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CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/32**

Paper 3 (Core) **May/June 2017**

MARK SCHEME

Maximum Mark: 96

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.

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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.

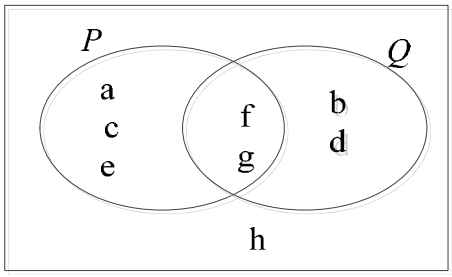
B Mark for a correct result or statement independent of Method marks.

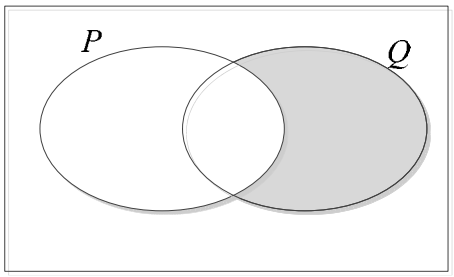
When a part of a question has two or more 'method' steps, the M marks are in principle independent unless the scheme specifically says otherwise; and similarly where there are several B marks allocated. The notation '**dep**' is used to indicate that a particular M or B mark is dependent on an earlier 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	Marks	Part marks
1(a)	Seventy thousand, three hundred [and] two	**1**	
1(b)	2560.108032 or 2560.11	**1**	
1(c)(i)	623.89	**1**	
1(c)(ii)	624	**1**	
1(c)(iii)	600	**1**	
1(d)	11	**2**	**M1** for $8 \times 7 + 5 \times -9$ or 56 or – 45 seen
1(e)	5.5 or $\frac{11}{2}$	**2**	**M1** for correct first step e.g. $54 - 10 - 8x = 0$ or $54 = 10 + 8x$
2(a)(i)	60	**1**	
2(a)(ii)	12.6[0]	**2**	**FT** *their* (a)(i) **M1** for $\frac{\textit{their}(\text{a})(\text{i})}{10}$
2(a)(iii)	2.9[0]	**1**	
2(b)(i)	4	**2**	**M1** for $\frac{40}{8}$ soi or $\frac{20}{40}$ soi
2(b)(ii)	8.6[0]	**1**	**FT** *their* (a)(ii) – *their* (b)(i)
3(a)		**2**	**B1** for 2 or 3 correct regions
3(b)	a or c or e or f or g	**1**	
3(c)	Any proper subset containing some (but not all) of b, d, f, g	**1**	
3(d)	{b, d, h }	**1**	**FT** from *their* Venn diagram
3(e)	1	**1**	**FT** from *their* Venn diagram
3(f)	$c \in P$	**1**	

Question	Answer	Marks	Part marks
3(g)		**1**	
4(a)(i)	*x* in correct place	**1**	
4(a)(ii)	*y* in correct place	**1**	
4(a)(iii)	*z* in correct place	**1**	
4(b)(i)	Any pair of parallel lines	**1**	
4(b)(ii)	Any pair of perpendicular lines	**1**	
4(b)(iii)	Any 2 congruent shapes	**1**	Correct order of letters not required
5(a)	9	**2**	**B1** for 7 or –7 seen
5(b)	–5	**1**	
5(c)	$30 - 7n$ oe	**2**	**B1** for $k - 7n$ or $30 - kn$, $k \neq 0$
5(d)	$-187 = 30 - 7n$ (*their* c) $-217 = -7n$	**M1**	
	$n = 31$	**A1**	
	Yes	**B1**	**1FT** dependent on conclusion correct for their result.
6(a)(i)	190	**2**	**B1** for 3 hours 10 minutes
6(a)(ii)	19	**1**	**FT** *their* (a)(i)
6(a)(iii)	63.2 or 63.15 to 63.16	**2**	**M1** for $\frac{120}{their\,(a)(i)}$ or $\frac{12}{their\,(a)(ii)}$
6(b)(i)	15	**1**	
6(b)(ii)	8	**1**	
6(b)(iii)	11	**1**	
6(c)(i)	$\frac{2}{13}$ oe	**1**	
6(c)(ii)	$\frac{7}{13}$ oe	**1**	

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Question	Answer	Marks	Part marks
7(a)(i)	2, – 3	**2**	**B1** for each If extras given, **B1** for 1 correct and 1 incorrect or 2 correct and no more that 2 incorrect
7(a)(ii)	$\sqrt{2}$ or π	**1**	
7(b)	2, –3, 0.55, $-1\frac{1}{7}$	**2**	**B1** for any 1 or more correct and no extras
7(c)	$\frac{11}{20}$	**2**	**B1** for $\frac{55}{100}$
8(a)	All 4 points correctly plotted	**2**	**B1** for 2 or 3 correctly plotted
8(b)	Positive	**1**	
8(c)(i)	9.9	**1**	
8(c)(ii)	10.1	**1**	
8(d)	Mean point correctly plotted	**1**	**FT** *their* (c)
8(e)	Appropriate line through mean point	**2**	**M1** for ruled line within tolerance but not passing through *their* mean point or ruled line with positive gradient passing through *their* mean point
8(f)	12	**2**	**B1FT** from *their* decimal value or rounded up value from ruled line on graph
9(a)	90	**1**	
9(b)	Friday	**1**	
9(c)(i)	$\frac{22}{90} \times 360 [= 88]$ oe	**1**	
9(c)(ii)	Correct pie chart	**3**	**B2** for correct pie chart without labels or **B1** for 1 correct angle
10(a)	60	**3**	**M2** for $\sqrt{100^2 - 80^2}$ or **M1** for $100^2 = 80^2 + AC^2$ or better
10(b)	240	**1**	**FT** 180 + *their* (a)
10(c)	36.9 or 36.86 to 36.87	**2**	**M1** for cos[ ] = $\frac{80}{100}$ oe
10(d)(i)	150	**2**	**M1** for 9 × 1000 or $\frac{9}{60}$ or $\frac{1000}{60}$

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Question	Answer	Marks	Part marks
10(d)(ii)	8	**2**	**M1** for 5 × *their* (b) oe or $\frac{\textit{their}(\text{b})}{\textit{their}(\text{d})(\text{i})}$
11(a)	880 or 879.6 to 879.8	**3**	**M2** for $\frac{1}{3} \times \pi \times 6^2 \times 20 + \pi \times 2^2 \times 10$ **M1** for $\frac{1}{3} \times \pi \times 6^2 \times 20$ or $\pi \times 2^2 \times 10$
11(b)(i)	20.9 or 20.88...	**2**	**M1** for $20^2 + 6^2$
11(b)(ii)	394 or 393.5 to 394.0	**2**	**M1** for $\pi \times 6 \times$ *their*(b)
12(a)	Correct curve drawn	**2**	**M1** for maximum and minimum in correct quadrants or **B1** for axes intercepts approximately correct or correct shape in wrong position
12(b)	– 1	**1**	
	0.5	**1**	
	2	**1**	
12(c)	2	**1**	
12(d)	(– 0.366, 2.6[0]) or (–0.366… , 2.598…)	**2**	**B1** for *x* co-ordinate **B1** for *y* co-ordinate If 0 scored **SC1** for (– 0.37, 2.6[0])

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