1		Daisy is wrong	P1	for process to find area of any relevant circle ie $\pi\times4^2$ (=16π), $\pi\times7^2$ (=49π), $\pi\times10^2$ (=100π) **or** 7^2 and 4^2	
		(supported)	P1	for completed method to find shaded area eg "$\pi\times7^{2}$" – "$\pi\times4^{2}$" (=33π) **or** use of radii eg $7^2 - 4^2$ (=33)	
			A1	for 2 comparable figures, eg 33π and 100π **or** 33 and 100 **or** 103 to 103.7 and 314 to 314.2 **or** 103 to 103.7 and 104.6 to 104.8	
			C1	statement eg No because it should be $\frac{33}{100}$ and their accurate figures Allow use of $\pi = 3$ or better	

2	(a)	31.4	P1	for working with circumference formula, eg $\pi \times 80$ (=251.(….)) oe	
			A1	for answer in the range 31.4 to 31.5 accept 10π	
	(b)	No (supported)	C1	Mean distance stays the same with reason, eg total distance remains unchanged or same number of points	

3	(a)	Radius	B1	cao	Accept spelling mistakes
	(b)	Tangent	B1	cao	Accept spelling mistakes

4		4378.2(0)	P1	for a process to find the circumference of the circle **or** the semi circle, eg $\pi \times 50$ (= 157.0796327) **or** $0.5 \times \pi \times 50$ (= 78.53981634)	Figures may be truncated or rounded
			P1	for a complete process to find the perimeter of the field, eg $(0.5 \times \pi \times 50) + 50$ (= 128.5...) **OR** for working with one cost eg "157.07…" × 29.86 (= 4690.11..) **or** "78.5…" × 29.86 (= 2345.198…) **or** 50 × 29.86 (=1493) **or** 3 × 180 (= 540)	May use circle at this point, figures imply method One cost is 1 length or labour Figures may be truncated or rounded
			P1	For finding the costs of two different aspects eg 2 of "78.5…" × 29.86 (= 2345.1..) **or** 50 × 29.86 (= 1493) **or** 3 × 180 (= 540)	Two different aspects means arc and straight edge or arc and labour or straight edge and labour Condone circle and labour or circle and straight edge.
			P1	for a adding at least 2 costs eg "2345.1.." + "540" (=2885.1..) **or** "1493" + "540" (=2033) **or** "128.5…" × 29.86 (= 3838.2..)	Finding the cost of the perimeter is two costs added and so implies the previous P1 The circle is not allowed to be counted as one of the two costs for this mark
			A1	for answer in the range 4377 – 4392	

5	shown	C1	for method to find area of semicircle, eg $\pi \times 10^2 \div 2$ (= 50π)	Can award first 3 marks if a value for π is used
		C1	for method to find area of quarter circle, for $\pi \times 20^2 \div 4$ (= 100π)	
		C1	for a complete method to find area shaded **and** area of square, eg $\pi \times 20^2 \div 4 - \pi \times 10^2 \div 2$ **and** 20 × 20	Working out to find the area of the shaded region must be shown
		C1	fully correct working leading to $\frac{\pi}{8}$	

6	(a)	Diameter drawn	B1	diameter drawn	Accept hand drawn, intention through centre and from edge to edge. Ruler not required but intention clear.
	(b)	Segment shaded	B1	segment drawn unambiguously	Line must go edge to edge (condone extending outside the circle). Freehand acceptable. Can also draw a diameter here (as semi-circle).

7	Result shown	M1	for finding the area of **A** or the area of **B**, eg $(\pi \times 15^2) \div 4$ $(=56.25\pi = 176.(7\ldots)$ or 177) **or** $\pi \times 2.5^2$ $(= 6.25\pi = 19.6(3\ldots))$	May work without π or with an approximation of π Values may be rounded or truncated
		M1	for finding the area of **A and** the area of **B**, eg $(\pi \times 15^2) \div 4$ **or** "6.25π" $\times 9$ $(=56.25\pi = 176.(7\ldots)$ or 177) **AND** $\pi \times 2.5^2$ **or** "56.25π" $\div 9$ $(= 6.25\pi = 19.6(3\ldots))$	
		C1	for conclusion eg, $\sqrt{56.25\pi \div 9 \div \pi} = 2.5$ oe **or** $\sqrt{\frac{6.25\pi \times 9 \times 4}{\pi}} = 15$ oe **or** $56.25\pi \div 9 = 19.6(3\ldots)$ **and** $\pi \times 2.5^2 = 19.6(3\ldots)$ oe **or** $6.25\pi \times 9 = 176.(7\ldots)$ or 177 **and** $(\pi \times 15^2) \div 4 = 176(.7..)$ or 177 oe **or** for $((\pi \times 15^2) \div 4) \div (\pi \times 2.5^2) = 9$ oe	

8	35.3	P1	for starting the process to find length of third side of triangle, eg $9^2 - 6^2$ $(=45)$ **or** $6^2 + x^2 = 9^2$	
		P1	for $\sqrt{9^2 - 6^2}$ or $\sqrt{81 - 36}$ or $\sqrt{45}$ or $3\sqrt{5}$ $(= 6.7..)$ **or** $r^2 = 45$	
		P1	for stating or using $\pi \times [\text{radius}]^2 \div 4$	[radius] is any value
		A1	for answer in range 35.2 to 35.4	If an answer in the range 35.2 to 35.4 is given in the working space then incorrectly rounded, award full marks No working, answer only no marks