

**MARK SCHEME for the October/November 2010 question paper  
for the guidance of teachers**

**0580 MATHEMATICS**

**0580/12**

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
<b>1</b>	134	1	
<b>2</b>	512(.00)	1	
<b>3</b>	<b>(a)</b> $-7$ <b>(b)</b> $(+ )6$	1 1ft	ft $-1$ – their <b>(a)</b>
<b>4</b>	$1.43 \times 10^9$ final answer	2	<b>B1</b> for answers of $1.43 \times 10^n$ ( $n \neq 0$ ) or figs 143 or $1.429(\dots) \times 10^9$ <b>SC1</b> for answer of $1.42 \times 10^9$ or $1.4 \times 10^9$
<b>5</b>	$899.5 \leq w < 900.5$	2	<b>B1</b> for 1 correct or <b>SC1</b> for correct but reversed.
<b>6</b>	10 www	2	<b>M1</b> for $15 \div 6$ soi or <b>B1</b> for $\frac{6}{4} = \frac{15}{EF}$ oe or better
<b>7</b>	662.794 to 663.304.... final answer	3	<b>M2</b> for $600 \times 1.034^3$ or <b>M1</b> for $(600 + 0.034 \times 600) \times 0.034$ or $(600 \times 1.034) \times 0.034$ and <b>M1 dep</b> correct method for the remaining time.
<b>8</b>	<b>(a)</b> $4p(2q + 3r)$  <b>(b)</b> $(p =) \frac{s}{4(2q + 3r)}$ oe	2  1ft	<b>B1</b> for $p(8q + 12r)$ or $2p(4q + 6r)$ or $4p(aq + br)$ $a, b$ integers or $4(2pq + 3pr)$  ft if p is a common factor in <b>(a)</b> or in working in <b>(b)</b>
<b>9</b>	<b>(a)</b> 245  <b>(b)</b> 360	1  2	<b>M1</b> for $\frac{3}{7} \times 840$ or <b>SC1</b> for answer 480

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10	(a) $\frac{15}{43}$ cao final answer	1	If zero in (a) and (b) then <b>SC1</b> if both (a) and (b) are correct decimals or percentages as answers. (Mark as 0 for (a) and SC1 for (b))
	(b) $\frac{42}{43}$ cao final answer	1	
	(c) 0 or $\frac{0}{43}$	1	
11	(a) $(x=) 35$	2	<b>B1</b> for angle $BDC = 90$ soi May be marked on the diagram
	(b) $(y=) 55$	1ft	
12	(a) (i) $(x=) 6$	1	
	(ii) $(x=) -2$	1	
	(b) 3	1	
13	(a) Two stage proof	2	<b>M1</b> for $\frac{1 \times 7 + 2 \times 5}{5 \times 7}$ or $\frac{1 \times 7}{5 \times 7} + \frac{2 \times 5}{5 \times 7}$ or alt $\frac{4}{5} - \frac{2}{7}$ or $\frac{5}{7} - \frac{1}{5}$ <b>M1dep</b> for 1 – their $\frac{17}{35}$ or $\frac{18}{35} + \frac{17}{35} = \frac{35}{35}$ or alt $\frac{28-10}{35}$ oe or $\frac{25-7}{35}$ oe  <b>M1</b> for $\frac{1}{3} \times \frac{18}{35}$ oe If zero <b>SC1</b> for answer of $\frac{12}{35}$
	(b) $\frac{6}{35}$ final answer	2	
14	(a) (i) $\frac{10 \times 8 - 0.5 \times 90}{5}$	1	<b>B1</b> for 80 (from $10 \times 8$ ) or 45 (from $0.5 \times 90$ ) or 5 (denominator) seen
	(ii) 7(.0) cao	2	
	(b) 5.92 or 5.919(.....)	1	
15	(a) (i) 175	1	
	(ii) 70	1	
	(b) 2 points plotted correctly ( $\pm 1$ mm).	1	
	(c) Positive	1	

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<b>16</b>	<p><b>(a)</b> Rotation or enlargement 180° (SF) –1 (about or centre) origin oe</p> <p><b>(b)</b> Correct translation 5 right and 3 down</p>	<p>1 1 1</p> <p>2</p>	<p>Two transformations named, zero for <b>(a)</b> Independent Independent</p> <p><b>B1</b> for 5 right or 3 down applied</p>
<b>17</b>	<p><b>(a)</b> <math>\begin{pmatrix} -12 \\ -3 \end{pmatrix}</math></p> <p><b>(b)</b> <math>\begin{pmatrix} -3 \\ 3 \end{pmatrix}</math></p> <p><b>(c)</b> <b>(i)</b> Vector <b>AB</b> drawn <b>(ii)</b> 134° to 136°</p>	<p>2</p> <p>1</p> <p>1 1</p>	<p><b>B1</b> for 1 component correct.</p> <p>Diagonal line, ignore working lines</p>
<b>18</b>	<p><b>(a)</b> <b>(i)</b> 12.7 to 12.73</p> <p><b>(ii)</b> 161 to 162.1</p> <p><b>(b)</b> 254 to 255</p>	<p>2</p> <p>2ft</p> <p>2</p>	<p><b>M1</b> for <math>\frac{x}{18} = \sin 45</math> or <math>\frac{x}{18} = \cos 45</math> or better</p> <p><b>M1</b> for method for squaring their <b>(a)(i)</b>.</p> <p><b>M1</b> for <math>\pi \times 9^2</math></p>