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Mark Scheme (Results)

November 2009

GCSE

GCSE Mathematics (Modular) - 2381
Paper: 5384H/13H

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Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		24	1	B1 cao
	(b)		1½ hours	1	B1 for 1½ hours oe (do not accept 1.30 hrs)
2	(a)	$\frac{25}{100}$ x 800	200	1	B1 cao
	(b)	$\frac{52}{200} \times 100$	26	2	M1 for $\frac{52}{200} \times 100$ or a clear attempt to change $\frac{52}{200}$ to an equivalent fraction over 100 A1 cao
3		4×6	24	2	M1 for 4×6 A1 cao
4	(a)		Enlarged P	2	B2 any correct enlargement (B1 at least one side drawn to a sf of 3 or any enlargement ≠ 3 or 1) Tolerance ½ square
	(b)		Rotated Q	3	B3 fully correct (B2 correct orientation in correct quadrant or anticlockwise rotation 90º centre O) (B1 any rotation about O or correct orientation in incorrect quadrant or correct orientation in all 4 quadrants).

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Question		**Working**	**Answer**	**Mark**	**Notes**
5	(a)		12½	3	M1 for $4 \times x - 4 \times 3$ or $4x - 12$ or $(2x + 13) \div 4$ M1 for $2x - 12 = 13$ or $4x = 2x + 25$ or $0.5x = 3.25 + 3$oe A1 12½ oe
	(b)		–1,0,1,2	2	B2 cao (–1 each error or omission)
	(c)	$5y \geq 10$	$y \geq 2$	2	M1 for $5y \geq 10$, condone use of = sign or > sign A1 for(y) ≥ 2 as a final answer [SC: B1 for 2 or $\frac{10}{5}$ seen if M0]
6	(a)	(5×5)×6=	150	4	M1 for attempt to find the area of one face (eg 5×5 or 25) M1 for 6 faces with an intention to add or × 6 A1 cao
			cm^2		B1 (indep) for cm^2 (with or without numerical answer) **N.B.** Do not accept any multiplication which should lead to 125
	(b)	$125 \times 10 \times 10 \times 10$ or $50 \times 50 \times 50$	125 000	2	M1 125×10^3 (oe) or 50^3 (oe) A1 cao

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Question		**Working**	**Answer**	**Mark**	**Noteso**
7	(a)	$\frac{3}{8}+\frac{1}{4}=\frac{3}{8}+\frac{2}{8}=$ |	| 1 | 4 | | 3 | × | 12 | | 8 | 8 | 32 | $8 + 12 = 20 = \frac{20}{32}$	$\frac{5}{8}$	2	M1 Use of common denominator: $\frac{1}{4}=\frac{1\times2}{4\times2}$ or $\frac{2}{8}$ or writing both fractions with a common denominator other than 8 with at least one fraction correct or 0.375 + 0.25 or correct table with sight of 8 + 12 or 20 A1 $\frac{5}{8}$ Accept 0.625
	(b)	$\frac{2}{3}\times\frac{4}{5}=\frac{2\times4}{3\times5}=\frac{8}{15}$	$\frac{8}{15}$	2	M1 for multiplying numerator and denominator of $\frac{2}{3}$ oe and $\frac{4}{5}$ oe OR 0.66(..)×0.8 OR 0.67(..)×0.8 oe A1 for $\frac{8}{15}$ oe OR for 0.533…
8			$N = 4p + 20b$	3	B3 for $N = 4p + 20b$ oe (B2 for 4p + 20b or $N = k + 20b$ oe or $N = 4p + k$ oe where k is ≠ 0) (B1 for $N = cp + db$ where c and d are numerical and not both zero OR $k+20b$ oe or $4p+ k$ oe where k ≠ 0) SC B2 for $N = 4p + 20b$ subsequently incorrectly simplified SC B2 for $kN = 4p + 20b$ where k ≠ 1 SC B1 for $4p + 20b$ subsequently incorrectly simplified SC B1 for $N = 4p$ (space) $20b$ or $N = 4p \times 20b$

