

Question			Answer	Marks	Part Marks and Guidance	
1	(a)	(i)	Rectangle 3 by 2	1	Mark the outline	
		(ii)	L shape	1	Mark the outline	
	(b)	84	2	B1 for 16 seen		

2	(a)		D in correct position and sides AD and CD drawn using arcs	2	M1 for one of AD and CD correct or for D in correct position with no arcs or for CD = 5 cm and AD = 7.5 cm seen tolerance 1 mm	Use overlay/ruler
	(b)	(i)	Angle bisector of B drawn with correct arcs	2	Tolerance 2°; B1 if no arcs	Condone E not marked Use protractor eg with angle BCE set at 40° and accept tolerance of 2°
		(ii)	405 to 435 from acceptable angle bisector or FT	2	FT (5 × <i>their</i> BE in mm) calculated, tolerance 15 B1 for answer up to and including 5 below or above acceptable range FT Or M1 for 8.4 [cm] or 84 [mm] or FT <i>their</i> BE, tolerance 3 mm	Use ruler with one end set on B No FT for a line BE not drawn eg for E correctly 8.4 cm from B, allow B1 for 400 to 440 if B2 not earned eg allow M1 for answer of 81 on answer line from acceptable angle bisector

3	(a)		84	2	M1 for $7 \times 3 \times 4$	
	(b)		Correct isometric drawing	3	For 3 marks condone hidden edges shown as dotted lines Or B2 for correct isometric drawing but with hidden edges shown solid or incorrect Or B1 for one correct face	Allow freehand if intention clear – ie just misses dot Ignore any non-edge lines

4	(a)		6 correct rectangles, correctly joined	3	B2 for 6 correct rectangles only, incorrectly joined or 5 correct rectangles only, correctly joined or 4 correct rectangles in a 'correct' net of 6 sides Or B1 for any correct 3 of <i>their</i> 6 rectangles in an attempt at a net Or SC1 for a correct net of any closed cuboid	Condone freehand. Condone outline only ie open top cuboid
	(b)		A (4, 0, 0) B (4, 3, 2)	1 1	SC1 for reversed answers	

5		Circle or arc centre A that crosses the position of a line through AB	M1	Condone hand-drawn since interpretation required for this M1	Use overlay
		Radius 6 cm and compass-drawn, at least the part of the arc bounded by the correct perp bisector)	A1	Tolerance 2 mm	scoris tip: find out how the tolerance relates to the size of the overlay circles on your screen setting
		Attempt at perpendicular bisector of AB	M1	Passing within 5mm of centre of AB and making an angle of 80° to 100° with AB	2 nd M not earned for just two sets of arcs or two circles with no line
		Accurate attempt with correct compass arcs	A1	Must pass between parallel lines on overlay	NB be alert for spurious arcs added after drawing line – A0
	Shading of minor segment of circle centre A cut off by perp bisector	B1	FT <i>their</i> circle/arc centre A and line	B0 for overlap of two circles	

6	(a)	Both perpendicular bisectors drawn with correct construction arcs and intersecting [at labelled P]	3	M2 for both correct but without arcs or for one correct with arcs or for bisectors both drawn but not intersecting Or M1 for one correct without arcs	Use tolerance on overlay For each perp bisector, allow two sets of arcs or one set + measured midpoint
	(b)	No, distance from D is different oe	1	Not dependent on (a), but comment should refer to distance from vertices not distance from sides, or should refer to fact that bisectors of DA and DC not drawn (and may conclude 'don't know') 0 if yes...	0 if their comment implies distance from A different as well, for instance

7		Correct hexagon	3	M1 for 360/5 or 72 seen B1 for an angle of 72° drawn at O	
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8		<p>arc of circle centre T radius 6 cm drawn</p> <p>arc of circle centre B radius 4 cm drawn</p> <p>Perpendicular bisector of WS drawn with correct arcs</p> <p>Correct region indicated clearly, dep on arcs centres B and T drawn and straight line attempt at perpendicular bisector</p>	<p>1</p> <p>1</p> <p>2</p> <p>1</p>	<p>arcs for B and T circles must be compass drawn; radius tol 2 mm, and extending for a sector of at least 30°</p> <p>must be at least 3 cm long</p> <p>B1 if no/wrong arcs e.g. arcs touching at midpoint of WS; line must be within 1 mm of centre of WS and tol 1°; or allow M1 for two correct pairs of arcs but no line or line inaccurate or too short (e.g. if arcs too close)</p> <p>accept lack of label R if other indication is clear; assume their region is bounded by the requested loci – ignore construction arcs for the perpendicular bisector going through this region</p>	
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9			arcs on AB equidistant from C (may be small arcs)	1	accept one arc where distance from C = BC	0 for arcs centres A and B through C and common tangent at C drawn
			correct perp drawn with a correct pair of arcs	1	0 if no arcs; Allow 2 nd mark even if pts on AB equidistant from C have been obtained without arcs	NB check that arcs are not spurious; e.g. perp drawn using protractor, and then arcs from A and B crossing on perp.

10			Perpendicular bisector of AB drawn with correct arcs (two pairs)	2	M1 for perpendicular bisector of AB with no/wrong arcs or correct arcs and too short or for the perpendicular bisector of another side with correct arcs	Use overlay; their line must pass between parallel lines on overlay and be at least as long; condone touching these lines but not crossing them
			Circle centre D radius 4 cm drawn	1	At least the relevant part of the arc	Tolerance 2 mm
			Correct region shaded	1	Garden to left of perpendicular bisector and outside circle; dependent on circle centre D attempted and reasonable attempt at perpendicular bisector of AB (a line passing through somewhere near the middle of AB and approaching an angle of 90° with it)	Allow correct region indicated by label not shading Ignore other constructions if correct ones are there

11		(4.5, 4)	2	<p>B1 for 4.5 or 4 as correct coordinate or for (4, 4.5)</p> <p>If B0, allow M1 for $\frac{10+^{-}1}{2}$ or $\frac{7+1}{2}$</p>	May do sketches; condone scale drawing instead of calculation
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12		<p>Any square with any 4 triangles 3 by 3 square Correct compass construction All four triangles sides 4 cm \pm 2 mm and 3 cm \pm 2 mm</p>	<p>1 1 M1 A2</p>	<p>Appropriately joined attempt at a net</p> <p>Correct for at least one triangle All four correctly compass constructed A1 for one triangle correctly constructed</p> <p>After M0 allow SC2 for 4 triangles correct but with no/wrong arcs Or SC1 for one triangle sides 4 cm \pm 3 mm but with no/wrong arcs</p>	<p>Allow freehand for first mark only</p> <p>Arcs must be visible</p>
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