



# Cambridge Lower Secondary Checkpoint

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**MATHEMATICS**

**1112/02**

Paper 2

**October 2020**

MARK SCHEME

Maximum Mark: 50

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Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Markers were instructed to award marks. It does not indicate the details of the discussions that took place at a Markers' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the End of Series Report. Cambridge will not enter into discussions about these mark schemes.

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This document has **14** pages. Blank pages are indicated.

**Mark scheme annotations and abbreviations**

<b>M1</b>	method mark
<b>A1</b>	accuracy mark
<b>B1</b>	independent mark
<b>FT</b>	follow through after error
dep	dependent
oe	or equivalent
cao	correct answer only
isw	ignore subsequent working
soi	seen or implied

Question	Answer	Marks	Further Information								
1	4	1									
2	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">Colour of car</td> <td style="padding: 5px;">Tally</td> </tr> <tr> <td style="height: 20px;"></td> <td></td> </tr> <tr> <td style="height: 20px;"></td> <td></td> </tr> <tr> <td style="height: 20px;"></td> <td></td> </tr> </table>	Colour of car	Tally							2	Accept a list of at least 3 different car colours if the columns or rows have no heading. Accept : Amount, Frequency or Number for 'Tally'
Colour of car	Tally										
3	220 (cm <sup>3</sup> )	B1	Accept a list of at least 3 different car colours in a column/row.  Do <b>not</b> accept <ul style="list-style-type: none"> <li>• a question with answer options, e.g. a question from a questionnaire</li> <li>• a graph/axes instead of a table</li> </ul>								

Question	Answer	Mark	Further Information
4(a)	$20 + 15h$ or $15h + 20$	1	
4(b)	\$110	1	FT from an incorrect formula if at least two different arithmetic operations are involved and provided cost $> 0$
5	50.09 (cm <sup>2</sup> )	2	Accept 50.1 for 2 marks. Accept 50 for 2 marks if supported by working.
	evidence seen of one correct, relevant area calculation e.g. $8.2 \times 3.2$ or 26.24 <b>or</b> $5.3 \times 4.5$ or 23.85 <b>or</b> $8.5 \times 4.5$ or 38.25 <b>or</b> $3.2 \times 3.7$ or 11.84 <b>or</b> $8.5 \times 8.2$ or 69.7 <b>or</b> $3.7 \times 5.3$ or 19.61	M1	
6	7.5 (%)	2	Accept $7\frac{1}{2}\%$ Do <b>not</b> accept 1.075
	$\frac{2580 - 2400}{2400}$ <b>or</b> $\frac{2580}{2400} - 1$ <b>or</b> $\frac{2580}{2400} \times 100$ <b>or</b> 0.075 <b>oe</b> <b>or</b> 107.5(%)	M1	

Question	Answer	Marks	Further Information
7	(2, 8) (0, 4) (100, 302) (9, 29)	1	Accept any clear indication.
8	13 (cm)	1	
9	30	1	
10 (a)	$\frac{6}{3}$ $6\frac{3}{87}$ $14\frac{3}{6}$ $\left(\frac{3}{6}\right)$ $\frac{6}{14}$ $3\frac{6}{14}$	1	Accept any clear indication.
10 (b)	119 and 13	1	In this order. Accept any multiple of 119 and 13, (must be the same multiple of each e.g. 238 and 26)
11	A set of data with either 2 or 4 numbers where the middle two numbers, when put in order, sum to 10 and 5 is not one of the numbers in the set.	1	e.g. 4,6 2,3,7,8 Accept correct numbers in any order.
12	2 : 3    4 : 3 $\left(3 : 2\right)$ 6 : 8 $\left(15 : 10\right)$	1	Accept any clear indication.

Question	Answer	Marks	Further Information
13	It is a biased/leading question.	1	Accept, "He is trying to get people to agree with him." Do <b>not</b> accept comments about the question being closed / open / fair.
14	90 (km)  140 ÷ 7 <b>or</b> Scale is 1 cm to 20 km <b>or</b> 1:2000000	2	Accept answers in the range 86 – 94  M1 may be implied by 20 Accept measurements of 6.8 to 7.2 in place of 7  M1 may be implied by (19.4 to 20.6)  Accept M1 for full correct method $140 \times \frac{4.5}{7}$ oe which may be done in stages and may include premature rounding.

