

**MARK SCHEME for the May/June 2010 question paper
for the guidance of teachers**

0581 MATHEMATICS

0581/32

Paper 32 (Core), maximum raw mark 104

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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
- art anything rounding to
- soi seen or implied

Qu.	Answers	Mark	Part Marks
1 (a)	(i) 3, 4, 6, 9, 12, 18	2	W1 for 4 or 5 correct and no errors or 6 correct and 1 error.
	(ii) Any two of 3, 6, 9, 18	2	W1 for 1 correct and no errors or 2 correct and one extra, incorrect given.
	(b) 25, 36, 49	3	-1 each error or omission SC2 for all of 5 ² , 6 ² , 7 ² . SC1 for all of 5, 6, 7
	(c) $p = 2, q = 7$	2	W1 for either correct.
2 (a)	12	3	Either M1 for 150 – 132 soi M1 for '18' ÷ 150 × 100 or M1 for 132/150×100 M1 for 100 – '88'
	(b) 60	3	M1 for 15 + 7 + 11 M1dep for 15 ÷ '33' × 132, 132 ÷ '33' × 15, 4 × 15 SC2 for 60:28:44
	(c) $\frac{2}{11}$ cao	2	W1 for $\frac{12}{66}$ or $\frac{8}{44}$ or $\frac{6}{33}$ or $\frac{4}{22}$
	(d) (\$)162	2	M1 for 108 ÷ 100 × 150 or 150 + (8 ÷ 100 × 150)

3 (a)	32	2	M1 for $8 \div \frac{1}{4}$ or 8×4
(b) (i)	14 15	1	
(ii)	20	2	M1 for $12 \div 36$ or $(12 \div 36) \times k$
(iii)	Horizontal line from 13 45 to '14 15' Line from ('14 15', 8) to ('14 35', 20)	1ft 1ft	
(c) (i)	1(h) 20(min)	2	M1 for $20 \div 15$ Implied by 1.33(3333) seen or 1 (hr) 33 (mins) or $1 \frac{1}{3}$
(ii)	Line from 13 30 to '14 50'	1ft	
(iii)	15	1ft	
4 (a)	1 st row 7, 8, 6, 7, 5, 4 2 nd row 0, 8, 12, 21, 20, 20	1 1ft	Allow 1 error Allow 1 error
(b) (i)	103	1ft	
(ii)	2.575 or 2.58	2	M1 Their (b)(i) $\div 40$
(iii)	2 cao	2	M1 clear attempt to find the middle number of goals.
(iv)	1 cao	1	
(c) (i)	5	1	
(ii)	Line on pie chart 108° from either given line <u>and</u> correctly labelled.	2	M1 for $(12 \text{ or '5'}) \div 40 \times 360$ oe seen
(d) (i)	$\frac{23}{40}$	1	or 0.575 or 57.5%
(ii)	$\frac{35}{40}$ or $\frac{7}{8}$	1ft	or 0.875 or 87.5%, or $\frac{315}{360}$ ft 1 – their (c)(i)/40 oe

5	(a) (i)	art 6.43	2	M1 for $10\sin(180 - 140)$ or $10\sin 40$ or
	(ii)	77.1 to 77.2	1ft	Their (a)(i) $\times 12$
	(b)	8.5	3	W1 for $x + 2 + x + x + 2 + x = 38$ oe M1 for correct first step but must be from a linear equation $ax + b = k$
6	(a) (i)	45	1	
	(ii)	8 cao	2	M1 for either $360 \div 45$ or $360 \div$ their (a)(i)
	(iii)	(Regular) Octagon	1ft	Only ft for integer in (a)(ii)
	(b)	(x =) 90 (y =) 26 cao (z =) 116 cao	1 2 2	M1 for $90 - 64$ M1 for $180 - 64$ or M1 for $90 + 'y'$ seen with correct working
7	(a)	Point <i>F</i> constructed with arcs. $AF = 4$ cm $EF = 5$ cm	2	1 mark if correct without arcs SC1 if <i>F</i> correctly constructed but in pond
	(b)	Bisector of <i>CD</i> 4.5 cm, with correct arcs	2	1 mark if correct without arcs
	(c)	Bisector of angle <i>BCD</i> with 4 correct arcs	2	1 mark if correct without arcs
	(d) (i)	6.8 – 7.3	1ft	ft their LM
	(ii)	136 – 146	1ft	ft their (d)(i) $\times 20$
	(e)	$45 \times$ their (d)(ii) or $900 \times$ their (d)(i)	2dep	Dep on at least 1 or 2 in (b) M1 $0.5 \times 90 \times$ their (d)(ii) or $0.5 \times 4.5 \times$ their (d)(i) or SCM1 for clear attempt at $\frac{1}{2} \times \text{base} \times \text{height}$ of their triangle CML with consistent units
(f)	Arc of a circle inside the hexagon, radius 6 cm. Correct labelling	1 1ft	Must be bounded by their <i>LM</i> , <i>MD</i> , part of <i>DE</i> and attempt at an arc	

8 (a)	y values $-1, -2, -3, 3, 2, 1$	3	W2 4 or 5 correct W1 2 or 3 correct
(b)	12 points plotted Two smooth correct curves No part across y axis	P2ft C1 B1	P1ft for 10 or 11 'correct'. Independent
(c)	2	1	
(d) (i)	$y = x$ ruled	1	At least 2 diagonal large (4×4) squares.
(ii)	(4 to 4.5, 4 to 4.5) (-4 to -4.5, -4 to -4.5)	2ft	1 mark for each point Ft from their intersections
(e)	$y = -x$ ruled	1ft	Follow through reflection of their (d)(i) in the y axis.
9 (a) (i)	$3k + 4p - 7$ final answer	2	W1 for any 2 correct terms seen or correct answer seen but spoiled by subsequent working.
(ii)	$x - 2y^2$ final answer	2	W1 for a correct term seen or correct answer seen but spoiled by subsequent working.
(b) (i)	$12 + 21g$ final answer	1	
(ii)	$25m^3 - 5mt^2$ final answer	2	W1 for one correct term
10(a) (i)	9.43 art	2	M1 for $\sqrt{8^2 + 5^2}$ oe or $\sqrt{89}$
(ii)	32 or 32.0 art	2	M1 for $\tan(A) = 5 \div 8$ or better
(b) (i)	Similar	1	
(ii)	Enlargement (SF) 2 (Centre) A	1 1 1	W1 for each Independent Independent
(c)	9 and 11	2	W1 for 1 correct or diagram 5 two more than diagram 4.
(d) (i)	21	1	
(ii)	$2n + 1$ oe	2	W1 for $2n + j$ seen or $kn + 1$ seen where $k \neq 0$
(e)	23	2	M1 for $2n + 1 = 47$ seen or their (d)(ii) = 47 seen SC1 for embedded answer