

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	$\frac{7}{20}$ or equivalent fraction isw www	2	M1 for $\frac{2 \times 4}{4 \times 5} + \frac{5 \times 1}{4 \times 5}$ or $\frac{8}{20} + \frac{5}{20}$ or $0.4 + 0.25$ or $1 - \frac{8}{20} - \frac{5}{20}$ or $1 - 0.4 - 0.25$ or $40 + 25$ or $400 + 250$ or $1000 - 400 - 250$ seen If M0 then SC1 for $\frac{7}{20}$ 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)	1ft	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 $66.5 < LB < 67.5$
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 $\frac{1}{m^4}$	1	

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13	(a) 0.08259(.....) (b) 8.26×10^{-2}	1 2ft	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 (b) E (c) G (d) F	1 1 1 1	
18	(a) Translation $\begin{pmatrix} 7 \\ -6 \end{pmatrix}$ (b) Correct rotation (4, 4), (5, 4), (5, 2) and (2, 4)	2 2	W1 cao for translation (allow poor spelling) or W1 independent for correct vector alone. 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 (b) 19.6 or 19.62 to 19.63	3 2ft	M1 for $14 \times 6 (+.....)$ M1 ind for $\pi \times 3^2 \div 2$ 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. (b) 391 or 391.3 to 391.4	2 3 cao	W1 for 2 correct lines or 2 semicircles. 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