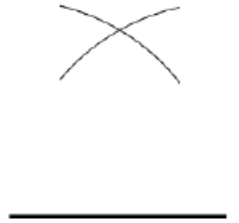
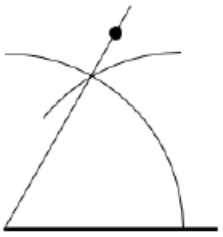
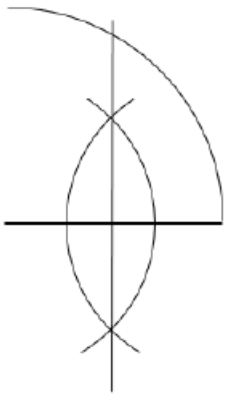
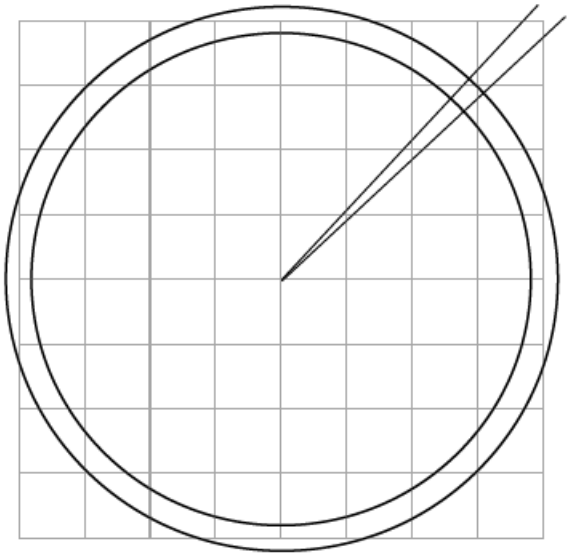
1(a)	**Alternative method 1** shown by valid calculation		
	1500 × 100 or 30 000 × 5 or 1500 ÷ 5 or 30 000 ÷ 100 or 5 ÷ 100 or 1500 × 100 ÷ 5 or 30 000 × 5 ÷ 100 or 1500 × 100 ÷ 30 000	M1	must see one of these calculations but may evaluate incorrectly for M1 do **not** allow embedded in an invalid calculation eg 30 000 × 5 ÷ 1000 is M0
	$\frac{1500\times100}{5} = 30\,000$ or $\frac{30\,000\times5}{100} = 1500$ or $\frac{1500\times100}{30\,000} = 5$ **and** $AB = 5$ or 1500 × 100 = 30 000 × 5 or 1500 ÷ 5 = 30 000 ÷ 100	A1	must show correct use of all four of 1500, 100, 5 and 30 000 may be in two stages eg 1500 × 100 = 150 000 **and** 150 000 ÷ 5 = 30 000 or 1500 ÷ 5 = 300 **and** 30 000 ÷ 100 = 300 if units shown must be correct for A1

1(a) cont	**Alternative method 2** shown by unit conversion and valid calculation		
	150 000 cm or 300 m or 0.05 m	M1	correct units must be shown to imply use of 100
	150 000 cm **and** 30 000 × 5 = 150 000 or 150 000 cm **and** 150 000 ÷ 5 = 30 000 or 150 000 cm **and** 150 000 ÷ 30 000 = 5 **and** *AB* = 5 or 30 000 cm **and** 300 m **and** 1500 ÷ 5 = 300 or 30 000 cm **and** 300 m **and** 300 × 5 = 1500 or 30 000 cm **and** 300 m **and** 1500 ÷ 300 = 5 **and** *AB* = 5 or 0.05 m **and** 1500 ÷ 0.05 = 30 000 or 0.05 m **and** 30 000 × 0.05 = 1500	A1	correct units must be shown
	Additional Guidance		
	30 000 × 5 may be seen as a correct build-up ie 30 000, 60 000, 90 000, 120 000, 150 000		
	Measuring *AB* as a value other than 5 will score M1 max		
	Using *AC* or *BC* can only score a max of M1 for one of the calculations or conversions that does not use *AB*		
	Allow M1 even if seen among other incorrect work but for A1 their method must be all correct and unambiguous		
	Must show a calculation from Alt 1 or a value with units from Alt 2 for the M1 ie 150 000 only or 300 only or 0.05 only is M0		
	Ignore any additional reference to the grid having 100 squares		

