Cambridge Assessment International Education

Cambridge Lower Secondary Progression Test

Mathematics mark scheme

Stage 8

MATHS_03_S3_MS_7RP

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	**1**		
Part	**Mark**	**Answer**	**Further Information**
	1	19.7 or 19.6(58…)	
Total	**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 aren't 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 (i.e. 18 minutes) of an hour 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. $5(x + (3 + y))$.

Inequalities

The table shows acceptable and unacceptable versions of various answers.

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

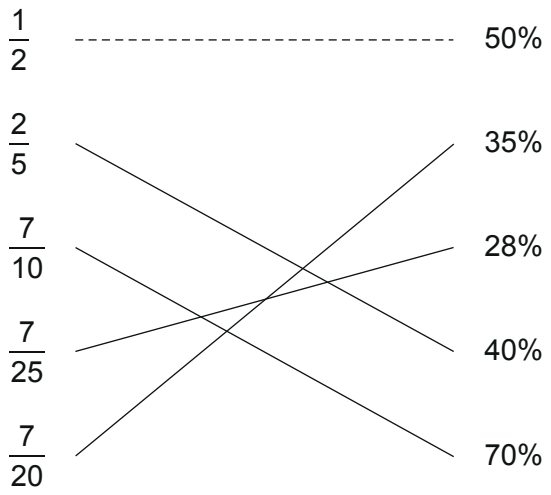
Plotting points

The table shows acceptable and unacceptable ways to plot points.

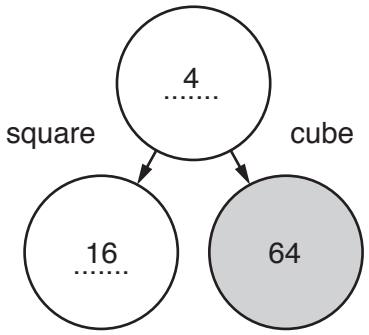
Accept	Do not accept
Crosses or dots plotted within $\pm \frac{1}{2}$ square of the correct answer The graph line passing through a point implies the point even though there is no cross.	A horizontal line and vertical line from the axes meeting at the required point

Stage 8 Paper 1 Mark scheme

Question	1		
Part	**Mark**	**Answer**	**Further Information**
	1	15.79	
Total	**1**		

Question	2		
Part	**Mark**	**Answer**	**Further Information**
	2		Award 1 mark for two additional correct lines.
Total	**2**		

Question	3		
Part	**Mark**	**Answer**	**Further Information**
(a)	1	x: –1, 0, 2 y: 11, 8, 2	Award 1 mark if both are correct.
(b)	2	Straight line drawn with a ruler extending at least between (–1, 11) and (2, 2)	Award 1 mark if all three points from *their* table are plotted correctly.
Total	**3**		

Question	4		
Part	**Mark**	**Answer**	**Further Information**
	2		Award 1 mark for 4 correct **or** for *their* 16 equal to the square of *their* 4.
Total	**2**		

Question	5		
Part	**Mark**	**Answer**	**Further Information**
(a)	1	0.3	
(b)	1	12	
Total	**2**		

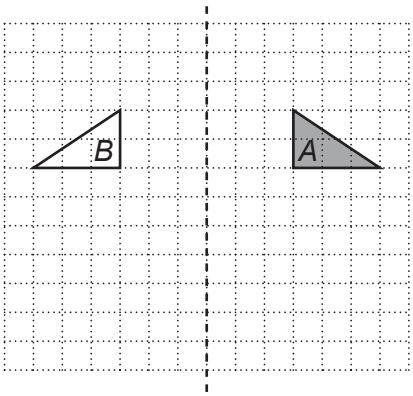
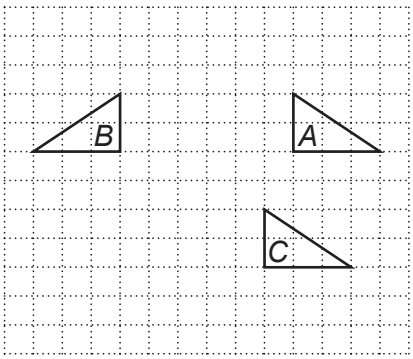
Question	6		
Part	**Mark**	**Answer**	**Further Information**
	1	$\frac{45}{75}$ (9) 25 $15\frac{3}{5}$ 3.6	
Total	**1**		

