

**MARK SCHEME for the May/June 2011 question paper  
for the guidance of teachers**

**0580 MATHEMATICS**

**0580/32**

Paper 3 (Core), maximum raw mark 104

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.

- Cambridge will not enter into discussions or correspondence in connection with these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2011 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

**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	(a) (i) $3000 \div (4 + 7 + 8 + 5)$ and multiply by 7	2	<b>M2</b> for $\frac{7}{24} \times 3000$  <b>M1</b> for $3000 \div (24 \text{ or their clear attempt at total})$
	(ii) 500 www cao	2	<b>M1</b> for $4 \div \text{their } 24 \times 3000 \text{ oe}$ or $\frac{4}{7} \times 875$
	(b) $\frac{1}{3}$	2	<b>B1</b> for $\frac{8}{24}$ or $\frac{4}{12}$ or $\frac{2}{6}$ oe seen or <b>SC1</b> $\frac{2}{5}$
	(c) 560	2	<b>M1</b> for $64 \div 100 \times 875$ or $0.64 \times 875$ oe
	(d) 23.5 or 23.52 to 23.53	3	<b>W1</b> for $105 - 85$ implied by 20  <b>M1dep</b> for their $(105 - 85) \div 85 \times 100$
	(e) 5660	3	<b>B2</b> for 5660.48 or 5660.5 or 660  If <b>B0</b> then <b>M1</b> for $5000 \times (1 + \frac{6.4}{100}) \times (1 + \frac{6.4}{100})$ or better
2	(a) (i) Enlargement (Scale factor) $-\frac{1}{2}$ (centre) origin oe	1 1 1	Independent marks
	(ii) 12	2	<b>M1</b> for $0.5 \times 6 \times 4$ or <b>SC1</b> for $-12$
	(iii) 15.7 to 16.5(cm)	1	
	(b) Image (0, -2), (-6, -2) and (-4, -6)	1	
	(c) Image (2, 0), (2, 6) and (6, 4)	2	<b>SC1</b> rotation $90^\circ$ anti-clockwise or $90^\circ$ clockwise about any other point
	(d) Reflection  $y = -x$ oe	1  1	Independent marks if no equation given then accept correct line drawn on diagram

3	(a)	Scale shown on axis in 2s or 4s or 5s Bars correct for their linear scale	1 2ft	B1 for 3 bars correct or B1 for 4 correct tops only shown, B0 for line graph allow consistent gaps between bars
	(b)	Silver	1	
4	(a) (i)	(\$)57.5(0)	2	M1 for $12 + 6.5 \times 7$  M1 for $(44.5(0) - \text{their } 12) \div \text{their } 6.5$ so  ww both correct B3 ww one correct B0 M1 for consistent multiplication and add/subtract or by substitution M1 for $5x + 3(3x - 22) = 4$ oe A1 for 1 correct answer
	(ii)	$12 + 6.5(0) n$ oe	1	
	(iii)	5	2ft	
	(b)	$(x =) 5, (y =) -7$	3	
5	(a)	Triangle, Pentagon, Octagon	1,1,1	In correct position in the table
	(b) (i)	$(x =) 40$	2	M1 for $360 \div 9$ or complete long method
	(ii)	140	1ft	ft 180 – (b)(i)
6	(a) (i)	1700	1	B2 if only one is correct B1 for Strawberry + Vanilla = 220 and/or M1 for $(\text{Strawberry}) 3600 \div (4200 + 3600 + 3000) \times 360$ or $140 \div 4200 \times 3600$ or better or $(\text{Vanilla}) 3000 \div (4200 + 3600 + 3000) \times 360$ or $140 \div 4200 \times 3000$ or better  1ft Independent. 1ft Consistent with angles in their table.
	(ii)	1858(.3...) or 1860	2	
	(iii)	1750	2	
	(b) (i)	(Strawberry) 120 (Vanilla) 100	3	
	(ii)	Angles correct Labelling with names	1ft 1ft	
	(c) (i)	5 points correctly plotted	2	
	(ii)	Positive	1	
	(iii)	Hotter weather more sales	1	
			1	

