Cambridge Secondary 1 Progression Test
Mark scheme

Cambridge
Secondary 1

Mathematics

Stage 8

V2

UNIVERSITY of CAMBRIDGE
International Examinations

These tables give general guidelines on marking answers that involve number and place value, and units of length, mass, money or duration. If the mark scheme does not specify the correct answer, refer to these general guidelines.

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, e.g. **0.7000**
Always accept appropriate tailing zeros, e.g. **3.00 m; 5.000 kg**
Accept a comma as a decimal point if that is the convention that you have taught the children, e.g. **0,638**

Units

For questions involving quantities, e.g. length, mass, time or money, correct units must be given in the answer. The table shows acceptable and unacceptable versions of the answer 1.85 m.

	Correct answer	Also accept	Do not accept
Units are not given on answer line and the question does not specify a unit for the answer	1.85 m	Correct conversions provided the unit is stated, e.g. 1 m 85 cm 185 cm 1850 cm 1850 mm 0.00185 km	1.85 185 m
If the unit is given on the answer line, e.g. ………………… m	……1.85…… m	Correct conversions, provided the unit is stated unambiguously, e.g. ……185 cm…… m	……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 m	1.85 1 m 85 cm	185; 1850 Any conversions to other units, e.g. 185 cm

Money

For questions involving money, it is essential that appropriate units are given in the answer.

The table shows acceptable and unacceptable versions.

	Accept	**Do not accept**
If the amount is in dollars and cents, the answer should be given to two decimal places.	$0.30 $9 or $9.00	$09 or $09.00
If units are not given on answer line	Any unambiguous indication of the correct amount, e.g. 30 cents; 30 c $0.30; $0.30 c; $0.30 cents $0-30; $0=30; $00:30	30 or 0.30 without a unit Incorrect or ambiguous answers, e.g. $0.3; $30; $30 cents; 0.30 cents
If $ is shown on the answer line	$......**0.30**…… $......**0.30 cents**…… Accept all unambiguous indications, as shown above	$......**30**…… $......**30 cents**…… (this cannot be accepted because it is ambiguous, but if the dollar sign is deleted it becomes acceptable)
If cents is shown on the answer line	……**30**……cents ……**$0.30**……cents	……**0.30**……cents ……**$30**……cents

Duration

Accept any unambiguous method of showing duration and all reasonable abbreviations of hours (h, hr, hrs), minutes (m, min, mins) and seconds (s, sec, secs).

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 5 min 24 sec; 00 h 05 m 24 s	Incorrect or ambiguous formats, e.g. 2.30; 2.3; 2.30 hours; 2.30 min; 2 h 3; 2.3 h
Any correct conversion with appropriate units, e.g. 2.5 hours; 150 mins 324 seconds	2.5; 150 304
Also accept unambiguous digital stopwatch format, e.g. 02:30:00 00:05:24; 05:24 s	Do not accept ambiguous indications, e.g. 02:30 5.24

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Time

There are many ways to write times, in both numbers and words, and marks should be awarded for any unambiguous method. Accept time written in numbers or words unless there is a specific instruction in the question. Some examples are given in the table.

Accept	Do not accept
Any unambiguous indication of correct answer in numbers, words or a combination of the two, e.g. 07:30; 19:00	Incorrect or ambiguous formats, e.g.
0730; 07 30; 07.30; 07,30; 07-30; 7.30; 730 a.m.; 7.30am; 7.30 in the morning	07.3; 073; 07 3; 730; 73; 7.3; 7.3 am; 7.30 p.m
Half past seven (o'clock) in the morning Thirty minutes past seven am Also accept: O-seven-thirty	
1900; 19 00; 19_00 etc.	19; 190; 19 000; 19.00 am; 7.00 am
Nineteen hundred (hours) Seven o'clock in the afternoon/evening	
Accept correct conversion to 12-hour clock, e.g. 16:42 4.42 p.m.	4.42 am; 0442; 4.42
Sixteen forty two Four-forty-two in the afternoon/evening Four forty two p.m. Forty two (minutes) past four p.m. Eighteen (minutes) to five in the evening	Forty two (minutes) past sixteen Eighteen (minutes) to seventeen
Also accept a combination of numbers and words, e.g. 18 minutes to 5 p.m. 42 minutes past 4 in the afternoon	