Question	7		
Part	**Mark**	**Answer**	**Further Information**
(a)	1	18 (cm^2)	
(b)	1	(a =) 4	
Total	**2**		

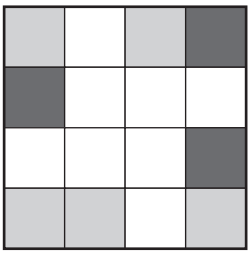
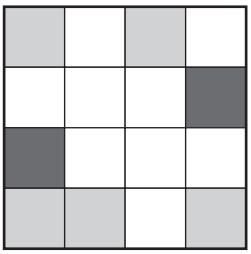
Question	8		
Part	**Mark**	**Answer**	**Further Information**
	1	60.5 (m) $>$ 5700 (cm) $>$ 0.0509 (km)	Accept correct conversions to the same unit.
Total	**1**		

Question	9		
Part	**Mark**	**Answer**	**Further Information**
(a)	1	$15x^2$	
(b)	2	$5y + 12$	Award 1 mark for $5y$ or +12 correct.
Total	**3**		

Question	10		
Part	**Mark**	**Answer**	**Further Information**
	2	1.5 (km)	Award 1 mark for correct conversion between metres and kilometres e.g. 40 lengths = 1 km or 25 m = 0.025 km **or** correct conversion of *their* total length in metres to kilometres **or** for 1500 m seen.
Total	**2**		

Question	11		
Part	**Mark**	**Answer**	**Further Information**
(a)	1		Accept shorter mirror line as long as the section between *A* and *B* is present. Accept solid mirror line.
(b)	1		Condone lack of label if the position is clear.
(c)	1	1 (unit) right **and** 4 (units) up	Accept $\begin{pmatrix}1\\4\end{pmatrix}$. Accept 4 up and 1 right.
Total	**3**		

Question	12		
Part	**Mark**	**Answer**	**Further Information**
(a)	1	12	
(b)	1	($)6	
Total	**2**		

Question	13		
Part	**Mark**	**Answer**	**Further Information**
(a)	1		
(b)	1		
Total	**2**		

Question	14		
Part	**Mark**	**Answer**	**Further Information**
(a)	1	$2 \times 2 \times 7$ or $2^2 \times 7$	Must see prime factors multiplied. Do not accept $1 \times 2 \times 2 \times 7$.
(b)	1	$2 \times 3 \times 5 \times 7$	If 1 is given as prime in parts (a) and (b) penalise only on first occurrence.
(c)	1	14	
(d)	1	420	
Total	**4**		

Question	15		
Part	**Mark**	**Answer**	**Further Information**
	1	100	
Total	**1**		

Question	16		
Part	**Mark**	**Answer**	**Further Information**
	1	103	
Total	**1**		

Question	17		
Part	**Mark**	**Answer**	**Further Information**
(a)	1	8.6	Accept $8\frac{3}{5}$ or equivalent fraction.
(b)	1	180	
Total	**2**		

Question	18		
Part	**Mark**	**Answer**	**Further Information**
	1	Square Rectangle Parallelogram Rhombus (Kite)	
Total	**1**		

Question	19		
Part	**Mark**	**Answer**	**Further Information**
(a)	1	1904	
(b)	1	938	
Total	**2**		

Question	20		
Part	**Mark**	**Answer**	**Further Information**
	2	$3n + 1$	Award 2 marks for any equivalent expressions, e.g. $1 + 3n$ or $n + n + n + 1$ Award 1 mark for $3n$ seen.
Total	**2**		

Question	21		
Part	**Mark**	**Answer**	**Further Information**
	2	$0.41\dot{6}$	Allow any clear indication of recurring 6, i.e. 6 with recurring symbol. Award 1 mark for any rounded or truncated answer to two significant figures or better, e.g. 0.416, 0.41 or 0.42.
Total	**2**		

Question	22		
Part	**Mark**	**Answer**	**Further Information**
	2	$\frac{1}{25}$	Award 1 mark for $\frac{200}{5000}$ seen **or** any equivalent fraction not in its simplest form.
Total	**2**		

Question	23		
Part	**Mark**	**Answer**	**Further Information**
	2	$1\frac{11}{14}$ or $\frac{25}{14}$	Award 1 mark for finding two correct fractions with a common denominator.
Total	**2**		

