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CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/52**

Paper 5 (Core) **May/June 2017**

MARK SCHEME

Maximum Mark: 24

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.

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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

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Question	Answer	Mark	Part Marks
1(a)	<table><tr><td>×3</td><td>3</td><td>6</td><td>9</td><td>12</td><td>15</td><td>18</td><td>21</td><td>24</td><td>27</td><td>30</td></tr><tr><td>*NS*</td><td>3</td><td>6</td><td>9</td><td>3</td><td>**6**</td><td>9</td><td>3</td><td>6</td><td>9</td><td>3</td></tr></table> <table><tr><td>×12</td><td>12</td><td>24</td><td>36</td><td>48</td><td>60</td><td>72</td><td>84</td><td>96</td><td>108</td><td>120</td></tr><tr><td>*NS*</td><td>3</td><td>6</td><td>9</td><td>**3**</td><td>**6**</td><td>9</td><td>**3**</td><td>**6**</td><td>9</td><td>3</td></tr></table> <table><tr><td>×21</td><td>21</td><td>42</td><td>63</td><td>84</td><td>105</td><td>126</td><td>147</td><td>168</td><td>189</td><td>210</td></tr><tr><td>*NS*</td><td>3</td><td>**6**</td><td>**9**</td><td>**3**</td><td>**6**</td><td>9</td><td>3</td><td>6</td><td>9</td><td>3</td></tr></table> <table><tr><td>×30</td><td>30</td><td>60</td><td>90</td><td>120</td><td>150</td><td>180</td><td>210</td><td>240</td><td>270</td><td>300</td></tr><tr><td>*NS*</td><td>3</td><td>**6**</td><td>**9**</td><td>**3**</td><td>**6**</td><td>9</td><td>3</td><td>6</td><td>9</td><td>3</td></tr></table>	**2**	**B1** for at most 2 errors
1(b)	multiples oe	**1**	
1(c)	<table><tr><td>3 ÷ 9</td><td>= 0</td><td>remainder</td><td>3</td></tr><tr><td>12 ÷ 9</td><td>= 1</td><td>remainder</td><td>3</td></tr><tr><td>21 ÷ **9**</td><td>= 2</td><td>remainder</td><td>3</td></tr><tr><td>**30** ÷ 9</td><td>= 3</td><td>remainder</td><td>3</td></tr><tr><td>39 ÷ 9</td><td>= **4**</td><td>remainder</td><td>**3**</td></tr></table>	**2**	**B1** for 3 correct
1(d)	…remainder … 3	**1**	
1(e)(i)	Add 9 oe	**1**	
1(e)(ii)	9*n* + 3 oe	**2**	**B1** for 9*n* + *a* oe (*a* may = 0)
1(e)(iii)	786	**1**	**FT** *their* (9*n* + 3) C opportunity
2(a)	<table><tr><td>×2</td><td>2</td><td>4</td><td>6</td><td>8</td><td>10</td><td>12</td><td>14</td><td>16</td><td>18</td><td>20</td><td>22</td><td>24</td></tr><tr><td>*NS*</td><td>2</td><td>4</td><td>6</td><td>8</td><td>**1**</td><td>**3**</td><td>**5**</td><td>**7**</td><td>**9**</td><td>2</td><td>4</td><td>6</td></tr></table> <table><tr><td>×11</td><td>11</td><td>22</td><td>33</td><td>44</td><td>55</td><td>66</td><td>77</td><td>88</td><td>99</td><td>**110**</td><td>**121**</td><td>**132**</td></tr><tr><td>*NS*</td><td>2</td><td>4</td><td>6</td><td>8</td><td>**1**</td><td>**3**</td><td>**5**</td><td>**7**</td><td>**9**</td><td>2</td><td>4</td><td>6</td></tr></table>	**2**	**B1** for at most 2 errors
2(b)(i)	38, 47	**2**	**B1** for each
2(b)(ii)	9*n* + 2 oe	**1**	C opportunity

Question	Answer	Mark	Part Marks
2(b)(iii)	$9 \times 150 + 2$ [= 1352] oe	**1**	or $n = \frac{1352-2}{9}$[=150] oe
3(a)	17, 26, 35, 44	**2**	**B1** for any three correct
3(b)	$9n + 8$ oe	**1**	C opportunity **FT** *their* answer to 3(a)
3(c)	9998	**2**	**FT** *their* $(9n + 8)$ **B1** for 1110[…..] C opportunity
4(a)	$k + 9$, $k + 18$, $k + 27$, $k + 36$	**1**	
4(b)	$9n + k$ oe	**1**	**SC1**for $9n + k - 9$ oe from an answer of k, $k + 9$, $k + 18$, $k + 27$ in (a)
Communication: Seen in two of the following questions		**1**	
1(e)(iii)	for *their* $(9 \times 87 + 3)$ seen		
2(b)(ii)	for two differences of 9 seen or for saying e.g. the sequence is one less than the previous sequence		
3(b)	for three correct differences FT seen		
3(c)	for *their* $(9n + 8)$ * 10 000, where * is = or any inequality sign or for 2 trials close to 10 000 and number stems calculated or substitution for n then stem checked and checked for closest		