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Question		**Working**	**Answer**	**Mark**	**Notes**
9		$5q + 5p = 4 + 8p$ $5q = 4 + 8p - 5p$ $5q = 4 + 3p$ $q = \frac{4 + 3p}{5}$	$q = \frac{4 + 3p}{5}$	3	M1 for expansion of bracket or $5q + 5p$ or each term ÷5 throughout M1 for correct process to obtain $aq = bp + c$ where a,b ,and c are numbers A1 for $q = \frac{4 + 3p}{5}$ oe e.g. $q = \frac{4}{5} + \frac{3}{5}p$ or $q = 0.8 + 0.6p$ [SC B2 for ambiguous answer eg $4+3p/5$]
10	(a)		Reason	1	B1 for "angles stay the same" or "angles will be 60º, 70º, 50º" oe (B0 for "not doubled" oe)
	(b)		Reason	2	M1 for attempt to find scale factor or sight of 10 unless not relevant or recognition that the same scale factor has been used A1 for reason that uses both dimensions of the rectangle or states that a scale factor of 10 has been used for both dimensions (accept "5 × 10 = 50, 2 × 10 = 20" oe for M1A1)
11			95° Reason	2	B1 for 95° B1 for opposite angles in cyclic quadrilateral add to 180º
12		$4x + y = -1$ $\quad 12x+3y = -3$ $4x - 3y = 7$ $\quad 4x - 3y = 7$ $4y = -8$ $\quad 16x = 4$ $y = -2$ $\quad x = 1/4$	$x = \frac{1}{4}$ $y = -2$	3	M1 for correct process to eliminate either x or y (condone one arithmetic error) M1 (dep on previous M1) for substituting found value into an appropriate equation, or further elimination A1 cao

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Question		**Working**	**Answer**	**Mark**	**Notes**
13			2.5×10^{-7}	2	B2 for 2.5×10^{-7} (B1 for 2.5×10^{n} or $a \times 10^{-7}$)
14			$y = -\frac{1}{2}x + 8$	3	M1 for $y = mx + 8$ M1 for drawing $y = -\frac{1}{2}x + 8$ on diagram with attempt to identify the value of the gradient or writing $2 \times m = -1$) A1 for $y = = -\frac{1}{2}x + 8$ oe
15	(a) (b)		81 $\frac{1}{3}$	1 1	B1 cao B1 for $\frac{1}{3}$ oe
16		$(2+\sqrt{3})(2-\sqrt{3})$ $= 4-2\sqrt{3}+2\sqrt{3}-\sqrt{3}\sqrt{3}$ $= 4-3$	1	2	M1 for all 4 terms correct ignoring signs or 3 out of 4 terms with correct signs or $2^2 - (\sqrt{3^2})$ or $2^2 - (\sqrt{3})^2$ from difference of 2 squares) A1 cao
17	(a) (b)	$\overrightarrow{OP} = \overrightarrow{OA} + \overrightarrow{AP}$ $= \overrightarrow{OA} + \frac{2}{3}\overrightarrow{AB}$ $= \underline{\mathbf{a}} + \frac{2}{3}(\underline{\mathbf{b}} - \underline{\mathbf{a}})$	$\mathbf{b} - \mathbf{a}$ $\frac{1}{3}\mathbf{a} + \frac{2}{3}\mathbf{b}$	1 3	B1 cao M1 for $\overrightarrow{OP} = \overrightarrow{OA} + \overrightarrow{AP}$ or $\overrightarrow{OP} = \overrightarrow{OB} + \overrightarrow{BP}$ M1 for $\overrightarrow{OP} = \mathbf{a} + n \times$ "$(\mathbf{b} - \mathbf{a})$" or $\mathbf{b} + n$ "$(\mathbf{a} - \mathbf{b})$" where $0 < n < 1$ or $\overrightarrow{AP} = \frac{2}{3}\overrightarrow{AB}$ or $\overrightarrow{BP} = \frac{1}{3}\overrightarrow{BA}$ A1 for $\frac{1}{3}\mathbf{a} + \frac{2}{3}\mathbf{b}$ oe

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Question		Working	Answer	Mark	Notes
18	(a)		(5, –4)	2	B2 for (5, –4) (B1 for (a, –4) or (5,b) where $a\neq5$ or 3 and $b\neq-4$)
	(b)		(–2, 2)	2	B2 for (–2, 2) (B1 for (a, 2) or (–2, b) where $a\neq-2$ and $b\neq2$)

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