Stage 8 Paper 2 Mark scheme

Question	1		
Part	**Mark**	**Answer**	**Further Information**
	1	2 : 4 : 1	
Total	**1**		

Question	2		
Part	**Mark**	**Answer**	**Further Information**
	2	All 7 additional combinations shown, with no repetitions. **Morning activity** / **Afternoon activity** S T S V S F C T C V C F A T A V A F	Combinations can be listed in any order. Award 1 mark for at least 5 additional correct combinations with at most 1 repetition or error.
Total	**2**		

Question	3		
Part	**Mark**	**Answer**	**Further Information**
(a)	1	10:17	
(b)	2	15 (minutes)	Award 1 mark for sight of either 14 (minutes) or 29 (minutes) or 7 (minutes) or 8 (minutes).
Total	**3**		

Question	4		
Part	**Mark**	**Answer**	**Further Information**
(a)	1	(C =) $18t + 3$	
(b)	1	($)147	Follow through from an incorrect answer to part (a) as long as it involves more than one arithmetical operation.
Total	**2**		

Question	5		
Part	**Mark**	**Answer**	**Further Information**
(a)	1	Any decimal strictly between 11.375 and 11.38, e.g. • 11.376 • 11.3751 • 11.37999	Do not accept 11.375 or 11.38.
(b)	1	Any decimal strictly between 0.99 and 1, e.g. • 0.995 • 0.991 • 0.99996	Do not accept 0.99 or 1.
Total	**2**		

Question	6		
Part	**Mark**	**Answer**	**Further Information**
	2	$\frac{5}{7}$ $\frac{7}{10}$ $\frac{10}{13}$ **and** a comparative calculation, e.g. • $\frac{5}{7} = 0.71(4\ldots)$ $\frac{7}{10} = 0.7$ $\frac{10}{13} = 0.76(9\ldots)$ • $\frac{650}{910}$ and $\frac{637}{910}$ and $\frac{700}{910}$	Award 2 marks for $\frac{10}{13}$ circled **and** correct comparison. Award 1 mark for two fractions correctly converted to comparable form, e.g. $\frac{10}{14}$ and $\frac{10}{13}$. Award no marks for a decision with no calculation.
Total	**2**		

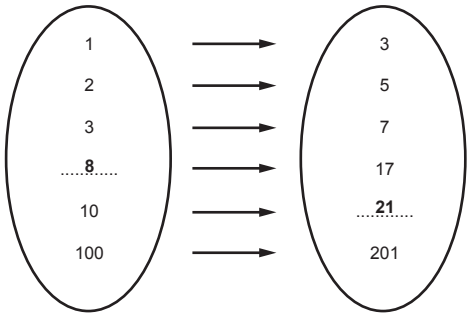
Question	7		
Part	**Mark**	**Answer**	**Further Information**
(a)	1	($)640	
(b)	1	(£)185 to (£)190 inclusive	
(c)	1	($)1600	Allow follow through of 2.5 × *their* (a).
Total	**3**		

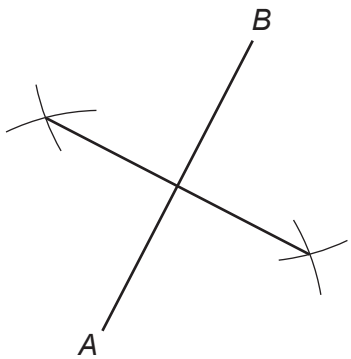
Question	8		
Part	**Mark**	**Answer**	**Further Information**
	2	($)15.66	Award 1 mark for sight of any of these: • 0.08 × 14.50 • $\frac{8}{100}$ × 14.50 • 1.16 • 1.08 • $\frac{108}{100}$ • 108%
Total	**2**		

Question	9		
Part	**Mark**	**Answer**	**Further Information**
	2	12 (cm^2)	Award 1 mark for **either** 0.5 × 4 × 6 **or** sight of 9 or 21 **or** for any other complete method for finding the area.
Total	**2**		

Question	10		
Part	**Mark**	**Answer**	**Further Information**
	1	0.0625	Accept $\frac{1}{16}$.
Total	**1**		

Question	11		
Part	**Mark**	**Answer**	**Further Information**
	2	8.7	Award 1 mark for a total of 174 **or** Award 1 mark for *their* total f × *x* correctly divided by 20; this can be implied by (42 + 16 + 36 + 80)/20 with at least 3 values in numerator correct.
Total	**2**		

