

1	5	P1	for process to find the area of the triangle, eg. $0.5 \times (x + 4)(x - 2)$ oe OR for process to find the area of rectangle and 27.5×2 , eg. $(x + 4)(x - 2)$ and 55	Trial and improvement methods must be fully correct identifying the value of x as 7 (3 marks) or the shortest side as 5 (4 marks)
		P1	(dep P1) for process to expand the brackets and derive a quadratic equation. eg. $x^2 + 4x - 2x - 8 = 55$ or $0.5(x^2 + 4x - 2x - 8) = 27.5$ oe	
		P1	(dep P2) for complete process to solve the quadratic equation $x^2 + 2x - 63 = 0$ eg $(x - 7)(x + 9) (= 0)$ or $\frac{-2 \pm \sqrt{2^2 - 4 \times 1 \times -63}}{2 \times 1}$ or $(x + 1)^2 - 1 - 63 (= 0)$	
		A1	cao SC: B1 for $x^2 + 4x - 2x - 8 = 27.5$	

2	0.5	P1	derive an algebraic expression for the area of A eg $\frac{1}{8}\pi[(5x - 1)^2 - (3x - 1)^2]$	Accept only the single value of 0.5 oe but award 0 marks for a correct answer with no supportive working
		P1	expand and simplify for either area A or area B eg $\frac{1}{8}\pi(16x^2 - 4x)$ or $\pi(x^2 - 2x + 1)$	
		P1	(dep P2) equate and rearrange into a quadratic eqn of the form $ax^2 + bx + c = 0$ eg $2x^2 + 3x - 2 = 0$	
		P1	(dep P3) factorise eg $(2x - 1)(x + 2) = 0$ or use of formula eg $\frac{-3 \pm \sqrt{3^2 - 4 \times 2 \times -2}}{2 \times 2}$	
		A1	oe	

3	8 and -3	M1	for rearranging to get $x^2 - 5x - 24 (= 0)$ or $-x^2 + 5x + 24 (= 0)$	Can be implied by $(x - 8)(x + 3)$ or $(-x + 8)(x + 3)$
		M1	for $(x \pm 8)(x \pm 3)$ or $(x + a)(x + b)$ where $ab = -24$ or $a + b = -5$ or substitution into formula, condoning one sign error eg $(x =) \frac{-5 \pm \sqrt{(-5)^2 - 4 \times 1 \times -24}}{2 \times 1}$	
		A1	for 8 and -3	

4	Shown (supported)	M1	for eliminating y or x , eg $x^2 + 3x - 3 = 5x - 4$	There must be a statement in words for the award of this mark
		M1	for rearranging, collecting terms and setting to 0 eg $x^2 - 2x + 1 (= 0)$	
		M1	for factorising or solving eg $(x - 1)^2 (= 0)$	
		C1	for statement confirming only 1 point in common eg only 1 root or only 1 value of x so only 1 set of coordinates	