark for $4x - 2x < 19 + 1$ or for $2x < 20$ or equivalent.	Accept use of = or > signs for 1 mark.				
5(a)	18	1						
5(b)	48	2	Award 1 mark for $\frac{2}{5} \times 120$ or for sight of either 50.8 or $(-)2.8$ or $\frac{254}{5}$ or $(-)\frac{14}{5}$					

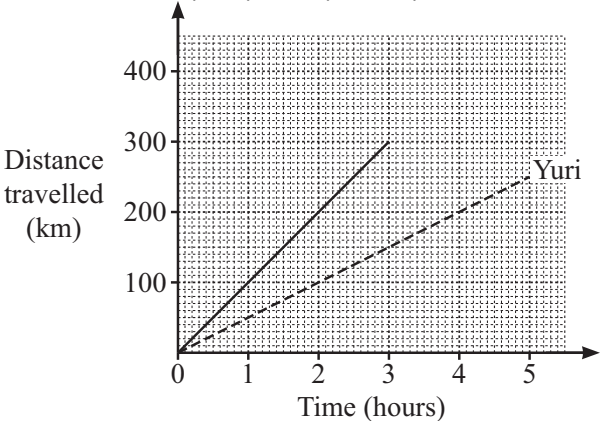
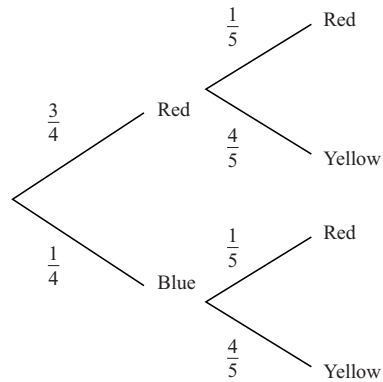
Question	Answer	Mark	Part Marks	Guidance						
6	Any correct demonstration that the y-coordinate of the midpoint is not 5, e.g. <ul style="list-style-type: none"> $\frac{-2+8}{2} = 3$ $8 - -2 = 10$ and $8 - 5 = 3$ 5 is 7 away from -2 but only 3 away from 8 	1		Do not accept without working: <ul style="list-style-type: none"> The midpoint is at (12, 3) 5 is not halfway between -2 and 8 						
7(a)	strong negative weak negative <u>no correlation</u> weak positive strong positive	1		Accept any clear indication.						
7(b)	seven points plotted demonstrating strong positive correlation.	1		Accept six or eight points plotted.						
8	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>π</td> <td>$\frac{2}{5}$</td> <td>1.289</td> </tr> <tr> <td>$\sqrt[3]{8}$</td> <td>$\sqrt{8}$</td> <td>$1.\dot{5}$</td> </tr> </table>	π	$\frac{2}{5}$	1.289	$\sqrt[3]{8}$	$\sqrt{8}$	$1.\dot{5}$	1		Correct two answers ringed and no other answers. Accept any clear indication.
π	$\frac{2}{5}$	1.289								
$\sqrt[3]{8}$	$\sqrt{8}$	$1.\dot{5}$								
9	$(-4, -5)$	2	Award 1 mark either for $(-4, 3)$ seen or plotted on grid or for reflecting their point Q in the line $y = -1$							

Question	Answer	Mark	Part Marks	Guidance
10		1		
11	<p>Any possible values that satisfy all three conditions:</p> <ul style="list-style-type: none"> ◆ is an integer greater than 1 ▲ is a decimal smaller than 1. ◆ ÷ ▲ = 60 	1		<p>Possible values include</p> <ul style="list-style-type: none"> ◆ = 30 ▲ = 0.5 ◆ = 6 ▲ = 0.1 ◆ = 15 ▲ = 0.25 etc.

Question	Answer	Mark	Part Marks	Guidance
12(a)		1		<p>Arc drawn radius 5 cm (tolerance ± 2 mm) centred on 2nd dot and intersecting first arc.</p> <p>Line drawn to make the 60° angle.</p>
12(b)	<p>Correct bisection of angle BAC, e.g.</p> 	2	Award 1 mark for an arc drawn at A that intersects both AB and AC .	Arcs must be seen.
13(a)	$5 \times 9 - 6 \times 7 = 3$	1		
13(b)	35	1		
14(a)	6×10^7	1		
14(b)	3.2×10^{-3} (kg)	1		