Question	12		
Part	**Mark**	**Answer**	**Further Information**
(a)	2		Award 1 mark for one correct value.
(b)	1	$x \rightarrow 2x + 1$	
Total	**3**		

Question	13		
Part	**Mark**	**Answer**	**Further Information**
	2	2 pairs of arcs **and** a correct line 	Construction curves must be arcs and line must be shown with accuracy ± 2 mm from the midpoint of *AB* and ± 2°. Award 1 mark for a correct line within tolerance **or** for an attempt at a correct method demonstrated by two pairs of intersecting arcs.
Total	**2**		

Question	14		
Part	**Mark**	**Answer**	**Further Information**
(a)	1	4	
(b)	1	35	
(c)	1	27	
(d)	1	Ticks No **and** gives a correct reason based on the values of the medians, e.g. • The median was higher before the menu was changed. • The average number of customers was lower after the menu changed. • The average number of customers fell.	Follow through from their **(b)**. Do not accept 'The average was higher/lower.' (no reference to before or after).
Total	**4**		

Question	15		
Part	**Mark**	**Answer**	**Further Information**
(a)	1	44	
(b)	2	5	Award 1 mark for sight of correct method for finding the second term, e.g. (17 + 7) ÷ 3 = (8) **or** for identifying the 2nd term as 8.
Total	**3**		

Question	16		
Part	**Mark**	**Answer**	**Further Information**
(a)	1	Answers in the range 75 to 75.4(…) (mm)	
(b)	1	Answers in the range 452 to 453 (mm^2)	
Total	**2**		

Question	17		
Part	**Mark**	**Answer**	**Further Information**
	1	315 (g)	
Total	**1**		

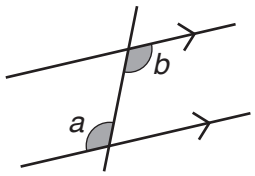
Question	18		
Part	**Mark**	**Answer**	**Further Information**
	2	128 (cm^2)	Award 1 mark for a correct method with at most 1 arithmetic error **or** for 24 **and** 16 seen.
Total	**2**		

Question	19		
Part	**Mark**	**Answer**	**Further Information**
	2	Correct triangle with side lengths equal to 6 cm and two correct arcs seen.	Award 1 mark for one correct arc shown. Allow a tolerance of ± 2 mm for the length of the sides and position of the arcs.
Total	**2**		

Question	20		
Part	**Mark**	**Answer**	**Further Information**
	2	4 green, 2 red **and** 3 blue	Award 1 mark for beads in the correct unsimplified ratio, e.g. 8 green, 4 red and 6 blue or equivalent, e.g. $\frac{4}{9}, \frac{2}{9}, \frac{3}{9}$ **or** if the number of green is double the number of red **or** if the number of blue is $\frac{1}{3}$ of *their* total number of beads. Do not accept $\frac{1}{3}$ for blue.
Total	**2**		

Question	21		
Part	**Mark**	**Answer**	**Further Information**
	2	Ticks Earth **and** shows a correct conversion between kilometres and miles, i.e. one of (Earth) 12 760 km = 7975 miles **or** (Venus) 7560 miles = 12 096 km	Award 1 mark for sight of 7975 or 12 096 **or** for sight of a correct conversion factor between miles and km, e.g. • 8 km = 5 miles • 1 km = 0.625 miles • 1 mile = 1.6 km This may be implied as part of a calculation, e.g. 12 760 × 5 ÷ 8
Total	**2**		

Stage 8 Paper 3 Mark scheme

Question	Mark	Answer	Further information
1	1	Any one of 1, 2, 4, 5, 10 or 20	
2	1	4	
3	1		*b* does not need to be labelled.
4	1	24.0	Do not accept just 24.
5	1	2	
6	1	$-4u + 2w$ or $2w - 4u$	
7	1	4	
8	1	$\frac{3}{10}$	Accept equivalent fractions or 0.3 or 30%.
9	1	136	
10	1	$2(n + 5)$ $n(2 + 5)$ $n + 5 \times 2$ $2n + 5$ $5n + 2$	
11	1	2 (km)	
12	1	0.92	
13	1	16(%)	
14	1	10 (children)	
15	1	(x =) 5	
16	1	70(°)	
17	1	9	
18	1	(3, 3)	
19	1	2 : 1	
20	1	260 (cm^2)	

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