Cambridge Assessment International Education

Mathematics

Stage 9

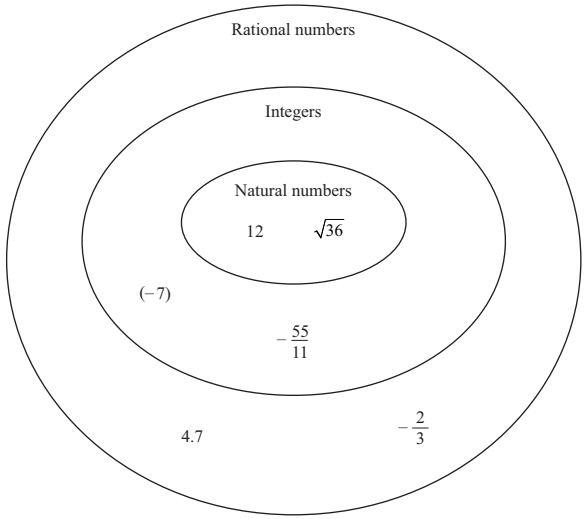
Paper 2

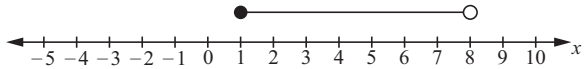
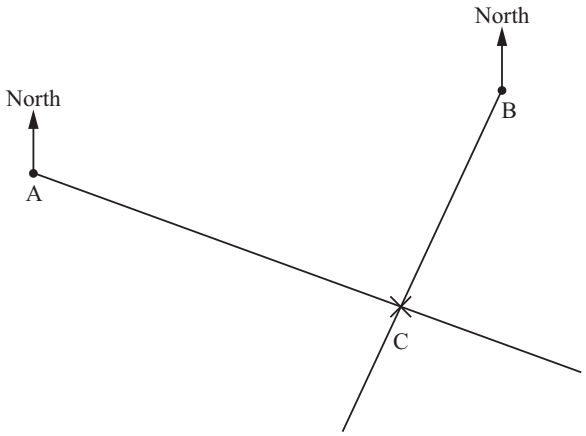
2023

Cambridge Lower Secondary Progression Test

Mark Scheme

3143_02_MS_3RP

Question	Answer	Marks	Part Marks	Guidance
1	5	**1**		
2(a)	38.5 **and** 37	**1**		Both answers in the correct order for the mark.
2(b)	–0.5	**1**		
3(a)	7	**1**		
3(b)	0.85 (m)	**1**		
4(a)		**2**	Award 1 mark for **three** or **four** correctly inserted values.	
4(b)	irrational	**1**		Accept any clear indication.
5	$x^2 + 9x + 14$ final answer	**2**	Award 1 mark for **three** correct terms from $x^2 + 7x + 2x + 14$	Note $9x$ counts as **two** terms.

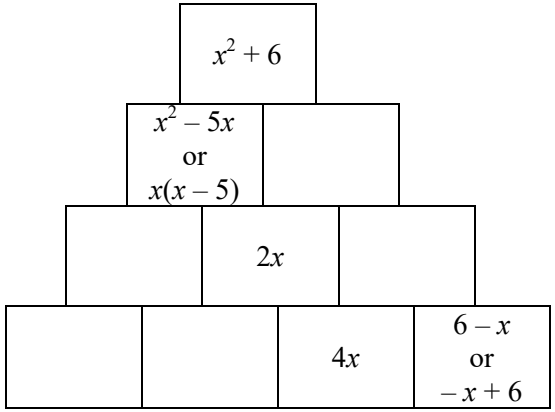
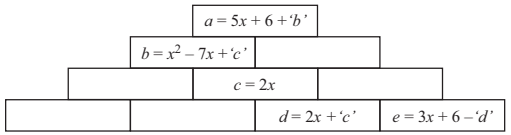
Question	Answer	Marks	Part Marks	Guidance
6(a)	$1 \leq x < 8$	**1**		
6(b)		**1**		Follow through *their* inequality from part **(a)** if in the form $a \leq x < b$ or $a < x \leq b$
7	Correct position for C drawn on the map.  **and** 10.25 to 12.5 (m)	**3**	Award 2 marks for correct position of C. **or** Award 1 mark for one bearing correct for C. **and** If 1 or 0 mark(s) for position of C, award 1 mark for *their* BC × 250 ÷ 100	Tolerance ± 2° Tolerance ± 2° Accept tolerance of ± 2 mm on *their* BC.
8(a)	Ruled straight line extending at least as far as (0, 1) and (4, 5).	**2**	Award 1 mark for a line with gradient 1 **or** y-intercept at 1	
8(b)	(1.5, 2.5) or equivalent	**1**		Follow through coordinates of *their* point of intersection.

