Silver Level

Mark Scheme 3

Level	IGCSE
Subject	Maths
Exam Board	Edexcel
Difficulty Level	Silver
Booklet	Mark Scheme 3

Time Allowed: **60 minutes**

Score: **/50**

Percentage: **/100**

Grade Boundaries:

9	8	7	6	5	4	3	2	1
>90%	80%	70%	60%	50%	40%	30%	20%	<20%

Question Number		Working	Answer	Mark	Notes	
1.	(a)	Complete, correct expression which, if correctly evaluated, gives 48 eg $4 \times \frac{1}{2} \times 6 \times 4$, $2 \times \frac{1}{2} \times 12 \times 4$, $\frac{1}{2} \times 12 \times 8$		3	M2	M1 for correct expression for area of one relevant triangle eg $\frac{1}{2} \times 6 \times 4$, $\frac{1}{2} \times 6 \times 4 \sin 90°$, $\frac{1}{2} \times 8 \times 6$, $\frac{1}{2} \times 12 \times 4$
			48		A1	cao
	(b)	$4^2 + 6^2 = 16 + 36 = 52$		3	M1	for squaring and adding
		$\sqrt{4^2 + 6^2}$			M1	(dep) for square root
			7.21		A1	for answer which rounds to 7.21 (7.211102…)
						Total 6 marks

Question Number		Working	Answer	Mark	Notes	
2.	(i)		$-1\frac{1}{2} < x \leq 2$	4	B2	Also accept $-\frac{3}{2} < x \leq 2$ or answer expressed as two separate inequalities B1 for $-1\frac{1}{2} < x$ or $-\frac{3}{2} < x$ or $x \leq 2$ (these may be as part of a double-ended inequality) or $-\frac{6}{4} < x \leq \frac{8}{4}$
	(ii)		$-1\ \ 0\ \ 1\ \ 2$		B2	B1 for 4 correct and 1 wrong or for 3 correct and 0 wrong
						Total 4 marks

3.	(a)	$75 = 3 \times 5^2$ and $90 = 2 \times 3^2 \times 5$ or 1,3,5,15,25,75 and 1,2,3,5,6,9,10,15,18,30,45,90 or 3×5		2	M1	Need not be products of powers; accept products or lists ie 3,5,5 and 2,3,3,5 Prime factors may be shown as factor trees or repeated division
			15		A1	
	(b)	$2 \times 3^2 \times 5^2$ oe eg $6 \times 3 \times 5^2$ or 75,150,225,300,375,450 and 90,180,270,360,450		2	M1	Also award for $\dfrac{75 \times 90}{15}$
			450		A1	
						Total 4 marks

4.	(a)	$4y = 10 - 3x$ or $-4y = 3x - 10$			3	M1	May be implied by second M1 or by $y = -\dfrac{3}{4}x + c$ even if value of c is incorrect. or finds coordinates of 2 points on the line eg (0, 2.5), $x = 2$, $y = 1$, table, diagram.
		$y = \dfrac{5}{2} - \dfrac{3}{4}x$ oe or $y = \dfrac{10}{4} - \dfrac{3}{4}x$ oe or $y = \dfrac{10 - 3x}{4}$ oe				M1	or for clear attempt to evaluate $\dfrac{\text{vert diff}}{\text{horiz diff}}$ for their pts
				$-\dfrac{3}{4}$		A1	Award 3 marks for correct answer if either first M1 scored or no working shown. *SC* If M0, award B1 for $-\dfrac{3}{4}x$

4	(b)	eg $9x + 12y = 30$ $10x - 12y = 46$	eg $15x + 20y = 50$ $15x - 18y = 69$		5	M1	for coefficients of x or y the same or for correct rearrangement of one equation followed by correct substitution in the other eg $5x - 6\left(\dfrac{10 - 3x}{4}\right) = 23$
		$x = 4$	$y = -\dfrac{1}{2}$			A1	cao dep on M1
						M1	(dep on 1st M1) for substituting for other variable
				$x = 4,\ y = -\dfrac{1}{2}$		A1	Award 4 marks for correct values if at least first M1 scored
				$(4, -\dfrac{1}{2})$		B1	Award 5 marks for correct answer if at least first M1 scored ft from their values of x and y
							Total 8 marks

