

Mark Scheme (Results)

November 2009

GCSE

GCSE Mathematics (Modular) - 2381

Paper: 5384H/ 14H

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5384H/14H					
Question		Working	Answer	Mark	Notes
1			28.38461538	2	B2 for 28.3846.... (B1 for 107.01 or 3.77 or 28.38(...) or $28\frac{5}{13}$ oe seen)
2	(a)	$3 \times 2 + 5 \times -4$	-14	2	M1 for $3 \times 2 + 5 \times -4$ oe or 6 and -20 seen A1 cao for -14
	(b)	$8x + 11 - 11 = 39 - 11$ $8x = 28$	3.5	2	M1 for $8x = 39 - 11$ oe or $(39 - 11) \div 8$ A1 ft for 3.5 or $3\frac{1}{2}$ oe
3	(a)		Correct plane	2	B2 for a correct plane defined by showing at least 2 adjacent lines of the plane (B1 for a line of symmetry on one face)
	(b)		Correct elevation 	2	B2 for sketch of trapezium (B1 for trapezium with a rectangle or parallelogram added at top or a side or lines drawn from vertices)
4		$\pi \times 5 \times 5$	78.5	2	M1 for $\pi \times 5 \times 5$ (accept π as 3.1 or better) A1 for 77.5 to 78.6 or 25π
5		$360 \div 12$	30	2	M1 for $360 \div 12$ A1 cao

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Question	Working	Answer	Mark	Notes
6	$1.72 \div 2 (= 0.86)$ $7.65 \div 9 (= 0.85)$	Large box with reasons	3	M1 for $1.72 \div 2 (= 0.86)$ M1 for $7.65 \div 9 (= 0.85)$ A1 for large box or 9 kg with correct calculations OR M1 for $2 \div 1.72 (= 1.162\dots)$ M1 for $9 \div 7.65 (= 1.176\dots)$ A1 for large box or 9 kg with correct calculations OR M2 for $7.65 \times 2 \div 9 (= 1.70)$ or for $1.72 \div 2 \times 9 (= 7.74)$ A1 for large box or 9 kg with correct calculations OR M1 for $1.72 \times 9 (= 15.48)$ M1 for $7.65 \times 2 (= 15.30)$ A1 for large box or 9 kg with correct calculations Accept equivalent methods for comparison
7		Rotation 180° Centre (0, 1)	3	B1 for rotation B1 for 180° or half turn B1 for (0, 1) (B0 for any combination of transformations)
8	$360 + \frac{17.5}{100} \times 360$	423	3	M1 for $\frac{17.5}{100} \times 360$ oe or $10\% + 5\% + 2\frac{1}{2}\%$ condone 1 calculation error or 63 or 36, 18 and 9 seen M1 (dep) for $360 + '63'$ A1 for 423 OR M2 for 1.175×360 oe A1 for 423

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Question	Working	Answer	Mark	Notes
9	$180 \div 9 (=20)$ 20×4	80	3	M2 for $180 \div (2 + 3 + 4) \times 4$ or 40, 60, 80 seen (M1 for $180 \div (2 + 3 + 4)$ or 20 seen) A1 cao
10	$3 \rightarrow 33$ $4 \rightarrow 72$ $3.1 \rightarrow 35.9(91)$ $3.2 \rightarrow 39.1(68)$ $3.3 \rightarrow 42.5(37)$ $3.4 \rightarrow 46.1(04)$ $3.5 \rightarrow 49.8(75)$ $3.6 \rightarrow 53.8(56)$ $3.7 \rightarrow 58.0(53)$ $3.8 \rightarrow 62.4(72)$ $3.9 \rightarrow 67.1(19)$ $3.75 \rightarrow 60.2(34375)$	3.7	4	B2 for a trial between 3.7 and 3.8 inclusive (B1 for a trial between 3 and 4 inclusive) B1 for a different trial between 3.7 and 3.8 exclusive B1 (dep on at least one previous B1) for 3.7 NB trials should be evaluated to at least 1dp truncated or rounded
11	(a)	m^7	1	B1 for m^7 , accept m^{3+4}
	(b)	p^4	1	B1 for p^4 , accept p^{7-3}
	(c)	$12x^3y^5$	2	B2 cao (B1 for two of 12, x^3 , y^5 in a product ignore \times signs)
12	$14^2 + 12^2 =$ $196 + 144 = 340$ $\sqrt{340} = 18.4\dots$	18.4	3	M1 for $14^2 + 12^2$ M1 (dep) for $\sqrt{14^2 + 12^2}$ A1 for 18.4 to 18.44

