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CAMBRIDGE INTERNATIONAL MATHEMATICS

0607/53

Paper 5 (Core)

October/November 2017

MARK SCHEME
Maximum Mark: 24

Published

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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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1(a) 9 4 5 1(b) 3 is added two times oe or 1 is added to 3 and not 2 oe 1 2(a) 20 8 12 3 5 7 2 2(b) A correct number wall with total > heir 20 2 B1 for a number wall with (2 and 4) or (3 and 4) in middle of bottom row 2(c) 14 17 3 B1 for each row 3(a) $a + 2b + c$ $a + 2b + c$ 2 B1 for each row 3(b) -2 1 C opportunity 4(a) $a + 3b + 3c + d$ $a + 2b + c$	Question	Answer	Marks	Partial Marks
2(a) 20 8 12 12 2 3 5 7 7 2 2 3 5 5 7 2 2 3 5 5 7 2 2 3 5 5 7 2 3 5 5 7 2 3 5 5 7 3 3 3 4 5 5 6 6 7 4 4 2 1 7 7 7 7 7 7 7 7 7	1(a)		1	
1 is added to 3 and not 2 oc 2 2 3 5 7 2 2 3 5 7 7 2 3 5 7 7 2 2 3 5 5 7 2 2 3 5 5 7 2 3 5 5 7 2 3 5 5 7 2 2 3 5 5 7 2 3 3 5 5 7 3 3 3 4 5 6 6 4 4 5 6 6 4 4 5 6 6 4 4 5 6 6 6 6 6 6 6 6 6	1(b)	3 is added two times oe	1	
2(a) 20 8 12 3 5 7 2(b) A correct number wall with total > their 20 2 B1 for a number wall with (2 and 4) or (3 and 4) in middle of bottom row 2(c) 14 17 3 B1 for each row 3(a) $a + 2b + c$ $b + c$ 2 B1 for each row 3(b) -2 1 C opportunity 4(a) $a + 3b + 3c + d$ $a + 2b + c$ $b + c$ 2 B1 for 3 cells correct, may be unsimplified 4(b) their $(a + 3b + 3c + d) = 34$ oe M1 C opportunity 4(c) 3 5 1 2 6 or c = 2 and d = 1 C opportunity 5(a) Row gives the coefficients of a, b, c and d 2 B1 for each B1 for each 5(b) [1] $a + 4b + 6c + 4d + [1]e$ oe 1 FT their correct 5(b) only 5(c) [1] $a + 4b + 6c + 4d + [1]e$ oe 1 FT their correct 5(b) only		or		
		1 is added to 3 and not 2 oe		
with total > their 20 (3 and 4) in middle of bottom row 2(c) 14 17 -3 3 3(a) $a+2b+c$ 2 $a+b$ $b+c$ 2 B1 for each row 3(b) -2 1 4(a) $a+3b+3c+d$ 2 $a+2b+c$ $b+c$ $c+d$ 4(b) their $(a+3b+3c+d)=34$ oc M1 C opportunity 4(b) their $(a+3b+3c+d)=34$ oc M1 A(c) $3 = 5 = 1 = 2 = 6$ M1 Or $4 = 2 = 1 = 1 = 1 = 1 = 1 = 1 = 1 = 1 = 1$	2(a)	8 12	2	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	2(b)		2	
$a+b$ $b+c$ 3(b) -2 1 C opportunity 4(a) $a+3b+3c+d \\ a+2b+c & b+2c+d \\ b+c & c+d$ 2 B1 for 3 cells correct, may be unsimplified 4(b) their $(a+3b+3c+d)=34$ oe M1 C opportunity 4(c) $3 + 5 + 2 = 6 = 6 = 6 = 6 = 6 = 6 = 6 = 6 = 6 =$	2(c)	7	3	B1 for each row
4(a) $a + 3b + 3c + d$ $a + 2b + c$ $b + 2c + d$ $b + c$ $c + d$ 4(b) $their (a + 3b + 3c + d) = 34$ oe 4(c) $3 5 1 2 6$ or $4 4 2 1 7$ 4(c) $a 5 6 0$ or $a 4 4 2 1 7$ 5(a) Row gives the coefficients of a , b , c and d 5(b) $a 6 1 1 2 1 3 4 4 5 6 6 4 4 2 1 7 1 1 1 1 1 1 1 1$	3(a)		2	B1 for each row
