UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2010 question paper

for the guidance of teachers

0580 MATHEMATICS

0580/12   Paper 12 (Core), maximum raw mark 56

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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Qu.	Answers	Mark	Part Marks
1	119	1	
2	**(a)** 24	1	
	(b) (24), 48, 72, 96	1	**SC1** for ans (48), 96 if their **(a)** is 48.
3	$3p(2m - 3q)$ final answer	2	**W1** for $3(2mp - 3pq)$ or $p(6m - 9q)$ or $3p(am \pm bq)$ where a and b are integers.
4	$\dfrac{7}{20}$ or equivalent fraction isw www	2	**M1** for $\dfrac{2 \times 4}{4 \times 5} + \dfrac{5 \times 1}{4 \times 5}$ or $\dfrac{8}{20} + \dfrac{5}{20}$ or $0.4 + 0.25$ or $1 - \dfrac{8}{20} - \dfrac{5}{20}$ or $1 - 0.4 - 0.25$ or $40 + 25$ or $400 + 250$ or $1000 - 400 - 250$ seen If **M0** then **SC1** for $\dfrac{7}{20}$ with no, incomplete or wrong working. Condone if followed by 0.35 or 35%
5	**(a)** 22 10, 22:10, 22.10, 10 10pm	1	
	(b) 11(h) 35(min)	1**ft**	Follow through time period from their **(a)** to 09 45
6	1904	2	**M1** for 400×4.76
7	66.5	2 cao	**W1** for figs 665 **or SC1** answer of $66.5 < \text{LB} < 67.5$
8	$(\pm)\sqrt{(m + 2)}$ final answer	2	**W1** for $p^2 = m + 2$ or ft square root after incorrect first step(s). **SC1** answer of $(\pm)\sqrt{m} + 2$
9	**(a)** (0)34 to (0)36	1	
	(b) 286 to 289	1	
10	**(a)** 6	1	
	(b) 520	2	**M1** for $5 \times 10^2 - 10 \times -2$, or better If zero, **SC1** for answer of 480 or 2520
11	**(a)** Line of fit by eye	1	
	(b) Negative	1	
	(c) Older children run faster	1	
12	**(a)** −3	1	
	(b) **(i)** p^5	1	
	(ii) m^{-4} or $\dfrac{1}{m^4}$	1	

13	**(a)** 0.08259(…..)	1	
	(b) 8.26×10^{-2}	2**ft**	**W1** for their figs 826, i.e. to 3 sig figs **(a)** must have a minimum of 4 figures in order to qualify for this mark. or **W1 ind** for their **(a)** in standard form.
14	$(x) = 7$, $(y) = 3$, www	3	**M1** for multiplying and subtracting or adding as appropriate. (allow errors in arithmetic operations) or any other correct methods **A1** for one correct variable.
15	Rectangle width 1.5 cm. Rectangle width 1 cm. Accurately drawn cross-section piece	1 1 1	in a correct place in a correct place in a correct place
16	($)282.56(…)	3	**M1** for 2500×1.055^2 oe 2782(. ...) **and M1 dep** for subtracting 2500
17	**(a)** D	1	
	(b) E	1	
	(c) G	1	
	(d) F	1	
18	**(a)** Translation $\begin{pmatrix} 7 \\ -6 \end{pmatrix}$	2	**W1 cao** for translation (allow poor spelling) **or W1** independent for correct vector alone.
	(b) Correct rotation (4, 4), (5, 4), (5, 2) and (2, 4)	2	**W1** for (2, 4) missed but other points correct **or SC1** for 90 anti-clockwise rotation **or SC1** correct rotation, any other centre
19	**(a)** 98.1 or 98.13 to 98.14	3	**M1** for 14×6 (+……) **M1 ind** for $\pi \times 3^2 \div 2$
	(b) 19.6 or 19.62 to 19.63	2**ft**	**M1** for their **(a)** $\times$ figs 2 Figs 196…. implies **M1**
20	**(a)** Two parallel straight lines 7 cm long and 4 cm from *AB* **and** two semicircular ends 4 cm from *A* and from *B*.	2	**W1** for 2 correct lines or 2 semicircles.
	(b) 391 or 391.3 to 391.4	3 **cao**	**M1** for 2×70 soi and **M1 ind** for $2 \times \pi \times 40$ **SC2** for answer of 39.1 or 39.13 to 39.14