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13		$\frac{29-x}{4} \times 4 = x \times 4 + 5 \times 4$ $29 - 20 = 4x + x$	1.8	3	M1 for multiplying through by 4 or for $\frac{29}{4} - \frac{x}{4} = x + 5$ M1 for correct rearrangement of their 4 terms to separate x and non- x terms A1 for 1.8 oe
14	(a)	$6 \times \frac{15}{10}$	9	2	M1 for sight of $\frac{15}{10}$ or $\frac{10}{15}$ or $\frac{10}{6}$ or $\frac{6}{10}$ oe seen A1 cao NB ratios get M0 unless of the form 1: n
	(b)	$12 \times \frac{10}{15}$	8	2	M1 for correct use of $\frac{15}{10}$ or $\frac{10}{15}$ or $\frac{15}{12}$ or $\frac{12}{15}$ or $\frac{9}{6}$ or $\frac{6}{9}$ oe A1 for 8 or $12 \times 6 \div "9"$
15		$y = kx$ $10 = k \times 500$	$y = \frac{1}{50}x$	3	M2 for $10 = k \times 500$ oe or $10 = \frac{500}{k}$ oe (M1 for $y = kx$ or $y \propto x$ or $y = x/k$) A1 for $y = \frac{1}{50}x$ oe e.g $y = 0.02x$
16		$AB^2 = 5^2 + 8^2 -$ $2 \times 5 \times 8 \times \cos 75$ $= 25 + 64 - 80 \times \cos 75$ $= 68.29\dots$ $AB = \sqrt{89 - 80 \times \cos 75}$ $= \sqrt{68.29\dots}$	8.26	3	M1 for $AB^2 = 5^2 + 8^2 - 2 \times 5 \times 8 \times \cos 75$ M1 (dep) for correct order of evaluation A1 for 8.26(40...) SC M1M1A0 for 3.9(0..) or 7.6(4..) seen

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Question	Working	Answer	Mark	Notes
17	Upper bound $\sqrt{\frac{6.435}{5.5135}} = 1.080340$ Lower bound $\sqrt{\frac{6.425}{5.5145}} = 1.079402$	1.08 because the LB and UB agree to that number of figures	5	B1 for either 6.435 or 6.425 or 6.434999... B1 for either 5.5145 or 5.5135 or 5.5144999... M1 for '6.435' ÷ '5.5135' where $6.43 < '6.435' \leq 6.44$ and where $5.513 \leq '5.5135' < 5.514$ OR for '6.425' ÷ '5.5145' where $6.42 \leq '6.425' < 6.43$ and $5.514 < '5.5145' \leq 5.515$ A1 for 1.0794... and 1.0803... A1 for 1.08 and 'both LB and UB round to 1.08' oe
18	$4(2x - 1) + 3(x + 3) = (x + 3)(2x - 1)$ $8x - 4 + 3x + 9 = 2x^2 - x + 6x - 3$ $2x^2 - 6x - 8 = 0$ $2(x - 4)(x + 1) = 0$	$x = -1, 4$	5	M1 for $4(2x - 1) + 3(x + 3) = (x + 3)(2x - 1)$ or $\frac{4(2x - 1) + 3(x + 3)}{(x + 3)(2x - 1)} (= 1)$ or Multiplying all 3 terms by $(x + 3)$ or by $(2x - 1)$ M1 for either $8x - 4 + 3x + 9$ oe or $2x^2 - x + 6x - 3$ oe seen A1 for correct quadratic (=0) M1(dep on M2) for a correct method to solve 3 term quadratic A1 cao for both solutions

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