

Cambridge IGCSE™

CAMBRIDGE INTERNATIONAL MATHEMATICS**0607/52**

Paper 5 (Core)

October/November 2024

MARK SCHEME

Maximum Mark: 36

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 Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' 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 Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the October/November 2024 series for most Cambridge IGCSE, Cambridge International A and AS Level components, and some Cambridge O Level components.

This document consists of **7** printed pages.

Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptions for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently, e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

GENERIC MARKING PRINCIPLE 5:

Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).

GENERIC MARKING PRINCIPLE 6:

Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

Mathematics-Specific Marking Principles

- 1 Unless a particular method has been specified in the question, full marks may be awarded for any correct method. However, if a calculation is required then no marks will be awarded for a scale drawing.
- 2 Unless specified in the question, non-integer answers may be given as fractions, decimals or in standard form. Ignore superfluous zeros, provided that the degree of accuracy is not affected.
- 3 Allow alternative conventions for notation if used consistently throughout the paper, e.g. commas being used as decimal points.
- 4 Unless otherwise indicated, marks once gained cannot subsequently be lost, e.g. wrong working following a correct form of answer is ignored (isw).
- 5 Where a candidate has misread a number or sign in the question and used that value consistently throughout, provided that number does not alter the difficulty or the method required, award all marks earned and deduct just 1 A or B mark for the misread.
- 6 Recovery within working is allowed, e.g. a notation error in the working where the following line of working makes the candidate's intent clear.

MARK SCHEME NOTES

The following notes are intended to aid interpretation of mark schemes in general, but individual mark schemes may include marks awarded for specific reasons outside the scope of these notes.

Types of mark

- M Method marks, awarded for a valid method applied to the problem.
- A Accuracy mark, awarded for a correct answer or intermediate step correctly obtained. For accuracy marks to be given, the associated Method mark must be earned or implied.
- B Mark for a correct result or statement independent of Method marks.

When a part of a question has two or more ‘method’ steps, the M marks are in principle independent unless the scheme specifically says otherwise; and similarly where there are several B marks allocated. The notation ‘dep’ is used to indicate that a particular M or B mark is dependent on an earlier mark in the scheme.

Abbreviations

- awrt answers which round to
- cao correct answer only
- dep dependent
- FT follow through after error
- isw ignore subsequent working
- nfww not from wrong working
- oe or equivalent
- rot rounded or truncated
- SC Special Case
- soi seen or implied

Question	Answer						Marks	Partial Marks
1(a)	12	14	15	16	17	18	3	B2 for 4 correct
	9	27	36	61	71	81		or B1 for 3 correct

Question	Answer	Marks	Partial Marks																																																																																								
1(b)	<table><tr><td>N</td><td>D</td><td>N</td><td>D</td><td>N</td><td>D</td><td>N</td><td>D</td></tr><tr><td>10</td><td>9</td><td>20</td><td>18</td><td>30</td><td>27</td><td>40</td><td>36</td></tr><tr><td>11</td><td>0</td><td>21</td><td>9</td><td>31</td><td>18</td><td>41</td><td>27</td></tr><tr><td>12</td><td>9</td><td>22</td><td>0</td><td>32</td><td>9</td><td>42</td><td>18</td></tr><tr><td>13</td><td>18</td><td>23</td><td>9</td><td>33</td><td>0</td><td>43</td><td>9</td></tr><tr><td>14</td><td>27</td><td>24</td><td>18</td><td>34</td><td>9</td><td>44</td><td>0</td></tr><tr><td>15</td><td>36</td><td>25</td><td>27</td><td>35</td><td>18</td><td>45</td><td>9</td></tr><tr><td>16</td><td>45</td><td>26</td><td>36</td><td>36</td><td>27</td><td>46</td><td>18</td></tr><tr><td>17</td><td>54</td><td>27</td><td>45</td><td>37</td><td>36</td><td>47</td><td>27</td></tr><tr><td>18</td><td>63</td><td>28</td><td>54</td><td>38</td><td>45</td><td>48</td><td>36</td></tr><tr><td>19</td><td>72</td><td>29</td><td>63</td><td>39</td><td>54</td><td>49</td><td>45</td></tr></table>	N	D	N	D	N	D	N	D	10	9	20	18	30	27	40	36	11	0	21	9	31	18	41	27	12	9	22	0	32	9	42	18	13	18	23	9	33	0	43	9	14	27	24	18	34	9	44	0	15	36	25	27	35	18	45	9	16	45	26	36	36	27	46	18	17	54	27	45	37	36	47	27	18	63	28	54	38	45	48	36	19	72	29	63	39	54	49	45	3	B2 for 5 correct rows or B1 for 2 correct rows
	N	D	N	D	N	D	N	D																																																																																			
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One correct subtraction seen or 3 differences of 9	C1																																																																																										
1(c)	9	1																																																																																									
	[11, 22, 33, 44,] 55, 66, 77, 88, 99 or comment that the digits must be the same.	C1																																																																																									
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1(d)(ii)	80	1																																																																																									
	In 2nd column three from 72, 63, 54, 45, 36, 27, 18, 9, 0 leading to 9 in the bottom row or [72, 63, 54, 45,] 36, 27, 18 (bottom row) or 89 in bottom left cell and $98 - 89 = 9$ or 12, 23, 34, 45, ... or difference in digits is 1	C1																																																																																									
1(d)(iii)	$(6 - 4) \times 9$ oe	1																																																																																									

