

**MARK SCHEME for the October/November 2011 question paper  
for the guidance of teachers**

**0580 MATHEMATICS**

**0580/11**

Paper 1 (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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### Abbreviations

cao	correct answer only
cso	correct solution only
dep	dependent
ft	follow through after error
isw	ignore subsequent working
oe	or equivalent
SC	Special Case
www	without wrong working

Qu.	Answers	Mark	Part Marks
1	$\begin{pmatrix} -3 \\ 4 \end{pmatrix}$	1	
2	24 or 24 out of 30	2	<b>M1</b> for $\frac{4}{5} \times 30$
3	1.8	2	<b>M1</b> for $1.4 \div 7$ or <b>SC1</b> for <b>answer</b> 180
4	16	2	<b>B1</b> for 1cm to 0.5km oe or 800 000 (cm) or figs 16
5	(a) 25 (b) Green cao	1 1	
6	7.5(0) cao	2	<b>M1</b> for $\frac{258.75}{4.6}$
7	(a) 120 (b) $\frac{9}{25}$ cao	1 2	<b>B1</b> for $\frac{36}{100}$ or $\frac{18}{50}$
8	(a) 7853 to 7855 or 7850 or 7860 www (b) 0.7853 to 0.7855 or 0.785 or 0.786	2 1ft	<b>M1</b> for $\pi \times 50^2$ Their (a) $\div 10\,000$ evaluated
9	(a) 15 (b) 2 (pm), 6 (pm) (c) 15	1 1 1	Allow -15
10	(a) Rectangle or rhombus (b) Isosceles (triangle) (c) 5 cao	1 1 1	Either one or both given

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11	$\frac{11k}{24k}$ final answer www		<p>Method 1 (Addition first)</p> <p><b>B1</b> <math>\frac{8}{12} + \frac{3}{12}</math> or <math>\frac{8+3}{12}</math> oe</p> <p><b>M1</b> <math>\frac{1 \times \text{their } 11}{2 \times \text{their } 12}</math></p> <p><b>A1</b></p> <p>Method 2 (Multiplication first)</p> <p><b>B1</b> <math>\frac{2}{6} + \frac{1}{8}</math> or <math>\frac{1}{3} + \frac{1}{8}</math> oe</p> <p><b>M1</b> <math>\frac{ad+bc}{bd}</math> for their <math>\frac{a}{b} + \frac{c}{d}</math></p> <p><b>A1</b></p> <p>If <b>M0</b>, <b>SC1</b> if <math>\frac{11}{12}</math> is only followed by <math>\frac{11}{24}</math> or if zero, <b>SC1</b> if work is entirely in decimals with answer of 0.458<math>\dot{3}</math> to 0.45835</p>
12	(a) Correct ruled line (b) -2.7, 0.7	1 1, 1ft	<b>B2ft</b> their ruled line through (0, 3) for two intersections given to 1 decimal place or <b>B1</b> for -2.70 to -2.75 and 0.70 to 0.75 or <b>B1ft</b> their ruled line through (0, 3) for two intersections not given to 1 decimal place
13	135 cao	3	<b>M1</b> for 720 or $(6-2) \times 180$ oe seen in working and <b>M1</b> for equation $180 + 4x = \text{their } 720$ or <b>M1</b> for $(360 - 180) \div 4 (= 45)$ oe seen in working and <b>M1</b> dep for $180 - \text{their } 45$
14	(a) $9x - 10$ final answer (b) $2x^3 - 3x$ final answer	2 2	<b>B1</b> for $6x - 4$ or $3x - 6$ or for answer of $9x + j$ , or $kx - 10$ <b>B1</b> for answer in form $2x^3 + m$ or $n - 3x$
15	(a) Negative (b) Correct point (c) (i) Accurate ruled line (ii) English mark	1 1 1 1ft	Ignore embellishments  Follow through their (c)(i)
16	(a) 70 (b) (i) $(y =) 80$ (ii) $(z =) 40$ (iii) $(t =) 10$	2 1 1 1ft	<b>B1</b> for angle $ABD = 70^\circ$ stated or seen on the diagram  Follow through $90 - \text{their } y$ or $50 - \text{their } z$

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17	(a) 7.42 or 7.416... cao	3	M2 for $\sqrt{8^2 - 3^2}$ or complete alternate method or M1 for $x^2 + 3^2 = 8^2$ or better
	(b) 67.97 to 68(.0) cao	2	M1 for $\cos(y) = \frac{3}{8}$ oe
18	(a) 75	2	M1 for $\frac{500 \times 5 \times 3}{100}$ oe or SC1 for answer of 575
	(b) 3.81(25)	4	M2 for $500 \times 1.05 \times 1.05 \times 1.05$ or M1 for $500 \times 1.05 \times 1.05$ A1 for 578.81(25) or 78.81(25) seen and A1ft for value of $500(1.05)^3 - 500$ – their (a)