

Silver Level

Mark Scheme 5

Level	IGCSE
Subject	Maths
Exam Board	Edexcel
Difficulty Level	Silver
Booklet	Mark Scheme 5

Time Allowed: 58 minutes

Score: /48

Percentage: /100

Grade Boundaries:

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

1.	(a)	$1 - \frac{5}{9}$ or $\frac{4}{9}$ seen		3	M1 $\frac{4}{9}$ oe
		$\frac{4}{9} \times \frac{5}{6}$ oe or $\frac{5}{9} \times \frac{5}{6}$ oe			M1
			$\frac{20}{54}$ or $\frac{10}{27}$		A1
	(b)		27	2	B2 cao B1 for 18 or 54 or any multiple of 27
					Total 5 marks

2.		$2(6x+1) = 3(5x-2)$ or $\frac{2(6x+1)}{(5x-2)(6x+1)} = \frac{3(5x-2)}{(5x-2)(6x+1)}$		4	M1 Need to see both expressions in an equation May be implied by second M1; NB: Denominators must be correct
		$12x+2 = 15x-6$ or $\frac{12x+2}{(5x-2)(6x+1)} = \frac{15x-6}{(5x-2)(6x+1)}$			M1 Need to see both expressions in an equation NB: Denominators must be correct
		$3x = 8$ or $-3x = -8$ or $3x = 2 + 6$ or $-3x = -6 - 2$ or $15x - 12x = 8$ or $12x - 15x = -8$ or $3x - 8 = 0$			M1 dep on awarding first two method marks for correct rearrangement with x terms on one side and numbers on the other AND correct collection of terms on at least one side or for $3x - 8 = 0$
			$2\frac{2}{3}$ oe		A1 for $2\frac{2}{3}$ oe including decimal equivalent rounded or truncated to at least 2 decimal places Award 4 marks if first two method marks scored and answer correct.
					Total 4 marks

3.	$\frac{-2 \pm \sqrt{2^2 - 4 \times 5 \times -4}}{2 \times 5}$ or for this expression with one or more of 2^2 , $4 \times 5 \times (-4)$, 2×5 or $2^2 - 4 \times 5 \times (-4)$ evaluated eg $\frac{-2 \pm \sqrt{84}}{10}$		3	M1 for correct substitution (brackets not necessary)
	$\sqrt{84}$ or $\sqrt{4+80}$ or $2\sqrt{21}$ or 9.165...			M1 (independent) for correct simplification of discriminant (if evaluated, at least 3sf rounded or truncated)
		-1.12, 0.717		A1 for values rounding to -1.12 and 0.717 (-1.11651..., 0.71651...) Award 3 marks if first M1 scored and answer correct.
				Total 3 marks

4	(a)	corresponding (angle(s))	1	B1 oe eg x corresponds to angle A; corresponding to angle A	
	(b)	$(6 - 2) \times 180$ or 4×180 or $(2 \times 6 - 4) \times 90$ or 8×90 or 120×6 or $(180 - 60) \times 6$ or $360 + 360$	4	M1	$360 - (73 + 46 + 38 + 88 + 57)$ Condone one incorrect ext angle
		720		A1	58 M1 A1 for 58 seen
		"720" - $(107 + 134 + 142 + 92 + 123)$ or "720" - 598		M1	dep on first M1
			122	A1	
				Total 5 marks	

5 (a)	$43 = 12x + 2 \times 6.5$ or $43 = 12x + 13$ or $P - 2y = 12x$ (oe with $\pm 12x$ or $\pm x$ as the subject)		3	M1 for correct rearrangement of original equation or substitution	M2 for $43 - 2 \times 6.5 (= 12x)$ or $30 (= 12x)$
	$12x = 43 - 13$ or $12x = 30$ or $-12x = 13 - 43$ or $-12x = -30$			M1 for correct rearrangement and substitution	
		2.5 oe		A1 Correct answer scores full marks	
(b)	$4xy + \frac{1}{2} \times 3x \times 4x$ or $\frac{3x + y + y}{2} \times 4x$		2	M1 for any one correct area eg $4xy$ oe or $\frac{1}{2} \times 3x \times 4x$ oe or $4x(3x + y)$	
		$4xy + 6x^2$ etc		A1 for $4xy + 6x^2$ or $4yx + 6x^2$ or $2x(3x + 2y)$ or $2(3x^2 + 2xy)$ or $x(6x + 4y)$ (No fractions or uncollected terms but could be multiplication signs and/or brackets present)	
				Total 5 marks	

