

**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	M1 for $\frac{4}{5} \times 30$
3	1.8	2	M1 for $1.4 \div 7$ or SC1 for answer 180
4	16	2	B1 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	M1 for $\frac{258.75}{4.6}$
7	(a) 120 (b) $\frac{9}{25}$ cao	1 2	B1 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	M1 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>B1 $\frac{8}{12} + \frac{3}{12}$ or $\frac{8+3}{12}$ oe</p> <p>M1 $\frac{1 \times \text{their } 11}{2 \times \text{their } 12}$</p> <p>A1</p> <p>Method 2 (Multiplication first)</p> <p>B1 $\frac{2}{6} + \frac{1}{8}$ or $\frac{1}{3} + \frac{1}{8}$ oe</p> <p>M1 $\frac{ad+bc}{bd}$ for their $\frac{a}{b} + \frac{c}{d}$</p> <p>A1</p> <p>If M0, SC1 if $\frac{11}{12}$ is only followed by $\frac{11}{24}$ or if zero, SC1 if work is entirely in decimals with answer of 0.458$\dot{3}$ to 0.45835</p>
12	<p>(a) Correct ruled line</p> <p>(b) -2.7, 0.7</p>	<p>1</p> <p>1, 1ft B2ft their ruled line through (0, 3) for two intersections given to 1 decimal place or B1 for -2.70 to -2.75 and 0.70 to 0.75 or B1ft their ruled line through (0, 3) for two intersections not given to 1 decimal place</p>
13	135 cao	<p>3</p> <p>M1 for 720 or $(6-2) \times 180$ oe seen in working and M1 for equation $180 + 4x = \text{their } 720$ or M1 for $(360 - 180) \div 4 (= 45)$ oe seen in working and M1 dep for $180 - \text{their } 45$</p>
14	<p>(a) $9x - 10$ final answer</p> <p>(b) $2x^3 - 3x$ final answer</p>	<p>2 B1 for $6x - 4$ or $3x - 6$ or for answer of $9x + j$, or $kx - 10$</p> <p>2 B1 for answer in form $2x^3 + m$ or $n - 3x$</p>
15	<p>(a) Negative</p> <p>(b) Correct point</p> <p>(c) (i) Accurate ruled line</p> <p>(ii) English mark</p>	<p>1 Ignore embellishments</p> <p>1</p> <p>1</p> <p>1ft Follow through their (c)(i)</p>
16	<p>(a) 70</p> <p>(b) (i) $(y =)$ 80</p> <p>(ii) $(z =)$ 40</p> <p>(iii) $(t =)$ 10</p>	<p>2 B1 for angle $ABD = 70^\circ$ stated or seen on the diagram</p> <p>1</p> <p>1</p> <p>1ft Follow through $90 - \text{their } y$ or $50 - \text{their } z$</p>

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17	(a) 7.42 or 7.416... cao	3	M2 for $\sqrt{8^2 - 3^2}$ or complete alternate meth... 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)