Question	Answer	Marks	Partial Marks																																																																																								
2(a)	<table><tr><th>N</th><th>D</th><th>N</th><th>D</th><th>N</th><th>D</th><th>N</th><th>D</th></tr><tr><td>100</td><td>99</td><td>110</td><td>99</td><td>120</td><td>99</td><td>130</td><td>99</td></tr><tr><td>101</td><td>0</td><td>111</td><td>0</td><td>121</td><td>0</td><td>131</td><td>0</td></tr><tr><td>102</td><td>99</td><td>112</td><td>99</td><td>122</td><td>99</td><td>132</td><td>99</td></tr><tr><td>103</td><td>198</td><td>113</td><td>198</td><td>123</td><td>198</td><td>133</td><td>198</td></tr><tr><td>104</td><td>297</td><td>114</td><td>297</td><td>124</td><td>297</td><td>134</td><td>297</td></tr><tr><td>105</td><td>396</td><td>115</td><td>396</td><td>125</td><td>396</td><td>135</td><td>396</td></tr><tr><td>106</td><td>495</td><td>116</td><td>495</td><td>126</td><td>495</td><td>136</td><td>495</td></tr><tr><td>107</td><td>594</td><td>117</td><td>594</td><td>127</td><td>594</td><td>137</td><td>594</td></tr><tr><td>108</td><td>693</td><td>118</td><td>693</td><td>128</td><td>693</td><td>138</td><td>693</td></tr><tr><td>109</td><td>792</td><td>119</td><td>792</td><td>129</td><td>792</td><td>139</td><td>792</td></tr></table>	N	D	N	D	N	D	N	D	100	99	110	99	120	99	130	99	101	0	111	0	121	0	131	0	102	99	112	99	122	99	132	99	103	198	113	198	123	198	133	198	104	297	114	297	124	297	134	297	105	396	115	396	125	396	135	396	106	495	116	495	126	495	136	495	107	594	117	594	127	594	137	594	108	693	118	693	128	693	138	693	109	792	119	792	129	792	139	792	2	B1 for first D column correct
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	109	792	119	792	129	792	139	792																																																																																			
One correct subtraction seen or three differences of 99	C1																																																																																										
2(b)	99	1																																																																																									
2(c)(i)	Three examples, each with three calculations showing the rule e.g. $601 - 106 = 495$ $6 - 1 = 5$ $5 \times 99 = 495$ oe or $500 - 5 = 495$	2	B1 for two examples, each with two or three calculations from e.g. $601 - 106 = 495$ $6 - 1 = 5$ $5 \times 99 = 495$ oe																																																																																								
	$(a - c) \times 99 =$ reverse difference oe isw	1	Dependent on one example with three calculations																																																																																								
2(c)(ii)	$100a + 10b + c - 100c - 10b - a$	1																																																																																									
	$99a - 99c = 99(a - c)$	1																																																																																									
2(c)(iii)	$594 \div 99$ or difference [between a and c] = 6 or $99c = 99 \times 8 - 594$ or three correct trials with $a = 8$	C1																																																																																									
	Three numbers of the form $8 \dots 2$			1																																																																																							

Question	Answer	Marks	Partial Marks
3	$(10a + b) - (10b + a)$	M3	M1 for $10a + b$ M1FT for <i>their</i> $(10a + b)$ reversed
	$9a - 9b$	1	Dependent on M2 or M3 awarded
	$9(a - b)$	1	
4(a)	$1000d + 100c + 10b + a$	C1	
	$999a + 90b - 90c - 999d$	2	B1 for two terms correct
4(b)	Second digit minus third digit is 2 or $b - c = 2$	1	
	AND		
	One correct calculation with $b - c = 2$ e.g. $\begin{array}{r} 7\ 3\ 1\ 5 \\ -\ 5\ 1\ 3\ 7 \\ \hline 2\ 1\ 7\ 8 \end{array}$	C2	C1 for $\begin{array}{r} 7\ .\ .\ 5 \\ -\ 5\ .\ .\ 7 \\ \hline 2\ 1\ 7\ 8 \end{array}$ or $\begin{array}{r} 7\ b\ c\ 5 \\ -\ 5\ c\ b\ 7 \\ \hline \end{array}$
	Two further correct calculations with $b - c = 2$	C1	
	OR		
	Substitution of $a = 7$ and $d = 5$ e.g. $999 \times 7 + 90b - 90c - 999 \times 5 = 2178$	C2	FT <i>their</i> four-term expression C1 for $a = 7$ and $d = 5$
	Collection of terms $90b - 90c = 2178 - 6993 + 4995$ or better	C1	
	OR		
	$7 - 5 = 2$	C1	
	$2178 - 2 \times 999$	C1	
	$180 \div 90 = 2$	C1	