Question	Answer	Marks	Further Information
<b>15 (a)</b>	45 (minutes)	<b>1</b>	
<b>15 (b)</b>	<p>Distance from home (km)</p> <p>Time</p> <p>Safia</p> <p>Angelique</p>	<b>1</b>	A line from (08:30, 0) to (09:15, 17) $\pm \frac{1}{2}$ small square tolerance.
<b>15 (c)</b>	(0)9:03	<b>1</b>	Accept (0)9:01 to (0)9:05 FT <i>their</i> diagonal straight line starting at 08:30 Accept unambiguous times, e.g. using space, dot, dash in place of the colon. Accept 9:03 am

Question	Answer	Marks	Further Information
16 (a)	$\frac{54}{120}$ oe	1	Equivalent answers include $\frac{9}{20}$ , 0.45, 45% Do <b>not</b> accept ratio answers e.g. 54:120
16 (b)	15	2	
	0.575 × 120 <b>or</b> (0.575 – 0.45) × 120 <b>or</b> (0.575 – <i>their</i> 0.45) × 120	M1	M1 may be implied by 69
17	$2^2 \times 3^2 \times 7$	2	Accept $2 \times 2 \times 3 \times 3 \times 7$ Accept e.g. $2^2 \times 3^2 \times 7 = 252$
	For expressing 252 as a product of factors, e.g. $4 \times 63$ . This could be done implicitly using e.g. a factor tree, repeated division, listing 2, 2, 3, 3, 7	M1	Do <b>not</b> award M1 for just 2, 3 and 7 alone Do <b>not</b> accept $1 \times 252$ as a product



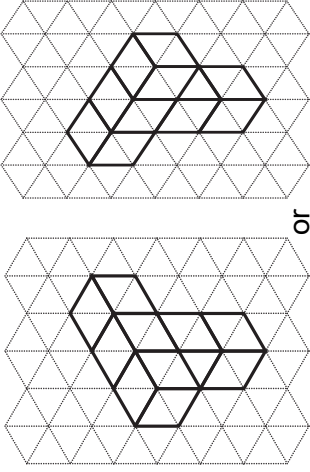
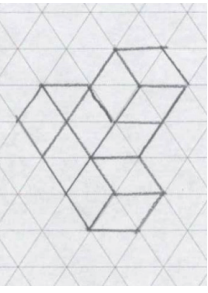
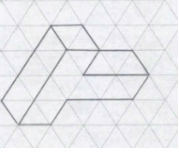
Question	Answer	Marks	Further Information
18	<p>Indicates Yellow <b>and</b> gives correct working, e.g.</p> <ul style="list-style-type: none"> <li>● Showing 6.2 g per 100 ml equates to 15.5 g of sugar in 250 ml</li> <li>● Showing 14.5 g in 250 ml is equivalent to 5.8 g in 100 ml</li> </ul> <p>Correct method to compare 14.5 g in 250 ml with either 2.4 g or 6.2 g in 100 ml.</p> <p>e.g.</p> <ul style="list-style-type: none"> <li>● <math>2.4 \times 2.5</math></li> <li>● <math>6.2 \times 2.5</math></li> <li>● <math>14.5 \div 2.5</math></li> </ul> <p>A correct method could also involve comparing sugar in 500 ml or 1000 ml of drink.</p>	2	<p>Correct working could be implied by sight of either 15.5 or 5.8</p> <p>Correct working could be implied by sight of either 15.5 or 5.8</p>
19	115.(...)	1	
20	110	2	
	$80 \times \frac{11}{8}$ oe	M1	Or equivalent, e.g. $\frac{80 \times 55}{40}$ , $200 \times 0.55$

Question	Answer	Marks	Further Information																														
<p><b>21</b></p>	<p>A complete trial and improvement method leading to the answer <math>x = 8.7</math></p> <p>Must include all three marking points below.</p>	<p><b>3</b></p>	<p>Ignore the final column in the table when marking.</p> <table border="1" data-bbox="368 327 1002 775"> <thead> <tr> <th data-bbox="368 663 507 775"><math>x</math></th> <th data-bbox="368 327 507 663"><math>x^2 - 3x</math> (Accept appropriately rounded or truncated answers)</th> </tr> </thead> <tbody> <tr><td data-bbox="507 663 544 775">8.1</td><td data-bbox="507 327 544 663">41.31</td></tr> <tr><td data-bbox="544 663 580 775">8.2</td><td data-bbox="544 327 580 663">42.64</td></tr> <tr><td data-bbox="580 663 617 775">8.3</td><td data-bbox="580 327 617 663">43.99</td></tr> <tr><td data-bbox="617 663 654 775">8.4</td><td data-bbox="617 327 654 663">45.36</td></tr> <tr><td data-bbox="654 663 691 775">8.5</td><td data-bbox="654 327 691 663">46.75</td></tr> <tr><td data-bbox="691 663 727 775">8.6</td><td data-bbox="691 327 727 663">48.16</td></tr> <tr><td data-bbox="727 663 764 775">8.7</td><td data-bbox="727 327 764 663">49.59</td></tr> <tr><td data-bbox="764 663 801 775">8.71</td><td data-bbox="764 327 801 663">49.7341</td></tr> <tr><td data-bbox="801 663 837 775">8.72</td><td data-bbox="801 327 837 663">49.8784</td></tr> <tr><td data-bbox="837 663 874 775">8.73</td><td data-bbox="837 327 874 663">50.0229</td></tr> <tr><td data-bbox="874 663 911 775">8.74</td><td data-bbox="874 327 911 663">50.1676</td></tr> <tr><td data-bbox="911 663 948 775">8.75</td><td data-bbox="911 327 948 663">50.3125</td></tr> <tr><td data-bbox="948 663 984 775">8.8</td><td data-bbox="948 327 984 663">51.04</td></tr> <tr><td data-bbox="984 663 1002 775">8.9</td><td data-bbox="984 327 1002 663">52.51</td></tr> </tbody> </table>	$x$	$x^2 - 3x$ (Accept appropriately rounded or truncated answers)	8.1	41.31	8.2	42.64	8.3	43.99	8.4	45.36	8.5	46.75	8.6	48.16	8.7	49.59	8.71	49.7341	8.72	49.8784	8.73	50.0229	8.74	50.1676	8.75	50.3125	8.8	51.04	8.9	52.51
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	<p>Any correct trial of a number between 8 and 9, not including 8 and 9</p>	<p><b>B1</b></p>	<p>For first two B1 marks to be awarded, one appropriate trial to <b>at least</b> 1 decimal place <b>and</b> one appropriate trial to <b>at least</b> 2 decimal places must be seen, e.g. trial at 8.8 and trial at 8.74 scores both B marks e.g. trial at 8.72 <b>and</b> trial at 8.73 scores both B marks e.g. trial at 8.7 <b>and</b> trial at 8.8 scores first B1 but not second</p>																														