$a + 2b + c \qquad b + 2c + d \qquad \text{unsimplified}$ $4(b) \qquad their (a + 3b + 3c + d) = 34 \text{ oe} \qquad \mathbf{M1} \qquad \mathbf{C} \text{ opportunity}$ $4.25 \qquad \mathbf{M1}$ $4(c) \qquad 3 \qquad 5 \qquad 1 \qquad 2 \qquad 6 \qquad \qquad \mathbf{C} \qquad \mathbf{C} = 1 \text{ and } d = 2 \text{ or } c = 2 \text{ and } d = 1 \text{ Copportunity}}$ $5(a) \qquad \mathbf{Row gives the coefficients of } a, b, c \text{ and } d \qquad \mathbf{C} \qquad \mathbf{C} = 1 \text{ and } d = 2 \text{ or } c = 2 \text{ and } d = 1 \text{ Copportunity}}$ $5(a) \qquad \mathbf{Row gives the coefficients of } a, b, c \text{ and } d \qquad \mathbf{C} \qquad \mathbf{C} = 1 \text{ and } d = 2 \text{ or } c = 2 \text{ and } d = 1 \text{ Copportunity}}$ $5(a) \qquad \mathbf{C} = 1 \text{ and } d = 2 \text{ or } c = 2 \text{ and } d = 1 \text{ Copportunity}}$ $\mathbf{C} = 1 \text{ and } d = 2 \text{ or } c = 2 \text{ and } d = 1 \text{ Copportunity}}$ $\mathbf{C} = 2 \text{ and } d = 1 \text{ Copportunity}}$ $\mathbf{C} = 2 \text{ and } d = 1 \text{ Copportunity}}$ $\mathbf{C} = 2 \text{ and } d = 1 \text{ Copportunity}}$ $\mathbf{C} = 2 \text{ and } d = 1 \text{ Copportunity}}$ $\mathbf{C} = 2 \text{ and } d = 1 \text{ Copportunity}}$ $\mathbf{C} = 2 \text{ and } d = 1 \text{ Copportunity}}$ $\mathbf{C} = 2 \text{ and } d = 1 \text{ Copportunity}}$ $\mathbf{C} = 2 \text{ and } d = 1 \text{ Copportunity}}$ $\mathbf{C} = 2 \text{ and } d = 1 \text{ Copportunity}}$ $\mathbf{C} = 2 \text{ and } d = 1 \text{ Copportunity}}$ $\mathbf{C} = 2 \text{ and } d = 1 \text{ Copportunity}}$ $\mathbf{C} = 2 \text{ and } d = 1 \text{ Copportunity}}$ $\mathbf{C} = 2 \text{ and } d = 1 \text{ Copportunity}}$ $\mathbf{C} = 2 \text{ and } d = 1 \text{ Copportunity}}$ $\mathbf{C} = 2 \text{ and } d = 1 \text{ Copportunity}$ $\mathbf{C} = 2 \text{ and } d = 1 \text{ Copportunity}$ $\mathbf{C} = 2 \text{ and } d = 1 \text{ Copportunity}$ $\mathbf{C} = 2 \text{ and } d = 1 \text{ Copportunity}$ $\mathbf{C} = 2 \text{ and } d = 1 \text{ Copportunity}$ $\mathbf{C} = 2 \text{ and } d = 1 \text{ Copportunity}$ $\mathbf{C} = 2 \text{ and } d = 1 \text{ Copportunity}$ $\mathbf{C} = 2 \text{ and } d = 1 \text{ Copportunity}$ $\mathbf{C} = 2 \text{ and } d = 1 \text{ Copportunity}$ $\mathbf{C} = 2 \text{ and } d = 1 \text{ Copportunity}$ $\mathbf{C} = 2 \text{ and } d = 1 \text{ Copportunity}$ $\mathbf{C} = 2 \text{ and } d = 1 \text{ Copportunity}$ $\mathbf{C} = 2 \text{ and } d = 1 \text{ Copportunity}$ $\mathbf{C} = 2 \text{ and } d = 1 \text{ Copportunity}$ $\mathbf{C} = 2 \text{ and } d = 1 \text{ Copportunity}$ $\mathbf{C} = 2 \text{ and } d = 1 \text{ Copportunity}$ $\mathbf{C} = 2 \text{ and } d = 1 \text{ Copportunity}$ $\mathbf{C} = 2 and $	3(b)	-2	1	C opportunity
