

**MARK SCHEME for the October/November 2010 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.

Mark schemes must be read in conjunction with the question papers and the report on the examination.

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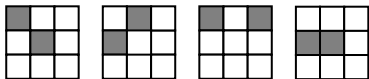
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Abbreviations

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	-8	1	Accept negative or minus in place of '-'
2	3.87×10^{-3}	1	
3	(Triangular) prism	1	
4	17.5	1	
5	54(.00) final answer	2	M1 for $\frac{450 \times 8 \times 1.5}{100}$ oe or SC1 for 504(.00)
6	Perpendicular bisector of AB with 2 pairs of arcs	2	SC1 accurate, but without arcs
7	11.5, 12.5	1, 1	Independent SC1 if answers reversed
8	14	2	M1 for $\frac{230}{(108+7)} \times 7$ or better or SC1 for 216 as answer (steel)
9	8.36(0)	2	M1 for $\frac{h}{6.3} = \tan 53^\circ$ or $\frac{6.3}{h} = \tan 37^\circ$ or better
10	(a) 5.062608(024) (b) 5.063	1 1ft	 ft (a) to 4sf only if their (a) is 5 digits or more
11	(a) 2 lines joining opposite vertices (b) Centre square and any other or 2 adjacent corner squares or 2 centre squares on adjacent edges	1, 1 1	Independent Accept reasonable freehand Any of these diagrams:  May be rotated through 90, 180, 270 degrees

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12	$(x =) 7$ $(y =) -3$	3	M1 for multiplying/dividing and adding/ subtracting or other complete correct method A1 for one correct variable
13	(a) $\begin{pmatrix} 4 \\ 2 \end{pmatrix}$	1	ft their <i>PS</i>
	(b) (i) $\begin{pmatrix} -6 \\ 3 \end{pmatrix}$	1	
	(ii) <i>S</i> plotted at $(-3, 4)$	1ft	
14	(a) 1	1	
	(b) x^{10}	1	
	(c) p^{-7} or $\frac{1}{p^7}$	1	
15	663.72	3	M2 for 663.716.... or M1 for $900 \div 1.356$ and B1 for their longer wrong answer corrected to 2dp
16	(a) 1, 2, 3, 6 final answer cao	2	B1 for only 3 factors as final answer or all 4 plus a wrong one as final answer
	(b) 36 only (as final answer)	2	B1 for any common multiple seen anywhere
17	(a) $\frac{1}{10}$	1	Accept $\frac{0}{10}$ but no other number than 10
	(b) 0	1	
	(c) $\frac{5}{10}$ oe	1	
	(d) $\frac{7}{10}$	1	
18	(a) 3846 to 3849 or 3850	2	M1 for $\pi \times 35^2$ or SC1 correct volume answer
	(b) 169224 to 169356 or 169400 or 169000	1ft	ft their (a) $\times 44$
	(c) 169.2 to 169.4 or 169	1ft	ft their (b) $\div 1000$

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19	(a) $\frac{4}{3} \times \frac{5}{14}$	M2	M1 for $\frac{4}{3} \div \frac{14}{5}$ and M1 for 'correct' expression with their inverted 2 nd fraction
	$\frac{10}{21}$	A1	Allow $\frac{20}{42}$ isw for attempt to cancel only
	(b) $\frac{13}{15} + \frac{3 \times 3}{15}$ or better or equivalent	B2	If B0 , then B1 for $\frac{13}{15} +$ their $\frac{9}{15}$ or equivalent pair of fractions
	$1\frac{7}{15}$	B1ft	Independent ft their improper fraction given as a mixed number
20	(a) Trapezium	1	
	(b) $p = 32^\circ$, alternate	1, 1	Accept Z angles
	$t = 99^\circ$, exterior angle (of) triangle	1ft, 1	ft if $t = p + 67$ Accept angle of triangles and angles on straight line
	$w = 74^\circ$, (base angle) isosceles triangle	1, 1	Accept $\frac{1}{2}(180 - 32)$ with isosceles