

Gold Level

Mark Scheme 5

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

Time Allowed: 59 minutes

Score: /49

Percentage: /100

Grade Boundaries:

9	8	7	6	5	4	3	2	1
>85%	75%	65%	55%	45%	35%	25%	15%	<15%

Question Number	Working	Answer	Mark	Notes
1.	eg $\frac{72}{360} \times \pi \times 5.4^2 - \frac{1}{2} \times 5.4^2 \times \sin 72^\circ$		5	M1 for $\frac{72}{360}$ oe inc 5
				M1 for $\pi \times 5.4^2$ or value which rounds to 91.6 seen
				M1 for completely correct method of finding the area of triangle <i>OAB</i> eg $\frac{1}{2} \times 5.4^2 \times \sin 72^\circ$ or $5.4 \times \sin 36^\circ \times 5.4 \times \cos 36^\circ$
	18.321... (or 18.312...) – 13.866...			A1 for either area correctly evaluated – may be rounded or truncated to 1 dp
		4.46 or 4.45		A1 for answer rounding to 4.46 ($\pi \rightarrow 4.45536\dots$) or for answer rounding to 4.45 ($3.14 \rightarrow 4.44607\dots$) If all M1s scored, award 5 marks for an answer which rounds to 4.46 or 4.45
				Total 5 marks

Question Number	Working	Answer	Mark	Notes
2.	42.875 seen		4	B1 Also accept 42.874 9 , 42.87499... throughout
	$\sqrt[3]{42.875}$			B1 Also award for 3.5 if first B1 scored ie if 42.875 seen
	6×3.5^2			M1 dep on both B1s
		73.5		A1 cao Award 4 marks if answer is correct and both B marks scored
				Total 4 marks

Question Number	Working	Answer	Mark	Notes
3.	$2x^2 = 20 - 3x$ May be implied by second M1		5	M1 $y = 2\left(\frac{20-y}{3}\right)^2$ May be implied by second M1
	$2x^2 + 3x - 20 (= 0)$			M1 $2y^2 - 89y + 800 (= 0)$
	$(2x - 5)(x + 4) (= 0)$ or $2x(x + 4) - 5(x + 4) (= 0)$ or $x(2x - 5) + 4(2x - 5) (= 0)$ or $\frac{-3 \pm \sqrt{3^2 - 4 \times 2 \times (-20)}}{2 \times 2}$ or $\frac{-3 \pm \sqrt{9 + 160}}{4}$ or $\frac{-3 \pm \sqrt{169}}{4}$ or $\frac{-3 \pm 13}{4}$			M1 $(2y - 25)(y - 32) (= 0)$ or $2y(y - 32) - 25(y - 32) (= 0)$ or $y(2y - 25) - 32(2y - 25) (= 0)$ or $\frac{89 \pm \sqrt{(-89)^2 - 4 \times 2 \times 800}}{2 \times 2}$ or $\frac{89 \pm \sqrt{7921 - 6400}}{4}$ or $\frac{89 \pm \sqrt{1521}}{4}$ or $\frac{89 \pm 39}{4}$
		$x = \frac{5}{2}, x = -4$		A1 $y = \frac{25}{2}, y = 32$ dep on all method marks
		$x = \frac{5}{2}, y = \frac{25}{2}$ $x = -4, y = 32$		A1 $x = \frac{5}{2}, y = \frac{25}{2}$ $x = -4, y = 32$ dep on all preceding marks Accept answers given as coordinates
				Total 5 marks

Question Number	Working	Answer	Mark	Notes
4. (a)		$-3, (1), -1, -3, 1, 17$	2	B2 for all correct, B1 for 3 or 4 correct
(b)	All points plotted correctly from their table Curve		1 1	B1 ft if at least B1 scored in (a) Plotting tolerance $\pm \frac{1}{2}$ sq B1 ft if B1 scored from plotting points. Must be attempt at a smooth curve & not line segments
(c)		Line segment at $y = 5$ drawn $2.2 \rightarrow 2.5$ inc	2	M1 M1 for $x^3 - 3x - 1 = 5$ stated or evidence of reading from $y = 5$ or $y=5$ stated A1 dep on M1
(d) (i)		$3x^2 - 3$	2	B2 B1 for $3x^2$ or -3
(ii)		$3 \times 4^2 - 3$ 45	2	M1 ft for a quadratic in d i) A1 cao
				Total 10 marks

Question Number	Working	Answer	Mark	Notes
5. (a)	180 – (90 + 58) (oe)	32	2	M1 i.e. 90 – 58 A1
(b) (i)		122	1	B1
(ii)	<u>Opposite angles in a cyclic quad</u> (=180°)		1	B1 Accept abbreviations if meaning is clear. B0 for incorrect statements
				Total 4 marks
6. (a)	(“AC ² ”=) $6^2 + (7+5)^2 - 2 \times 6 \times (7+5) \cos 28$ (“AC ² ”=)52.855...	7.27	3	M1 A1 awrt to 52.8 or 52.9 A1 awrt to 7.27
(b)	6 x “DX” = 12 x 5 “DX” = (12 x 5 ÷ 6) (=10) “DC” = “10” – 6	4	3	M1 M1 for an attempt to use intersecting chord theorem (external or internal case e.g $7 \times 5 = 6 \times “x”$) M1 must see a correct justification for the value 10 seen A1 Ans dependent on at least M1
				Total 6 marks
7. (a)	3.6 ÷ 20 x 100 oe (large squares or heights of bars) or (6+6+6) ÷ (10+10+8+35+19+6+6+6) x 100 or 90 ÷ 500 x 100 (small squares)	18	3	M2 a full and correct calculation leading to correct ans heights = 2+2+1.6+7+3.8+1.2+1.2+1.2 (=20) or 10+10+8+35+19+6+6+6 (=100) if not M2 then M1 for 3.6 and 20 (large sq or heights) or 6+6+6 and 10+10+8+35+19+6+6+6 (heights) or 12+12+12 and 20+20+16+70+38+12+12+12 (frequencies) or 90 and 500 (small sq) A1 Ans only = M2A1
(b)	20 x 10	200	2	M1 or 1 (large) square = 10 (people) or 1 (small) square = 0.4 (people) or correct fd seen with no errors or 16 ÷ 5 (= 3.2) {fd on 3 rd bar} or 20+20+16+70+38+12+12+12 (people in blocks) A1 Ans only = M1A1
				Total 5 marks

Question Number	Working	Answer	Mark	Notes
8. (a)		0.3 on bottom LH branch 0.8, 0.2, 0.5, 0.5 0.5, 0.5, 0.8, 0.2	3	B1 B1 Second game branches correct B1 Third game branches correct
(b)	$(0.7 \times "0.8") + (0.7 \times "0.2" \times "0.5") + ("0.3" \times "0.5" \times "0.8")$	0.75 oe	3	M2 ft M1 for 1 correct (ft) branch A1
				Alt method (1 – Jo winning) M2 $1 - \{(0.7 \times "0.2" \times "0.5") + ("0.3" \times "0.5" \times "0.2") + ("0.3" \times "0.5")\}$ A1
				Total 6 marks
9. (a)	$y = 3x - 2$ $y + 2 = 3x$		2	or $x = 3y - 2$ M1 or $x + 2 = 3y$ must reach 2 nd stage A1 Ans only = M1A1 must be a function of x
(b)	$\frac{10}{3x - 2 + 2}$		2	M1 A1 cao Do not isw if correct answer is seen in body and extra incorrect operations take place. Ans only = M1A1
				Total 4 marks