

**MARK SCHEME for the May/June 2010 question paper  
for the guidance of teachers**

<p style="text-align: center;"><b>0580 MATHEMATICS</b></p> <p><b>0580/13</b>      Paper 13 (Core), maximum raw mark 56</p>
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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	109	1	
2	10 26 (am), 10:26, 10.26	1	
3	12, 16, 24	2	<b>W1</b> for any <b>2</b> correct out of their 2 or 3 answers in the range <b>or W1</b> for <b>all 3</b> with other factors outside the range.
4	(a) > (b) <	1 1	
5	20	2	<b>M1</b> for $\frac{\text{their } (21000 - 16800)}{21000}$ or $\frac{4200}{21000}$
6	$y = 3x - 2$ oe final answer	2	<b>W1</b> for $3x + j, j \neq 5$ <b>or W1</b> for $kx - 2, k \neq 0$
7	$\frac{11}{40}$ or equivalent fraction isw www Condone if followed by 0.275 or 27.5%	2 cao	<b>M1</b> for $\frac{3 \times 8}{5 \times 8} + \frac{5 \times 1}{8 \times 5}$ or $\frac{5}{40} + \frac{24}{40}$ or $0.6 + 0.125$ or $1 - \frac{5}{40} - \frac{24}{40}$ or $1 - 0.6 - 0.125$ or $600 + 125$ or $60 + 12.5$ or $1000 - 600 - 125$ <b>seen</b> If <b>M0</b> , then <b>SC1</b> for $\frac{11}{40}$ with no, incomplete or wrong working.
8	(a) 519.504 (b) 520	1 1ft	Only ft if their (a) is <b>4 figs</b> or more
9	44.2 or 44.15 to 44.19	2	<b>M1</b> for $3.75^2 \times \pi$
10	(a) 2 (b) A M T	1 2	<b>W1</b> for 4 letters listed, 3 of them correct <b>or W1</b> for 2 and only 2 correct
11	(a) $m^{-2}, \frac{1}{m^2}$ o.e. (b) $5k^6$	1 2	<b>W1</b> for $5k^n (n \neq 0)$ or $mk^6 (m \neq 0)$ .
12	12	3	<b>M1</b> for exterior angle $180 - 150$ implied by 30 (could be on the diagram) <b>and M1 dep</b> for $360 \div \text{their } 30$
13	(a) $15 - 20h$ final answer (b) $24d^3 + 4de^2$ final answer	1 2	<b>W1</b> for $24d^3$ <b>or</b> $(+)4de^2$ <b>seen</b>
14	(a) 16.1 (b) 16100	2 1ft	<b>M1</b> for $4 \times 2.3 \times 1.75$ , or better 1000 $\times$ their (a)

Page 3	Mark Scheme: Teachers' version	Syllabus
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15	(a) $2r + 3s$ final answer	1	
	(b) $g - 5f^2$ final answer	2	<b>W1</b> for $g$ or for $-5f^2$ seen
16	276 or 276.3 to 276.5	3	<b>M2</b> for $2\pi \times 4 \times 11$ , or better, seen or <b>M1</b> for $2\pi \times 4$ <b>SC1</b> for $4 \times \pi \times 11$ or 138...., seen
17	$(x =) 4$ $(y =) 7$ www	3	<b>M1</b> for adding or multiplying and subtracting (allow errors in arithmetic operations) or any other correct methods <b>A1</b> for one correct variable.
18	(a) $90^\circ$	1	
	(b) $70^\circ$	1	
	(c) $35^\circ$	1ft	ft their (b) $\div 2$ only
19	(a) $\begin{pmatrix} 18 \\ 0 \end{pmatrix}$	1, 1	
	(b) $\begin{pmatrix} -5 \\ 8 \end{pmatrix}$	1, 1	
20	(a) 45	1	
	(b) 1.5 o.e.	1	Allow 1 h(our) 30(min) or 1:30
	(c) horizontal line from (5.5, 40) to (6.5, 40) diagonal line from their (x, 40) to $(x + \frac{1}{2}, 0)$	1	
		1ft	Independent
21	(a) 13.2 or 13.22 to 13.23	3	<b>M2</b> for $\sqrt{16^2 - 9^2}$ or $\sqrt{175}$ or <b>M1</b> for $16^2 = x^2 + 9^2$ or better
	(b) 8.22 to 8.23	2	<b>M1</b> for $\cos 24 = \frac{CD}{9}$ or better