5.		$-4 < x < 4$	2	B2	B1 for $x < 4$ or $x > -4$ or $x < \pm 4$ or $x < \sqrt{16}$ *SC* B1 for $-4 \le x \le 4$
					Total 2 marks

6.	(a)		2^9	1	B1	cao	
	(b)		3^5	1	B1	cao	
	(c)	$5^{n-4-6} = 5^3$ oe or $5^{n-10} = 5^3$ oe or $n - 4 - 6 = 3$ oe or $n - 10 = 3$ oe or $5^n = 5^3 \times 5^{10}$ oe or $5^n = 5^{3+10}$ or $5^n = 5^{13}$		2	M1		*SC* If M0, award B1 for an answer of 5^{13}
			13		A1	cao	
						Total 4 marks	

7.	(a)	$6x - 3 = 6$ or $2x - 1 = 2$		3	M1	for correct expansion ($6x - 3$ seen) or correct division of both sides by 3 ($2x - 1 = 2$) May be implied by second M1
		$6x = 6 + 3$ or $6x = 9$ or $6x - 9 = 0$ or $2x = 2 + 1$ or $2x = 3$ or $2x - 3 = 0$			M1	for correct rearrangement Also award for $6x = 6 + 1$ or $6x = 7$ or $6x - 7 = 0$ if preceded by $6x - 1 = 6$
			$1\frac{1}{2}$ oe		A1	Award 3 marks if answer is correct and at least one method mark scored

Question Number	Working	Answer	Mark	Notes	
7. (b)	$4(2y + 1) = 3(y - 2)$		4	M1	for clear intention to multiply both sides by 12 or by a multiple of 12 eg $4(2y + 1) = 3(y - 2)$ $2y + 1 \times 4 = y - 2 \times 3$ $12 \times \dfrac{2y+1}{3} = 12 \times \dfrac{y-2}{4}$ May be implied by second M1 or by $8y + 1 = 3y - 2$ or $8y + 4 = 3y - 2$ or $8y + 1 = 3y - 6$ Also award this mark for $\dfrac{4(2y+1)}{12} = \dfrac{3(y-2)}{12}$
	$8y + 4 = 3y - 6$			M1	for correct expansion of brackets or correct rearrangement of correct terms eg $8y - 3y = -6 - 4$, $\dfrac{8y+4}{12} = \dfrac{3y-6}{12}$
	$5y = -6 - 4$ or $8y - 3y = -10$ or $5y = -10$ or $-5y = 6 + 4$ or $3y - 8y = 10$ or $-5y = 10$ or $5y + 10 = 0$			M1	for correct rearrangement with y terms on one side and numbers on the other AND collection of terms on at least one side or for $5y + 10 = 0$ oe or for $\dfrac{5y+10}{12} = 0$ oe
		−2 oe		A1	Award 4 marks if answer is correct and at least one method mark scored
					Total 7 marks

Question Number		Working	Answer	Mark	Notes	
7.	(b)	Alternative method				
		$\frac{2}{3}y + \frac{1}{3} = \frac{1}{4}y - \frac{1}{2}$		4	M1	for correct expansion
		$\frac{2}{3}y - \frac{1}{4}y = -\frac{1}{2} - \frac{1}{3}$			M1	for correct rearrangement of correct terms
		$\frac{5}{12}y = -\frac{5}{6}$			M1	for correct collection of correct terms on both sides
			−2 oe		A1	Award 4 marks if answer is correct and at least one method mark scored
						Total 7 marks

Question Number		Working	Answer	Mark	Notes	
8.	(a)	1×3 + 2×6 + 3×5 + 4×8 + 5×2 + 6×1 or 3 + 12 + 15 + 32 + 10 + 6 or 78		3	M1	for finding at least 4 correct products and summing them
		"78" ÷ 25			M1	(dep) for division by 25 Accept division by their 25, if addition shown.
			3.12 oe inc $3\frac{3}{25}$, $\frac{78}{25}$		A1	Also accept 3 or 3.1 if both method marks scored
	(b)	$5 + 8$ or 13 or $\frac{5}{25} + \frac{8}{25}$		2	M1	
			$\frac{13}{25}$ oe		A1	