Question	Answer	Mark	Part Marks	Guidance																														
15(a)	<table style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="5" style="text-align: center; border-bottom: 1px solid black;">2 pm</td> </tr> <tr> <td style="width: 20%;"></td> <td style="width: 20%;"></td> <td style="width: 20%;"></td> <td style="width: 20%;"></td> <td style="width: 20%; border-left: 1px solid black; text-align: center;">0</td> </tr> <tr> <td></td> <td></td> <td></td> <td style="text-align: center;">8</td> <td style="border-left: 1px solid black; text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">8</td> <td style="text-align: center;">7</td> <td style="text-align: center;">5</td> <td style="text-align: center;">(2)</td> <td style="border-left: 1px solid black; text-align: center;">2</td> </tr> <tr> <td style="text-align: center;">7</td> <td style="text-align: center;">4</td> <td style="text-align: center;">2</td> <td style="text-align: center;">1</td> <td style="border-left: 1px solid black; text-align: center;">3</td> </tr> <tr> <td></td> <td></td> <td></td> <td style="text-align: center;">3</td> <td style="border-left: 1px solid black; text-align: center;">4</td> </tr> </table>	2 pm									0				8	1	8	7	5	(2)	2	7	4	2	1	3				3	4	2	Award 1 mark either if the numbers in all rows are correct but not ordered or if rows are ordered but one number is incorrectly entered or omitted.	
2 pm																																		
				0																														
			8	1																														
8	7	5	(2)	2																														
7	4	2	1	3																														
			3	4																														
15(b)	<p>Any correct comparison, e.g.</p> <ul style="list-style-type: none"> Fewer people watched at 7pm (on average) The number watching at 7pm is less variable 	1		The answer must involve a comparison of the two sets of data.																														
16	$16n^2$ (cm ²)	2	Award 1 mark for a correct unsimplified expression for the area, such as $\frac{6n+10n}{2} \times 2n$ or $8n \times 2n$																															
17	$(x =) 6.5$ or $6\frac{1}{2}$	2	Award 1 mark for $9 = 6(x - 5)$ or $9 = 6x - 30$ or $x - 5 = 1.5$	Accept improper fraction.																														
18	<p>Bearings should have 3 digits and Bearings should be measured (clockwise) from the North line.</p>	2	Award 1 mark for one correct criticism.	<p>For 1 mark accept</p> <ul style="list-style-type: none"> The correct bearing is 65° She should have done $90 - 25$ <p>Accept the correct bearing is 065° for 2 marks.</p>																														

Question	Answer	Mark	Part Marks	Guidance
19	$2\frac{2}{9}$	3	<p>Award 2 marks for $\frac{8}{3} \times \frac{5}{6}$</p> <p>or</p> <p>Award 2 marks for writing both improper fractions with a common denominator, $\frac{40}{15} \div \frac{18}{15}$</p> <p>Award 1 mark for sight of both $\frac{8}{3}$ and $\frac{6}{5}$</p> <p>or</p> <p>Award 1 mark for correct method of dividing <i>their</i> improper fractions.</p>	<p>An answer of $\frac{40}{18}$ or $\frac{20}{9}$ implies 2 marks.</p> <p>A correct method would be either to invert the second fraction and then multiply, <i>their</i> $\frac{8}{3} \times \textit{their}$ $\frac{5}{6}$, or to convert both improper fractions to a common denominator.</p>

Question	Answer	Mark	Part Marks	Guidance
20	<p>Line between (0, 0) and (3, 300)</p> 	2	<p>Award 1 mark either for a line indicating a journey lasting 3 hours.</p> <p>or for a line with gradient 100</p>	
21(a)	<p>Outcome from Spinner A Outcome from Spinner B</p> 	2	<p>Award 1 mark for two or three fractions correctly placed on diagram.</p>	<p>Accept equivalent fractions, decimals or percentages.</p>
21(b)	<p>$\frac{3}{20}$ or 0.15 or 15%</p>	1		
22	<p>(10 →) 58 (n →) $6n - 2$ or $n \times 6 - 2$</p>	2	<p>Award 1 mark for any one correct.</p>	<p>Accept equivalents.</p>

Question	Answer	Mark	Part Marks	Guidance
23	An algebraic method leading to $x = 7, y = -3$	3	<p>Award 2 marks for sight of an algebraic method leading to either $x = 7$ or $y = -3$</p> <p>Award 1 mark for correct substitution and evaluation from incorrect first value, i.e. two values satisfying one of the original equations.</p> <p>or</p> <p>A correct method for eliminating either x or y.</p>	<p>Do not accept a trial and improvement method.</p> <p>Correct method could include:</p> <ul style="list-style-type: none"> re-arranging one of the equations to make one variable the subject and then substitute their arrangement into the other equation, making the coefficients of x or y equal with no more than one arithmetic error or sign error, followed by an appropriate, consistent subtraction or addition across all three terms.
24	$\frac{1}{7}$	3	<p>Award 2 marks for correct red area (12) and correct blue area (72)</p> <p>or</p> <p>84</p> <p>Award 1 mark for correct method to find red area $(\frac{1}{2} \times 3 \times 4 + \frac{1}{2} \times 3 \times 4)$ or blue area $(3 \times 6 + 4 \times 6 + 5 \times 6)$</p>	<p>Accept equivalent fractions to $\frac{1}{7}$</p> <p>Accept equivalent calculations.</p>