	A correct trial of $x$ where $8.73 \leq x \leq 8.75$	<b>B1</b>	
	8.7 in the answer space	<b>B1</b>	

Question	Answer	Marks	Further Information
<b>22</b>	Ticks Mike with 2 supporting figures that can be compared, e.g. 75% and 80% or	<b>2</b>	Accept fractions with a common denominator and decimals e.g. $\frac{15}{20}$ <b>and</b> $\frac{16}{20}$ , 0.75 <b>and</b> 0.8 Other values may be possible, e.g. two ratios with a common value.
<b>23</b>	360 ÷ 450 <b>or</b> 2700 ÷ 3600 <b>or</b> 75% <b>or</b> 80%	<b>M1</b>	Award M1 for one correct value. Accept fractions and decimals.
<b>24</b>	24 (km) 20 (m)	<b>1</b> <b>2</b>	Accept 24-24.2 (km)
<b>25</b>	$\frac{72 \times 1000}{60 \times 60}$ <b>or</b> for sight of 1.2 <b>or</b> 1200 <b>or</b> 0.02 0.00451 cao <b>and</b> 779 000 cao	<b>M1</b> <b>2</b>	Do <b>not</b> accept 0.0045100 Do <b>not</b> accept 779 000.0
	1 correct	<b>B1</b>	

Question	Answer	Mark	Further Information								
26	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%; text-align: center;"><b>Congruent</b></td> <td style="width: 50%; text-align: center;"><b>Not Congruent</b></td> </tr> <tr> <td style="text-align: center;">A and B <input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr> <td style="text-align: center;">A and C <input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr> <td style="text-align: center;">B and D <input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table>	<b>Congruent</b>	<b>Not Congruent</b>	A and B <input type="checkbox"/>	<input checked="" type="checkbox"/>	A and C <input type="checkbox"/>	<input checked="" type="checkbox"/>	B and D <input checked="" type="checkbox"/>	<input type="checkbox"/>	<b>1</b>	Accept any clear indication.
<b>Congruent</b>	<b>Not Congruent</b>										
A and B <input type="checkbox"/>	<input checked="" type="checkbox"/>										
A and C <input type="checkbox"/>	<input checked="" type="checkbox"/>										
B and D <input checked="" type="checkbox"/>	<input type="checkbox"/>										
27	(2,-4)	<b>1</b>									

Question	Answer	Mark	Further Information
28 (a)	C	1	
28 (b)	 <p>For a correct isometric drawing in a different orientation where the T shape is not the front e.g.</p> 	2	<p>Outline of individual cubes or shading does not need to be shown e.g.</p>  <p>Ignore hidden lines and shading.</p> <p>Ignore hidden lines and shading.</p>
29	<p>A correct comparison of the length of battery life e.g. Battery A lasts longer Battery B has a shorter battery life</p> <p><b>and</b></p> <p>A correct comparison of the variability of the batteries e.g. Battery B is more variable Battery A is more consistent (stable, predictable, reliable)</p> <p>1 correct comparison</p>	2	<p>Do <b>not</b> accept a comparison of the figures without an interpretation e.g. the median is bigger for Battery A.</p> <p>For 2 marks condone an explanation comparing the maximum or minimum life e.g. the maximum life of Battery A is 2.2 which is larger than the maximum life of Battery B which is 1.9</p>
		<b>B1</b>	