4.25 or $\frac{34}{8}$ is not an integer oe 4(c) $\frac{3}{8}$ 5 1 2 6 or $\frac{3}{4}$ 4 2 1 7 5(a) Row gives the coefficients of a , b , c and d 2 B1 for $c = 1$ and $d = 2$ or $c = 2$ and $d = 1$ C opportunity 5(a) Row gives the coefficients of a , b , c and d 2 B1 for each 5(b) $[1]a + 4b + 6c + 4d + [1]e$ oe 1 5(c) $[1] \times 3 + 4 \times 5 + 6 \times 1 + 4 \times 2 + [1] \times 6 [= 43]$ or $[1] \times 4 + 4 \times 4 + 6 \times 2 + 4 \times 1 + [1] \times 7 [= 43]$	4(a)	a+2b+c $b+2c+d$	2	
or $\frac{34}{8}$ is not an integer oe 4(c) $3 5 1 2 6$ or $4 4 2 1 7$ 2 B1 for $c = 1$ and $d = 2$ or $c = 2$ and $d = 1$ C opportunity 5(a) Row gives the coefficients of a , b , c and d 2 B1 for each 3 5(b) $[1]a + 4b + 6c + 4d + [1]e$ oe 1 5(c) $[1] \times 3 + 4 \times 5 + 6 \times 1 + 4 \times 2 + [1] \times 6 [= 43]$ or $[1] \times 4 + 4 \times 4 + 6 \times 2 + 4 \times 1 + [1] \times 7 [= 43]$ 1 FT their correct 5(b) only	4(b)	their $(a + 3b + 3c + d) = 34$ oe	M1	C opportunity
or $4 \ 4 \ 2 \ 1 \ 7$ or $c = 2$ and $d = 1$ C opportunity 5(a) Row gives the coefficients of a , b , c and d 2 B1 for each 5(b) $[1]a + 4b + 6c + 4d + [1]e$ oe 1 $[1] \times 3 + 4 \times 5 + 6 \times 1 + 4 \times 2 + [1] \times 6 [= 43]$ or $[1] \times 4 + 4 \times 4 + 6 \times 2 + 4 \times 1 + [1] \times 7 [= 43]$			M1	
3 $5(b) [1]a + 4b + 6c + 4d + [1]e oe 1$ $5(c) [1] \times 3 + 4 \times 5 + 6 \times 1 + 4 \times 2 + [1] \times 6 = 43] or [1] \times 4 + 4 \times 4 + 6 \times 2 + 4 \times 1 + [1] \times 7 = 43]$ $1 FT their correct 5(b) only$	4(c)	or	2	or $c = 2$ and $d = 1$
5(b) $[1]a + 4b + 6c + 4d + [1]e$ oe 1 5(c) $[1] \times 3 + 4 \times 5 + 6 \times 1 + 4 \times 2 + [1] \times 6 = 43$ 1 FT their correct 5(b) only or $[1] \times 4 + 4 \times 4 + 6 \times 2 + 4 \times 1 + [1] \times 7 = 43$	5(a)	Row gives the coefficients of a , b , c and d	2	B1 for each
5(c) $[1] \times 3 + 4 \times 5 + 6 \times 1 + 4 \times 2 + [1] \times 6 = 43$ 1 FT their correct 5(b) only or $[1] \times 4 + 4 \times 4 + 6 \times 2 + 4 \times 1 + [1] \times 7 = 43$		3		
or $[1] \times 4 + 4 \times 4 + 6 \times 2 + 4 \times 1 + [1] \times 7 [= 43]$	5(b)	[1]a + 4b + 6c + 4d + [1]e oe	1	
5(d) 32272 1 C opportunity	5(c)	or	1	FT their correct 5(b) only
	5(d)	32272	1	C opportunity

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Question	Answer	Marks	Partial Marks
Communication: seen in one of the following questions		1	
3(b)	their (a+2b+c) = 7		
4(b)	$8x = 34$ or $x + 3x + 3x + x = 34$ or $34 \div 8$		
4(c)	Completing all empty bricks with 23, 20, 11, 8, 3, 8 or showing working with equations		
5(d)	Relevant working $1 + 4 + 6 + 4 + 1$ or 16×2017 or completing the number wall		

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