GCSE MATHEMATICS

MARK SCHEME – Specimen Paper –Unit 3 (Terminal) Higher Section B

Questions	Working	Answer	Mark	Notes
1	$\frac{3}{6}+\frac{2}{6}$	$\frac{5}{6}$	**3**	M1 for using 6ths oe M1 for $\frac{3}{6}$ and $\frac{2}{6}$ or $\frac{10}{12}$ A1 for $\frac{5}{6}$ cao
2	10% of £60 = £6 5% of £60 = £3 $2\frac{1}{2}$% of £60 = £1.50 £60 + £10.50	£70.50	**3**	M1 for $17\frac{1}{2}$% of £60 M1ft for adding their $17\frac{1}{2}$% A1 cao
3 (a)		48	**2**	M1 for realising 6 × 10 = 60 so 8 × 6 A1 for 48
(b)			**2**	B2 for connecting (45, 20) to (65, 0) (B1 for connecting (30, 20) to (50, 0))
4	$10a + 14 + 6a - 12 = 58$ $16a + 2 = 58$ $16a = 56$ $a = 3.5$ length = 5 × 3.5 + 7	24.5	**4**	M1 for forming equation M1 for $16a + 2 = 56$ A1 for $a = 3.5$ B1 for length = 24.5
5	570 ÷ 50 = 11.4	12	**2**	M1 for 570 ÷ 50 A1 cao
6	70 ÷ 5 × 2 70 ÷ 5 × 3	28, 42	**3**	B3 for both correct B2 for one correct B1 for 70 ÷ 5 seen

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7 **(a)**	$2\frac{11}{12} \div 1\frac{7}{8} = \frac{35}{12} \div \frac{15}{8}$ $\frac{35}{12} \div \frac{15}{8} = \frac{35 \times 8}{12 \times 15} = \frac{14}{9} = 1\frac{5}{9}$	$\frac{14}{9}$ or $1\frac{5}{9}$	**3**	M1 for converting to 12^{ths} and 8^{ths} M1 for reversing one fraction and multiplying A1 cao
(b)	$1\frac{2}{5} + 2\frac{3}{7} = \frac{7}{5} + \frac{17}{7}$ $\frac{7}{5} + \frac{17}{7} = \frac{49 + 85}{35} = \frac{134}{35}$	$3\frac{29}{35}$	**3**	M1 for converting to 5^{ths} and 7^{ths} M1 for cross-multiplying A1 cao
8 **(a)**	Reflection in $x = -1$		**2**	M1 for any reflection in a line parallel to $x = -1$ A1 for correct position
(b)	Rotation 90º about the origin		**3**	M1 for any rotation of 90º M1 if centre (0,0) used as centre A1 for correct position
9		$m = \frac{1}{2}$ c = 7	**2**	B1 B1
10		3-D sketch	**2**	B1 for cross-section correct B1 for 3-D image
11			**6**	B1 for line 5 cm from house and parallel to house B1 for angle bisector of top LH corner B1 for accuracy 45 ± 2º B1 for circular arc center top RH corner B1 for accuracy ± 2 mm B1 for shading combined region

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12	$50a + 60b = 730$ [1] $400a + 750b = 8000$ [2] Mult eqn [1] by 8 $400a + 480b = 5840$ $400a + 750b = 8000$ Subtract $270b = 2160$ $b = 8$ $50a + 480 = 730$ $a = 250/50$	$A = 5$ $B = 8$	**5**	B2 for both equations (B1 for 1 equation correct) M1 for isolating a or b A1 for one value correct A1 for second value correct
13	$200 = \frac{k}{25}$ $k = 5000$ $L = 50$ $50 = \frac{5000}{d^2}$ $d^2 = 100$	10	**4**	M1 for $200 = \frac{k}{25}$ A1 for $k = 5000$ M1 for $50 = \frac{5000}{d^2}$ A1 for 10

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14 **(i)**	$PS = \frac{1}{2}(\mathbf{q} - \mathbf{p})$ $OS = \mathbf{p} + \frac{1}{2}(\mathbf{q} - \mathbf{p})$	$= \frac{1}{2}(\mathbf{p} + \mathbf{q})$	**3**	B1 for $\overrightarrow{PS} = \frac{1}{2}(\mathbf{q} - \mathbf{p})$ M1 for $\overrightarrow{RS} = \frac{1}{2}\mathbf{p} + \frac{1}{2}(\mathbf{q} - \mathbf{p})$ A1 for $\frac{1}{2}(\mathbf{p} + \mathbf{q})$
(ii)	$\overrightarrow{RS} = \overrightarrow{RP} + \overrightarrow{PS}$ $\overrightarrow{RS} = \frac{1}{2}\mathbf{p} + \frac{1}{2}(\mathbf{q} - \mathbf{p})$ $\overrightarrow{RS} = \frac{1}{2}\mathbf{q}$ $\overrightarrow{OQ} = \mathbf{q}$ Therefore RS is parallel to OQ		**2**	B1 for $\overrightarrow{RS} = \frac{1}{2}\mathbf{q}$ and $\overrightarrow{OQ} = \mathbf{q}$ B1 for RS parallel to OQ
15	$2(x - 1) + 3(x + 1) = 5$ $2x - 2 + 3x + 3 = 5$ $5x + 1 = 5$ $5x = 4$	$x = 0.8$	**4**	M2 for $2(x - 1) + 3(x + 1) = 5$ (M1 if only one expression correct) M1 for $5x + 1 = 4$ A1 for 0.8 oe
16	(–3, 0), (–1, 0), (1, 0) (–6, 0), (–4, 0), (–2, 0)		**1** **1**	B1 cao B1 cao