

**MARK SCHEME for the May/June 2012 question paper
for the guidance of teachers**

0580 MATHEMATICS

0580/32

Paper 3 (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
- soi seen or implied

Qu.	Answers	Mark	Part Mark
1	(a) (\$) 15 000	1	
	(b) (\$) 500 000	2ft	M1 for their $15\ 000 \div 3 \times 100$
	(c) 35	2	M1 for $84 \div (3 + 5 + 4)$ or $84 \div 12$
	(d) 40.32 or 40.3	2	M1 for $4.5 \times 3.2 \times 2.8$
	(e) (i) (\$) 372 000	1	
	(ii) (\$) 200 000	2ft	M1 for $992\ 000 - (\text{their (e)(i)} + 420\ 000)$
	(iii) 42.3 cao	2	M1 for $420\ 000 \div 992\ 000 \times 100$ or better
(f) (\$) 4130	3	M1 for $3500 \times 3 \times 6 \div 100$ oe A1 for 630 soi After M1A0 then SCB1 for their $630 + 3500$	
2	(a) (i) Reflection $y = -1$	1 1	
	(ii) Rotation 180 or $\frac{1}{2}$ turn (centre) (0, 0) or O or origin	1 1 1	
	(iii) Translation $\begin{pmatrix} 7 \\ -9 \end{pmatrix}$	1 1	
	(b) Enlargement scale factor 0.5 drawn at the correct position.	2	B1 for 0.5 enlargement at incorrect position.
	3	(a) (i) 27 (ii) 16 (iii) 17 (b) (i) 9, 16, 25, 36	1 1 1 2

	(ii) 4 from 1, 2, 4, 19, 38, 76	2	B1 if 3 correct none wrong or 4 correct and 1 wrong or 5 correct and 1 wrong or 6 correct and 1 wrong
	(iii) 5 or 7	1	
	(iv) 24	2	B1 for any other multiple of 24
	(v) 14	2	B1 for answer of 7 or 2×7
4	(a) (i) -2, -2.5, -10 5, 2.5, 1.25	2	B1 for 4 or 5 correct
	(ii) 10 points correctly plotted	3ft	B2ft for 8 or 9 points correctly plotted. B1ft for 6 or 7 points correctly plotted
	Smooth curve	1	
	(b) (i) Ruled line through both given points	2	B1 for not ruled but otherwise correct or through just 1 of the points
	(ii) (-2.5, -4), (2, 5)	2ft	B1 for 1 correct. ft their line and their curve.
	(c) (i) 2 cao	2	M1 for change in y / change in x for 2 correct points
	(ii) $(y =) 2x + 1$	1ft	Ft $(y =)$ their (c)(i) x + intercept of their line in (b)(i)
5	(a) 82.5	2	M1 for $\frac{1}{2} (9.6 + 12.4) \times 7.5$ or better
	(b) (i) $x^3 - 3xy$ final ans	2	B1 for x^3 or $-3xy$ seen
	(ii) $13w - 22$ final ans	2	B1 for $13w$ or -22 or $8w - 12$ or $5w - 10$ seen
	(c) (i) $(p =) 3x + 4y$ final ans	2	B1 for $3x$ or $4y$ seen or $x + 2x + y + 3y$ seen
	(ii) $(y =) \frac{p-3x}{4}$ oe	2ft	B1ft for $4y = p - 3x$ or $\frac{p}{4} = \frac{3x}{4} + y$
	(d) (i) $2(n + 5) = 3n + 5$ oe	2	B1 for $2(n + 5)$ or $2n + 10$ or $3n + 5$ seen or B1 for any different letter to n in $2(n + 5) = 3n + 5$ oe
	(ii) $(n =) 5$ cao	3	M1 for clearing bracket M1 for $an = b$
6	(a) (i) 2, 3, 6, 5, 4, 3, 1	2	B1 for 4 correct or a fully correct tally
	(ii) 97	1ft	Ft their table
	(iii) 98	2ft	M1 for clear recognition of 12^{th} / 13^{th} value used

	(iv) 104	3	M1 for clear attempt at finding total height (implied by 2496) M1 independent for division by 24 but not $\frac{7}{24}$ nor $\frac{835}{24}$ nor $\frac{24}{24}$
	(v) Median, extreme value	1	Any correct statement referring to the size of the 250 value
	(b) $\frac{13}{24}$ or 0.5416 to 0.542 isw	2ft	M1 for addition of their frequencies of 98 and above
7	(a) 153 to 157	1	
	(b) Bisector of AB with two sets of arcs	2	B1 for 'correct' line without full sets of arcs
	(c) (i) Line at 020°	1	
	(ii) 550 to 590	2ft	B1ft for 5.5 cm to 5.9 cm seen
	(d) 447	2	M1 for $1230 \div 2.75$ (or 165 or 2.45)
8	(a) Isosceles	1	
	(b) (i) Correct triangle with one set of arcs	2	B1 'correct' triangle without arcs or a triangle with 1 side correct with arcs
	(ii) 15 cao	3	B1 for their height M1 for $0.5 \times$ their base \times their height
	(iii) 85	2ft	M1 for $4 \times$ their (b)(ii) $+ 5 \times 5$
	(iv) 46	2	B1 for 26 or 20 or 4×6.5 or 4×5 seen
	(c) Correct net	3	B1 for a rectangle or square surrounded by 4 triangles with bases on the sides of the rectangle or square B1 for accurate square $ABCD$ B1ft (dep on first 2 marks) for accurate isosceles triangles using their height from (b)(i)
9	(a) (i) Diagram 4 drawn	1	
	(ii) 8, 10, 12	2	B1 for 2 correct or follow through for Diagrams 4 and 5 as 2 more than the previous entry
	(b) $2n + 2$ oe	2	B1 for $jn + 2$ ($j \neq 0$) or $2n + k$
	(c) 98	1ft	Only follow through a linear expression in (b)
	(d) 15	2	B1 for a correct diagram or the sequence 1, 3, 6, ... seen or $5 + 4 + 3 + 2 + 1$ seen