6 (a)	$\frac{8}{100} \times 475$ oe or 38 or 437		3	M1	M2 for 475×1.08 oe
	475 + "38"			M1 (dep)	
		513		A1 cao	
(b)	1% = $\frac{48}{8}$ or 6 8% (of amount) = 48		3	M1	M2 for $\frac{48}{8} \times 100$ or 600 or $\frac{48}{0.08}$
	"6" $\times 100$ or 600			M1	or $\frac{48}{8} \times 108$ or $\frac{48}{0.08} \times 1.08$
		648		A1 cao (NB: An answer of 600 scores M2A0)	
Total 6 marks					

7	use of cos		3	M1	cos must be selected for use in trig ratio NOT Cosine Rule	or M2 for sin and $\frac{\sqrt{21.36}}{9.5}$ following correct Pythagoras or M2 for tan and $\frac{\sqrt{21.36}}{8.3}$ following correct Pythagoras or correct Pythag and then correct use of sine or cosine rule with "21.36"
	$\cos ("x") = \frac{8.3}{9.5} (=0.87\dots)$ or $("x" =) \cos^{-1} \left(\frac{8.3}{9.5} \right)$			M1		
		29.1		A1	for awrt 29.1 e.g. (29.1103...)	
						Total 3 marks

8	(a)	$54 = 2 \times 3^3$ and $90 = 2 \times 3^2 \times 5$ or 1,2,3,6,9,18,27,54 and 1,2,3,5,6,9,10,15,18,30,45,90 or 2×3^2 oe		2	M1	Need not be products of powers; accept products or lists eg 2,3,3,3 and 2,3,3,5 accept 9, 2, 3 and 9, 2, 5 (may be seen in a Venn diagram or may be shown as factor trees or repeated division)
			18		A1	cao
	(b)	$2 \times 3^3 \times 5$ oe eg $6 \times 9 \times 5$ or 54,108,162,216,270 and 90,180,270		2	M1	Need not be products of powers; accept products or lists eg 2, 3, 3, 3, 5
			270		A1	cao
						Total 4 marks

9	(a)	$24p^5q^6$	2	B2	B1 for 2 of 24, p^5 , q^6 correct in a single product with no additional terms or $24p^{3+2}q^{5+1}$
	(b)	$125x^6y^{12}$	2	B2	B1 for 2 of 125, x^6 , y^{12} correct in a single product with no additional terms or $125x^{2 \times 3}y^{4 \times 3}$
	(c)	$(3a + b)(3a - b)$	2	B2	B1 for $(3a + b)(3a + b)$ or $(3a + b)^2$ or $(3a - b)(3a - b)$ or $(3a - b)^2$
					Total 6 marks

10	(a)		$x = 3, y = 2$	1	B1	cao
	(b)	Use of gradient and $y = mx + c$ or clear attempt to use $\frac{\text{vertical difference}}{\text{horizontal difference}}$ eg $\frac{2}{3}$ oe (ignore omission of - sign) or for $3y = 12 - 2x$ or $3y = -2x + 12$ or for $y = \frac{12 - 2x}{3}$ oe or gradient = $\frac{2}{3}$ stated or used		4	M1	Throughout question accept $\frac{2}{3}$ written as a decimal rounded or truncated to 2 or more decimal places
		(grad =) $-\frac{2}{3}$ oe or $y = 4 - \frac{2}{3}x$ oe			A1	
		$y = -\frac{2}{3}x + c$ or for $y = -\frac{2}{3}x + c$ where $c \neq 10$ or $-\frac{2}{3}x + 10$, $-\frac{2}{3}x + 10$, $L = -\frac{2}{3}x + 10$ etc			M1	ft from " $-\frac{2}{3}$ "
		$y = -\frac{2}{3}x + 10$ oe or $2x + 3y = 30$ oe or $y = -\frac{2}{3}x + 10$ oe			A1	ft from " $-\frac{2}{3}$ "

(b)	Alternative scheme: Use of $2x+3y=k$ $2x+3y=k$		4	M1	
	$2 \times 0 + 3 \times 10 (=k)$			M1	Substitution of (0, 10) into $2x+3y=k$
	$k = 30$			A1	
		$2x+3y=30$ oe		A1	
(c)	(1,1) (1,2) (1,3) (2,2) marked	2	B2 B1 for 3 correct points marked and none wrong or for all correct points and either one or more of points on y axis ie. (0,-1) (0,0) (0,1) (0,2) (0,3) (0,4) points on $y = x-1$ ie (0,-1) (1,0) (2,1) (3,2)		
Total 7 marks					