1(b)	**Alternative method 1** working in cm		
	[4.4, 4.6]	B1	may be on diagram
	their [4.4, 4.6] × 30 000 or [132 000, 138 000]	M1	their *AC* must be in the range [4, 7] and must **not** be 5 [132 000, 138 000] implies B1M1 if no measurement for *AC* given
	their [132 000, 138 000] ÷ 100 ÷ 1000	M1dep	oe must be converting into km
	[1.32, 1.38]	A1ft	ft B0M2
	Alternative method 2 working in cm		
	[4.4, 4.6]	B1	may be on diagram
	$\frac{\text{their [4.4, 4.6]}}{5} \times 1500$ or their [4.4, 4.6] × 300 or [1320, 1380]	M1	their *AC* must be in the range [4, 7] and must **not** be 5 [1320, 1380] implies B1M1 if no measurement for *AC* given
	their [1320, 1380] ÷ 1000	M1dep	oe must be converting into km
	[1.32, 1.38]	A1ft	ft B0M2
	Alternative method 3 working in mm		
	[44, 46]	B1	may be on diagram
	their [44, 46] × 30 000 or [1 320 000, 1 380 000] or $\frac{\text{their [44, 46]}}{50} \times 1500$ or their [44, 46] × 30 or [1320, 1380]	M1	their *AC* must be in the range [40, 70] and must **not** be 50 [1 320 000, 1 380 000] implies B1M1 if no measurement for *AC* given [1320, 1380] implies B1M1 if no measurement for *AC* given
	their [1 320 000, 1 380 000] ÷ 10 ÷ 100 ÷ 1000 or their [1320, 1380] ÷ 1000	M1dep	oe must be converting into km
	[1.32, 1.38]	A1ft	ft B0M2

	Additional Guidance	
1(b) cont	Answer only in range [1.32, 1.38]	B1M1M1A1
	Answer must match their AC if seen	
	Must be using the scale 1 : 30 000 or 5 : 1500	
	Their [4.4, 4.6] is often 4 (perhaps counting squares crossed diagonally) or 6 (perhaps 2 down and 4 across)	
	4 seen and answer 1.2	B0M1M1A1ft
	4 seen and 120 000 (by Alt 1) or 4 seen and 1200 (by Alt 2)	B0M1M0A0
	Answer 1.2 (without 4 seen)	Zero
	6 seen and answer 1.8	B0M1M1A1ft
	6 seen and 180 000 (by Alt 1) or 6 seen and 1800 (by Alt 2)	B0M1M0A0
	Answer 1.8 (without 6 seen)	Zero
	4.7 seen and answer 1.41	B0M1M1A1ft
	4.7 seen and 141 000 (by Alt 1) or 4.7 seen and 1410 (by Alt 2)	B0M1M0A0
	Answer 1.41 (without 4.7 seen)	Zero
	Using Pythagoras gives $AC = \sqrt{20}$ or $2\sqrt{5}$ or 4.4(72...) or 4.5	B1

2	Side of length [7.8, 8.2] cm drawn	B1	
	Correct construction with intersecting arcs, same radius as their base ± 2 mm to identify the third vertex or correct construction with intersecting arcs, equal radii ± 2 mm, line drawn at 60° and third vertex correctly positioned or correct construction with intersecting arcs, equal radii ± 2 mm and construction arc drawn to correctly identify the third vertex	M1	 or  or 
	Triangle with equal sides [7.8, 8.2], with correct construction seen	A1ft	ft B0M1 triangle with equal sides ± 2 mm, with correct construction seen
	Additional Guidance		
	No construction arcs drawn can score a maximum of B1		

Q	Answer	Mark	Comments
3(a)	Point marked on grid North East of *A*	B1	± 2°
	Point marked 4 cm from *A*	B1	± 2 mm
	Additional Guidance		
			
	Ignore any North lines marked on grid		
	Point marked 3 cm right and 3 cm up – condone in tolerance		B1B1
	Point marked on top right corner of the grid		B1B0
	Assume the end of a line drawn from *A* with no point marked is their *B*		
	The point must be marked or implied by the end of a line from *A*, just writing the letter *B* is not enough to indicate the point		B0B0

Q	Answer	Mark	Comments
3(b)	180	B1	

Q	Answer	Mark	Comments
3(c)	30	B1	

Q	Answer	Mark	Comments
4(a)	All the points within 20 miles of A	B1	

Q	Answer	Mark	Comments
5	Angle [88°, 92°] at B	M1	length $\geqslant$ 1 cm for vertical may be implied by a point marked
	Line parallel to AB	M1	mark intention length $\geqslant$ 1 cm may be implied by two points marked
	Quadrilateral $ABCD$ with angle ABC = [88°, 92°] and CD parallel to BA and BC = [3.8, 4.2] cm and DC = [5.8, 6.2] cm	A1	sides must be joined and look straight ignore extra lines and lines extended SC2 reflection of correct shape with right angle at A (ignore labels)
	Additional Guidance		
	Lengths of lines (as long as $\geqslant$ 1 cm) irrelevant for up to M2		
	Condone absence of labels C and D		
	Correct quadrilateral with C and D labels swapped		M2A0

Q	Answer	Mark	Comments
6	90°	B1	