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**CAMBRIDGE INTERNATIONAL MATHEMATICS**

**0607/33**

Paper 3 (Core)

**October/November 2016**

MARK SCHEME

Maximum Mark: 96

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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 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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**Abbreviations**

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

Question	Answer	Marks	Part Marks	
1 (a)	trapezium	1		
	triangle	1		
	square	1		
	parallelogram	1		
1 (b) (i)	2	1	<b>B1</b> for 1 correct line and no incorrect or for 2 correct lines but $\geq 1$ incorrect	
	2 correct lines	2		
2 (a) (i)	38	1	<b>B1</b> for 35 and 32 soi	
	(ii) 6	1		
	(iii) 67	2		
	(b) 4400	2		
	(c) 5	3		
3 (a) (i)	130	1		
	(ii) Obtuse	1		
	(b) 147	1		
		57		1
		33		1
4 (a)	Correct pattern	1	<b>M2</b> for substituting one value bigger than or equal to 2 into both formulae or <b>M1</b> for any substituting into either formula	
	(b) 13, 16	1		
	(c) +3 oe	1		
	(d) Sarah, with correct justification	3		

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<b>5</b>	<b>(a)</b>	62.5 oe	<b>2</b>	<b>M1</b> for $6\frac{1}{4} \times 10$ oe
	<b>(b)</b>	12 min 30 sec	<b>4</b>	<b>B3</b> for 12.5 minutes seen or <b>M2</b> for $6.25 \div 30 \times 60$ oe or <b>M1</b> for $6.25 \div 30$ oe
<b>6</b>	<b>(a)</b>	57	<b>2</b>	<b>B1</b> for 12 or 45 seen or <b>M1</b> for $6 \times 2 + 9 \times 5$ seen
	<b>(b)</b>	$5x + 13$	<b>2</b>	<b>B1</b> for $5x$ or $[\+]13$ seen
	<b>(c)</b>	$3(2x + 3y)$	<b>1</b>	
<b>7</b>	<b>(a)</b>	24	<b>2</b>	<b>M1</b> for $6 \times 8 \div 2$ soi
	<b>(b)</b>	336	<b>3FT</b>	<b>FT</b> $288 + 2 \times \text{their (a)}$ <b>M2</b> for $12 \times 8$ , $12 \times 10$ and $12 \times 6$ soi or <b>M1</b> for any two of $12 \times 8$ , $12 \times 10$ , $12 \times 6$ soi
	<b>(c)</b>	288	<b>1FT</b>	<b>FT</b> $12 \times \text{their (a)}$
<b>8</b>	<b>(a)</b>	16.11	<b>3</b>	<b>M2</b> for $8.95 \div 5 \times 9$ or <b>M1</b> for $8.95 \div 5$
	<b>(b)</b>	1.38	<b>3</b>	<b>M2</b> for $1.20 \times 1.15$ oe or <b>M1</b> for $1.20 \times 0.15$ oe
	<b>(c)</b>	12	<b>3</b>	<b>M2</b> for $(5.50 - 4.84) \div 5.50$ oe or <b>M1</b> for $4.84 \div 5.50$ oe
<b>9</b>	<b>(a)</b>	10	<b>1</b>	
	<b>(b)</b>	2	<b>3</b>	<b>M1</b> for $6x - 3 = 9$ or for $2x - 1 = 3$ <b>M1</b> for $6x = 12$ or for $2x = 4$
	<b>(c)</b>	$4\frac{1}{2}$ oe	<b>3</b>	<b>M2</b> for $7x - 3x$ seen and $20 - 2$ seen or <b>M1</b> for $7x - 3x$ seen or $20 - 2$ seen
<b>10</b>	<b>(a)</b>	[0.75, 1.5] 3, 6, 12, 24	<b>1</b>	
	<b>(b)</b>	Correct curve	<b>1</b> <b>1</b>	<b>B1</b> for correct shape <b>B1</b> for crosses y-axis at approximately 3
	<b>(c) (i)</b>	Correct line	<b>1</b>	Above where curve crosses y-axis
	<b>(ii)</b>	1.415 to 1.42	<b>1</b>	

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11	(a)	Steve Median = 27 IQR = 13	1 2	B1 for 30 or 17 seen
	(b)	Tam Median = 23 IQR = 11 or 11.5	1 2	
	(c)	Steve's plants are taller oe Tam's plants have a more consistent height oe	1 1	
12	(a)	[0.455] 0.21, 0.335	2	M1 for $n \div 200$ soi
	(b)	Large amount of trials oe	1	
	(c)	1675	2	M1 for <i>their</i> $\frac{67}{200} \times 5000$
	(d)	0.665	2	M1 for $0.455 + \text{their}(0.21)$
13	(a)	$1.17 \times 10^{13}$	2	B1 for $9 \times 10^{16}$ seen
	(b)	[0].00013	1	
	(c)	$\sqrt{\frac{E}{m}}$ oe	2	M1 for $c^2 = \frac{E}{m}$ or SC1 for answer $\frac{\sqrt{E}}{m}$
14		826 or 825.6 to 825.7	6	M1 for $3 \times 100$ M1 for $4 \times 80$ M1 for $2 \times 40$ M2 for $\frac{1}{2} \times \pi \times 80$ or M1 for $\pi \times 80$
15	(a)	8.13 or 8.127...	2	M1 for $4.6^2 + 6.7^2$ seen
	(b)	27.6 or 27.64...	3	M2 for $10.8 \div \sin 23$ or M1 for $\sin 23 = \frac{10.8}{y}$