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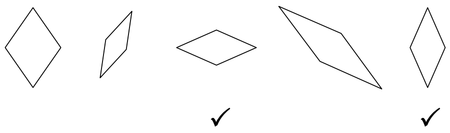
Stage 8 Paper 1 Mark Scheme

Question	**1**		
Part	**Mark**	**Answer**	**Further Information**
(a)	**1**	387	
(b)	**1**	265	
Total	**2**		

Question	**2**		
Part	**Mark**	**Answer**	**Further Information**
	1	4.96	
Total	**1**		

Question	**3**		
Part	**Mark**	**Answer**	**Further Information**
	1		Both must be ticked with no extras. Accept any clear indication.
Total	**1**		

Question	**4**		
Part	**Mark**	**Answer**	**Further Information**
(a)	**1**	64	
(b)	**1**	11	
Total	**2**		

Question	**5**		
Part	**Mark**	**Answer**	**Further Information**
(a)	**1**	0.01	Accept equivalent answer, e.g. $\frac{1}{100}$
(b)	**1**	0.1	Accept equivalent answer, e.g. $\frac{1}{10}$
Total	**2**		

Question	**6**		
Part	**Mark**	**Answer**	**Further Information**
	1	5 (miles)	Accept 4.8 to 5.2 inclusive.
Total	**1**		

<table>
<tr><th>Question</th><th>7</th><th></th><th></th></tr>
<tr><td>Part</td><td>Mark</td><td>Answer</td><td>Further Information</td></tr>
<tr><td></td><td>2</td><td>
<table>
<tr><th></th><th>Right-handed</th><th>Left-handed</th><th>Total</th></tr>
<tr><td>Boys</td><td>4</td><td>10</td><td>14</td></tr>
<tr><td>Girls</td><td>3</td><td>12</td><td>15</td></tr>
<tr><td>Total</td><td>7</td><td>22</td><td>29</td></tr>
</table>
</td><td>1 mark for either Boys or Girls row correct.</td></tr>
<tr><td>Total</td><td>2</td><td></td><td></td></tr>
</table>

Question	**8**		
Part	**Mark**	**Answer**	**Further Information**
	1	$\frac{9}{28}$ $\frac{3}{8}$ ✓ $\frac{24}{64}$ ✓ $\frac{21}{54}$ $\frac{15}{40}$ ✓	Accept any clear indication. All three must be correct with no incorrect answers.
Total	**1**		

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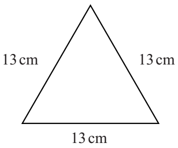
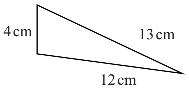
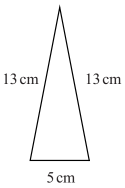
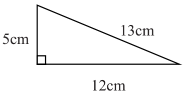
Question	**9**		
Part	**Mark**	**Answer**	**Further Information**
	1	    ✓	Accept any clear indication. No extras ticked.
Total	1		

13 cm
13 cm
13 cm
4 cm
13 cm
12 cm
13 cm
13 cm
5 cm
5cm
13cm
12cm

Question	**10**		
Part	**Mark**	**Answer**	**Further Information**
(a)	1	$2x+3$ $2(x-3)$ $3x-2$ $2x-3$ ✓ $3(x+2)$	Accept any clear indication. No extras ticked.
(b)	2	3 (sweets)	1 mark for $x = 2x - 3$ or x = answer to (a).
Total	3		

Question	**11**		
Part	**Mark**	**Answer**	**Further Information**
	1	240 (cm^3)	
Total	1		