Question Number	Working	Answer	Mark	Notes
8. (c)(i)	$\dfrac{5}{25}\times\dfrac{4}{24}$ oe		5	M1 for $\dfrac{5}{25}\times\dfrac{4}{24}$ oe
		$\dfrac{20}{600}$ oe		A1 for $\dfrac{20}{600}$ oe inc $\dfrac{1}{30}$
(ii)	$\dfrac{3}{25}\times\dfrac{5}{24} + \dfrac{6}{25}\times\dfrac{5}{24} + \dfrac{5}{25}\times\dfrac{3}{24}$ or $2\times\dfrac{3}{25}\times\dfrac{5}{24} + \dfrac{6}{25}\times\dfrac{5}{24}$			M1 for one correct product M1 for sum of all 3 correct products
		$\dfrac{60}{600}$ oe		A1 for $\dfrac{60}{600}$ oe inc $\dfrac{1}{10}$
				Note for (c)(ii): sample space method – award 3 marks for correct answer; otherwise no marks. *SC* M1 for $\dfrac{3}{25}\times\dfrac{5}{25}$ or $\dfrac{6}{25}\times\dfrac{6}{25}$ or $\dfrac{5}{25}\times\dfrac{3}{25}$ M1 for $\dfrac{3}{25}\times\dfrac{5}{25} + \dfrac{6}{25}\times\dfrac{6}{25} + \dfrac{5}{25}\times\dfrac{3}{25}$ or $2\times\dfrac{3}{25}\times\dfrac{5}{25} + \dfrac{6}{25}\times\dfrac{6}{25}$ *SC* Sample space method – award 2 marks for $\dfrac{66}{625}$; otherwise no marks.
				Total 10 marks

Question Number	Working	Answer	Mark	Notes	
9. (a)	$3y = 2x - 6$ or $-3y = 6 - 2x$		3	M1	May be implied by second M1 or by $y = \frac{2}{3}x + c$ even if value of c is incorrect or finds coordinates of 2 points on the line eg (3, 0), (0, −2), table, sketch showing line cutting x-axis at 3 and y-axis at −2
	$y = \frac{2}{3}x - 2$ oe or $y = \frac{2x-6}{3}$ oe			M1	for correct rearrangement of $3y = 2x - 6$ with y as subject or for clear attempt to use $\frac{\text{vert difference}}{\text{horiz difference}}$ for their two points on **L**
		$\frac{2}{3}$ oe		A1	for $\frac{2}{3}$ oe inc decimal equivalent rounded or truncated to at least 2 dp. Do not award A1 for $\frac{2}{3}x$

Question Number	Working	Answer	Mark	Notes	
9. (b)	$9 = "\frac{2}{3}" \times 6 + c$		2	M1 for correct substitution into $y = "\frac{2}{3}" x + c$ using their answer to (a) oe	*SC* Award B2 if $y - 9 = "\frac{2}{3}"(x-6)$ seen; then isw
		$y = \frac{2}{3}x + 5$		A1 for $y = \frac{2}{3}x + 5$ oe inc $2x - 3y = -15$ ft from their answer to (a)	*SC* Award B1 for $2x - 3y = k$ where $k \neq -15$ and $k \neq 6$ with no working
				SC If M0 A0, award B1 for answer with '$y =$' omitted which would otherwise score M1 A1 eg $\frac{2}{3}x + 5$, $2x - 3$ if ans to (a) is 2	*SC* If M0 A0, award B1 for $y = "\frac{2}{3}" x + c$ where $c \neq 5$ or $c \neq 0$ (ie do not award this mark for $y = "\frac{2}{3}" x + 5$ or $y = "\frac{2}{3}" x$) or does not ft from (a)
					Total 5 marks