Question	Answer	Marks	Part Marks	Guidance
9(a)	4200 (mg)	**1**		
9(b)	3.5×10^{-4} (g)	**2**	Award 1 mark for 4.2 ÷ 12 000 **or** figs 35 **or** for *their* decimal answer written correctly in standard form.	Figs 35 could be, e.g. 0.035 or 35 000 etc.
10	($)2.50 **and** ($)0.90	**2**	Award 1 mark for ($)2.50 **or** ($)0.90	Accept answers in either order. Accept 2.5 etc.
11(a)	$\frac{5}{6}$ in all **three** spaces	**1**		All **three** spaces correct for the mark.
11(b)	$\frac{5}{18}$ or equivalent	**2**	Award 1 mark for $\frac{1}{6} \times \frac{5}{6}$ $(\times 2)$ or equivalent. **or** for correct answer from $\frac{1}{6}$ × *their* $\frac{5}{6}$ × 2 provided *their* $\frac{5}{6} < 1$	For 2 marks, accept equivalent decimal or percentage. 1 mark implied by an answer of $\frac{5}{36}$ or equivalent.
11(c)	independent	**1**		Accept any clear indication.

Question	Answer	Marks	Part Marks	Guidance
12	84.4 (cm^2)	**3**	Award 2 marks for 84.35 to 84.43… **or** Award 1 mark for (0.5 ×) $\pi \times 7.33^2$ **and** award 1 mark for *their* more accurate answer correctly rounded to three sig figs.	Accept value of π between 3.14 and $\frac{22}{7}$
13	Elk ticked **and** ($72.4 \times \frac{5}{8}$ or equivalent) = 45.25 (miles/hour) **or** Elk ticked **and** ($43.0 \times \frac{8}{5}$ or equivalent) = 68.8 (kilometres/hour)	**2**	Award 1 mark for 5 miles = 8 kilometres seen or implied, e.g. $72.4 \times \frac{5}{8}$ or equivalent **or** $43.0 \times \frac{8}{5}$ or equivalent	For 2 marks, accept 45, 45.3 or 69 Accept more accurate conversion values used, e.g. 1.61, 1.609…

Question	Answer	Marks	Part Marks	Guidance
14(a)	The sample is small. **and** An explanation implying the sample may not be representative (of the population).	**2**	Award 1 mark for The sample is small. **or** An explanation implying the sample may not be representative (of the population).	Accept any explanation suggesting the sample may not be representative, e.g. • Boys from the running club may be unusually tall. • The boys and girls are not taken from the same sub-group.
14(b)	A correct explanation stating that the intervals do not include all heights.	**1**		Accept, e.g. • 150/160/170 (cm) is missing. • There is nowhere to put 150 (cm).
14(c)	Three class intervals that include every value once only, e.g. (h < 150), 150 ≤ h < 160, 160 ≤ h < 170, h ≥ 170	**1**		All **three** intervals correct for the mark. Accept unequal class intervals provided they include every value once only.
15(a)	B with vertices (1, 1), (4, 1), (4, 2), (2, 2), (2, 3) and (1, 3) **and** C with vertices (1, −5), (4, −5), (4, −6), (2, −6), (2, −7) and (1, −7)	**2**	Award 1 mark for B with vertices (1, 1), (4, 1), (4, 2), (2, 2), (2, 3) and (1, 3) **or** Correct reflection of *their* B in y = –2	
15(b)	180° rotation **and** centre (3, –2)	**2**	Award 1 mark for 180° rotation **or** centre (3, –2)	Accept follow through provided single transformation possible.

Question	Answer	Marks	Part Marks	Guidance
16(a)	(v =) 10.5 **and** (v =) –10.5	**2**	Award 1 mark for 10.5 **or** –10.5 **or** $v^2 = 110.25$	
16(b)	(a =) $\frac{v^2 - u^2}{2s}$ **or** (a =) $\frac{v^2}{2s} - \frac{u^2}{2s}$ final answer	**2**	Award 1 mark for $2as = v^2 - u^2$ **or** $a + \frac{u^2}{2s} = \frac{v^2}{2s}$	Do **not** accept, e.g. $\frac{\frac{v^2 - u^2}{2}}{s}$ for 2 marks.
17	116 (m)	**3**	Award 2 marks for (CD =) $\sqrt{24^2 + (42 - 10)^2}$ or better. **or** Award 1 mark for $BC^2 + 24^2 = 26^2$ or better **or** $CD^2 = 24^2 + (42 - \textit{their } BC)^2$ or better.	Or better, e.g. $CD = 40$ Or better, e.g. $\sqrt{26^2 - 24^2}$ or $BC = 10$ Or better, e.g. $\sqrt{24^2 + (42 - \textit{their } BC)^2}$

Question	Answer	Marks	Part Marks	Guidance
18		**3**	Award 2 marks for all **five** correct but not simplified **or** for **three** or **four** correct (accept unsimplified and allow follow through as detailed below). **or** Award 1 mark for **one** or **two** correct (accept unsimplified and allow follow through as detailed below). For follow through: 	'*c*' means *their c*, etc.