Question	**12**	

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<table>
<tr><th>Part</th><th>Mark</th><th>Answer</th><th>Further Information</th></tr>
<tr><td>(a)</td><td>2</td><td><table>
<tr><td>Pattern number</td><td>1</td><td>2</td><td>3</td><td>4</td><td></td><td>10</td></tr>
<tr><td>Number of white counters</td><td>0</td><td>2</td><td>4</td><td>6</td><td></td><td>18</td></tr>
<tr><td>Total number of counters</td><td>1</td><td>3</td><td>5</td><td>7</td><td></td><td>19</td></tr>
</table></td><td>1 mark for each correct column.</td></tr>
<tr><td>(b)</td><td>1</td><td>$2(n-1)$ or equivalent, e.g. $2n-2$</td><td></td></tr>
<tr><td>(c)</td><td>1</td><td>$2(n-1) + 1 = 2n-1$ or equivalent.</td><td>Follow through for ***(b)*** +1 if ***(b)*** is algebraic.</td></tr>
<tr><td>**Total**</td><td>4</td><td></td><td></td></tr>
</table>

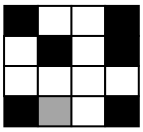
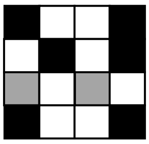
Question	**13**		
Part	**Mark**	**Answer**	**Further Information**
(a)	1	B **and** E, in either order	
(b)	1	B **and** D, in either order	
Total	2		

Question	**14**		
Part	**Mark**	**Answer**	**Further Information**
	2	75 (%)	1 mark for $\frac{27}{36}$ × 100 or equivalent method.
Total	2		

Question	**15**		
Part	**Mark**	**Answer**	**Further Information**
	2	(7,9)	1 mark for each coordinate. **or** 1 mark for clear method (algebraic or graphical) shown, e.g. evidence that coordinates of midpoint is average of two end points.
Total	**2**		

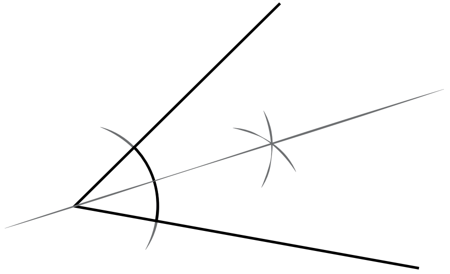
Question	**16**		
Part	**Mark**	**Answer**	**Further Information**
	2	60% **and** $\frac{1}{8}$	1 mark for each
Total	**2**		

Question	**17**		
Part	**Mark**	**Answer**	**Further Information**
(a)	**1**	10	
(b)	**1**	0.03	Accept equivalent answer, e.g. $\frac{3}{100}$
Total	**2**		

Question	**18**		
Part	**Mark**	**Answer**	**Further Information**
(a)	1		Accept any clear indication.
(b)	1		Both squares must be identified for the award of the mark. Accept any clear indication.
Total	**2**		

Question	**19**		
Part	**Mark**	**Answer**	**Further Information**
(a)	1	28	Do not accept 2 – 30.
(b)	1	22	Do not accept answers on diagram, e.g. 2 ringed.
Total	**2**		

Question	**20**		
Part	**Mark**	**Answer**	**Further Information**
	2	$5\frac{4}{15}$	1 mark for common denominator of 15 (or multiple of 15)
Total	**2**		

Question	**21**		
Part	**Mark**	**Answer**	**Further Information**
	2	Accurate construction with construction arcs, e.g. 	Accept ± 2°. Correct construction arcs must be seen. 1 mark for evidence of arcs in relevant position.
Total	2		

Question	**22**		
Part	**Mark**	**Answer**	**Further Information**
	2	Shape B **and** any valid reason, eg. • A is $\frac{5}{18}$ B is $\frac{1}{3} = \frac{6}{18}$ • 3 is more than $2\frac{1}{2}$	Do not award any marks for B without a reason. 1 mark for $\frac{5}{18}$ and $\frac{1}{3}$ Accept any valid method.
Total	2		