7	(a) (i) -1, -3, 3 (ii) 8 points correctly plotted Smooth curve (iii) (x =) -2.4 to -2.2 cao and 1.2 to 1.4 cao	2 3ft 1 1 1	B1 for any 2 correct B2 for 6 or 7 correctly plotted B1 for 4 or 5 correctly plotted Must be close to parabolic in shape
	(b) (i) $x = -\frac{1}{2}$ drawn (ii) $x = -\frac{1}{2}$ oe cao	1 1	Accept dotted/dashed as intention clear
	(c) (i) Ruled line through A and B (ii) (-2, -1) and (3, 9) cao (iii) 2	1 1,1 2	M1 for numbers representing "Change in y/ Change in x", implied by $\frac{2k}{k}$
	(iv) (y =) $2x + 3$ oe	2ft	B1 y = their (c)(iii) $x + k$ or $y = mx + 3$ ( $k, m \neq 0$ )
8	<b>All ft in this question are strict follow through</b> (a) (i) (0)55° (ii) 6 (km/h) (b) Line on bearing 145° (BC =) 7 cm (c) (i) <b>strict follow through</b> (ii) <b>strict follow through</b> (iii) <b>strict follow through</b> (d) (i) Circle (or long enough arc) centre A, radius 4 cm Circle (or long enough arc) centre B, radius 3 cm (ii) <b>strict follow through</b> Must be one buoy on each side of AB. (iii) <b>strict follow through</b>	1 1 1 1 1ft 1ft 1ft 2 1ft 1ft	Independent marks Follow through their CA Follow through their (c)(i) $\times 0.5$ Follow through their angle W1 for 1 correct circle (or long enough arc) Dependent on clear points for the buoys, even if not labelled P and Q. Their (d)(ii) $\div 2$

Page 5	Mark Scheme: Teachers' version	Syllabus
	IGCSE – May/June 2011	0580

<b>9</b>	<b>(a) (i)</b>	4968 Allow 4970	<b>2</b>	<b>M1</b> for $4 \times 60 \times 18 + 2 \times 18 \times 18$ oe
	<b>(ii)</b>	19440 Allow 19400	<b>2</b>	<b>M1</b> for $18 \times 18 \times 60$
	<b>(b) (i)</b>	15260 to 15271 or 15300	<b>2</b>	<b>M1</b> for $\pi \times 9 \times 9 \times 60$ or $4860\pi$ If <b>M0, SC1</b> for answer of 61000 to 61100
	<b>(ii)</b>	4172 or 4170 or 4169 to 4180 or 4140 or 4129 to 4140 or 4100	<b>1ft</b>	ft their <b>(a)(ii)</b> – their <b>(b)(i)</b> provided <b>(a)(ii)</b> > <b>(b)(i)</b>
	<b>(iii)</b>	3391 to 3393.5 or 3390	<b>2</b>	<b>M1</b> for $2 \times \pi \times 9 \times 60$ or $1080\pi$ If <b>M0, SC1</b> for answer of 6780 to 6790
<b>10</b>	<b>(a) (i)</b>	43 36	<b>1</b>	
	<b>(ii)</b>	-1 3	<b>1, 1ft</b>	ft 4 more than 5 <sup>th</sup> term
	<b>(b)</b>	-27	<b>1</b>	
	<b>(c)</b>	$4n - 21$ oe	<b>2</b>	<b>B1</b> for $4n + k$ or $jn - 21$ where $j$ and $k$ are positive or negative integers and $j \neq 0$ .
	<b>(d) (i)</b>	$(n =) 9$	<b>2cao</b>	<b>M1</b> for $78 - 7n =$ their <b>(c)</b> if linear.
	<b>(ii)</b>	15	<b>2cao</b>	<b>M1</b> for $78 - 7 \times$ their <b>(d)(i)</b> or substituting their <b>(d)(i)</b> into their <b>(c)</b>