<table>
<tr><td>Question</td><td>23</td><td colspan="2"></td></tr>
<tr><td>Part</td><td>Mark</td><td>Answer</td><td>Further Information</td></tr>
<tr><td></td><td>2</td><td>
<table>
<tr><td></td><td>Diagonals are perpendicular</td><td>Diagonals have equal length</td></tr>
<tr><td>Square</td><td>✓</td><td>✓</td></tr>
<tr><td>Rhombus</td><td>✓</td><td>×</td></tr>
<tr><td>Rectangle</td><td>×</td><td>✓</td></tr>
<tr><td>Trapezium</td><td>×</td><td>×</td></tr>
</table>
</td><td>2 marks for all correct.
1 mark for 2 correct rows or 1 correct column.
Do not accept blank cells.</td></tr>
<tr><td>Total</td><td>2</td><td colspan="2"></td></tr>
</table>

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Question	24		
Part	**Mark**	**Answer**	**Further Information**
(a)	**1**	4 **and** 6, in either order	Both must be correct.
(b)	**1**	6 **and** 7, in either order	Both must be correct.
Total	**2**		

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Stage 8 Paper 2 Mark Scheme

Question	**1**		
Part	**Mark**	**Answer**	**Further Information**
	1	1.070 1.24 1.3 1.39 1.5	
Total	**1**		

Question	**2**		
Part	**Mark**	**Answer**	**Further Information**
	1	3.75	
Total	**1**		

Question	**3**		
Part	**Mark**	**Answer**	**Further Information**
	2	Yes, **and** a correct explanation, e.g. both are 12 **or** LCM of 4 and 6 is 12 and HCF of 24 and 36 is 12	No mark for yes without an explanation. 1 mark for 12 as either LCM or HCF
Total	**2**		

Question	**4**		
Part	**Mark**	**Answer**	**Further Information**
	1	0.2	
Total	**1**		

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Question	**5**		
Part	**Mark**	**Answer**	**Further Information**
(a)	**1**	corresponding	Accept any discernable spelling.
(b)	**1**	alternate	Accept any discernable spelling.
Total	**2**		

Question	**6**		
Part	**Mark**	**Answer**	**Further Information**
	2	David ($) 8.80 Jo ($) 13.20 Mary ($) 22.(00)	1 mark for attempt to divide 44 by 10 Award 1 mark for all three correct answers but with currency information incorrect, e.g. 8.8
Total	**2**		

Question	**7**		
Part	**Mark**	**Answer**	**Further Information**
(a) (i)	**1**	36y (cents) or equivalent form	Accept e.g. 36 × y, y36
(ii)	**1**	(C=) 36y + 12z (cents) or equivalent form	Follow through answer to **(a)(i)**
(b)	**1**	340 (cents)	
Total	**3**		

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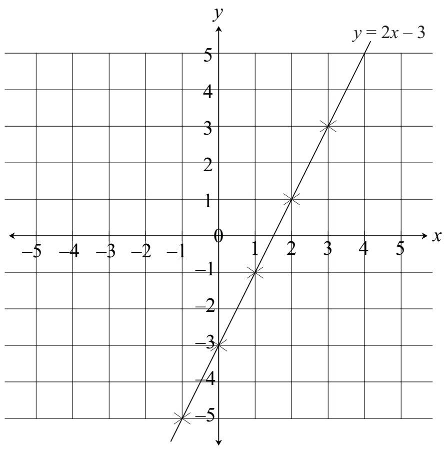
Question	**8**		
Part	**Mark**	**Answer**	**Further Information**
(a)	**1**	8:35 (am)	
(b)	**1**	3 (km)	
(c)	**1**	8:26 (am) **or** 8:27 (am)	
Total	**3**		

<table>
<tr><td>Question</td><td>9</td><td colspan="2"></td></tr>
<tr><td>Part</td><td>Mark</td><td>Answer</td><td>Further Information</td></tr>
<tr><td>(a)</td><td>1</td><td><table><tr><td>x</td><td>–1</td><td>0</td><td>1</td><td>2</td><td>3</td></tr><tr><td>y</td><td>–5</td><td>–3</td><td>–1</td><td>1</td><td>3</td></tr></table></td><td>All three points must be correct.</td></tr>
<tr><td>(b)</td><td>1</td><td>
</td><td>Accept correct line without visible points.
Accept line that stops at (–1,–5) and / or (3,3)
Accept line without label.</td></tr>
<tr><td>(c)</td><td>1</td><td>No and 29 ≠ 2×15−3 or equivalent explanation.</td><td>Do not award mark for NO without an explanation.</td></tr>
<tr><td>Total</td><td>3</td><td colspan="2"></td></tr>
</table>

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Question	10		
Part	**Mark**	**Answer**	**Further Information**
	2	$2^3 \times 3 \times 5^2 \times 11$ or equivalent	1 mark for list of correct factors or a correct factor tree. 1 mark for identification of 4 prime factors, 2, 3, 5, 11 **or** for evidence of the correct method.
Total	2		

Question	11		
Part	**Mark**	**Answer**	**Further Information**
(a)	1	(y =) $4x - 3$ or equivalent form	Accept e.g. $4 \times x$ or $x4$ for $4x$
(b)	1	$8\frac{1}{2}$ or equivalent	
Total	2		

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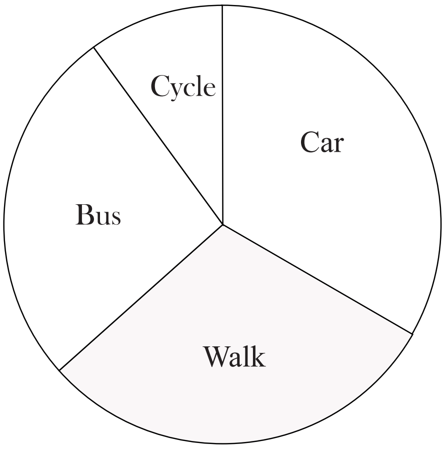
<table>
<tr><td>Question</td><td>12</td><td colspan="2"></td></tr>
<tr><td>Part</td><td>Mark</td><td>Answer</td><td>Further Information</td></tr>
<tr><td>(a)</td><td>1</td><td>
<table>
<tr><th>Method of travel</th><th>Frequency</th><th>Angle in pie chart</th></tr>
<tr><td>Car</td><td>10</td><td>120°</td></tr>
<tr><td>Walk</td><td>9</td><td>108°</td></tr>
<tr><td>Bus</td><td>8</td><td>96°</td></tr>
<tr><td>Circle</td><td>3</td><td>36°</td></tr>
<tr><td>Total</td><td>30</td><td>360°</td></tr>
</table>
</td><td>108° and 96° must be seen.
Accept omission of 360°
Accept omission of °</td></tr>
<tr><td>(b)</td><td>2</td><td>
</td><td>Award 2 marks for correct chart correctly labelled; angle within ± 2°
Award 1 mark for correct chart with no labels or at least one correct sector with label.</td></tr>
<tr><td>Total</td><td>3</td><td colspan="2"></td></tr>
</table>

<table>
<tr><td>Question</td><td>13</td><td colspan="2"></td></tr>
<tr><td>Part</td><td>Mark</td><td>Answer</td><td>Further Information</td></tr>
<tr><td></td><td>1</td><td>$\frac{81}{8}$ or $10\frac{1}{8}$</td><td>Do not accept 10.125</td></tr>
<tr><td>Total</td><td>1</td><td colspan="2"></td></tr>
</table>

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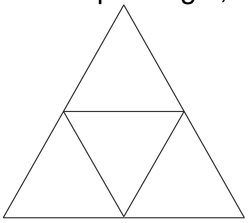
Question	14		
Part	**Mark**	**Answer**	**Further Information**
	1	$\boxed{56 \div 3}$ ✓ $\boxed{170 \div 9}$ $\boxed{113 \div 6}$ $\boxed{131 \div 7}$ ✓ $\boxed{93 \div 5}$	Both correct with no additional ticks. Accept any clear indication.
Total	1		

Question	15		
Part	**Mark**	**Answer**	**Further Information**
	2	Accurate net with tolerance of ± 2mm per line and ± 2° per angle, e.g. 	1 mark for inaccurately drawn net with 4 correctly positioned triangles.
Total	2		

Question	16		
Part	**Mark**	**Answer**	**Further Information**
	2	($) 9413.60	Accept any answer between ($) 9413 and ($) 9414 inclusive. 1 mark for amount after 1 year $11 480 **or** 14000 × 0.82 × 0.82 or equivalent seen
Total	2		

Question	17		
Part	**Mark**	**Answer**	**Further Information**
	1	$\frac{9}{12} > \frac{8}{12}$ or 0.75>0.666... or equivalent.	
Total	1		

Question	18		
Part	**Mark**	**Answer**	**Further Information**
(a)	1	16 (girls)	
(b)	2	$\frac{8}{20} < \frac{1}{2}$ (or equivalent) **or** The same number of boys and girls chose yellow but there are more boys than girls.	1 mark for partial answer, e.g. $\frac{8}{20}$ or 'yellow more popular with girls' No marks for sight of $\frac{1}{2}$ by itself.
Total	3		

Question	19		
Part	**Mark**	**Answer**	**Further Information**
	1	5.1 (00…)	
Total	1		

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Question	**20**		
Part	**Mark**	**Answer**	**Further Information**
(a)	**1**	$5a - \boxed{3a} + \boxed{2b} - 4b = 2a - 2b$	
(b)	**1**	$\boxed{3x} - 4y + 7x - 3y = 10x - \boxed{7y}$	
Total	**2**		

Question	**21**		
Part	**Mark**	**Answer**	**Further Information**
	1	$\frac{2}{9}$ ✓ $\frac{5}{8}$ $\frac{4}{11}$ ✓ $\frac{7}{20}$ $\frac{14}{33}$ ✓	All three must be correct with no incorrect answers. Accept any clear indication.
Total	**1**		

Question	**22**		
Part	**Mark**	**Answer**	**Further Information**
(a)	**1**	24(cm^2)	
(b)	**1**	4(cm)	Allow follow through from part **(a)** ÷ 6
Total	**2**		

Question	**23**		
Part	**Mark**	**Answer**	**Further Information**
	2	Can **and** a correct explanation **Either** Can 1 ml for 0.1666..cents **and** Bottle 1 ml for 0.17 cents **or** Can \$1 buys 600 ml **and** Bottle \$1 buys 588(.2..)ml	Two comparative figures must be seen. Accept equivalent arguments, e.g. using cents or litres. 1 mark for 0.1666.. or 0.17 **or** 1 mark for 600 or 588(.2..) No mark for "Can" with no explanation.
Total	2		

Question	**24**		
Part	**Mark**	**Answer**	**Further Information**
	2	$x + y + \angle ABC = 180°$ $x + y + \angle ABC = z + \angle ABC$ $x + y = z$	Argument may be stated informally. Award 1 mark for each element. Do not accept 'Exterior angle = sum of interior opposite angles' on its own.
Total	2		

Stage 8 Paper 3 Mark Scheme

Question	Mark	Answer
1	½	400
2	½	(0).4
3	½	chord
4	½	(0).48
5	½	7000(ml)
6	½	$\frac{7}{10}$ or equivalent
7	½	a^3
8	½	4 (counters)
9	½	899
10	½	70(°)
11	½	270(cents) or equivalent
12	½	7(°C) ± 0.5°C
13	½	5
14	½	(5,2)
15	½	10
16	½	33 (cm²)
17	½	$\frac{12}{27}$ or equivalent
18	½	5 (cm)
19	½	4 (accept TT, HH, TH, HT) or equivalent
20	½	4

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