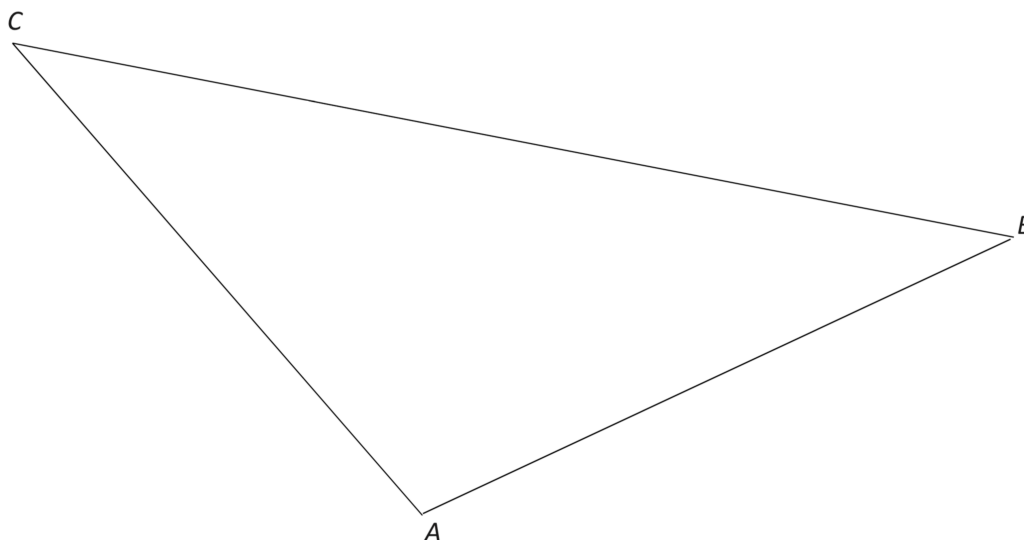


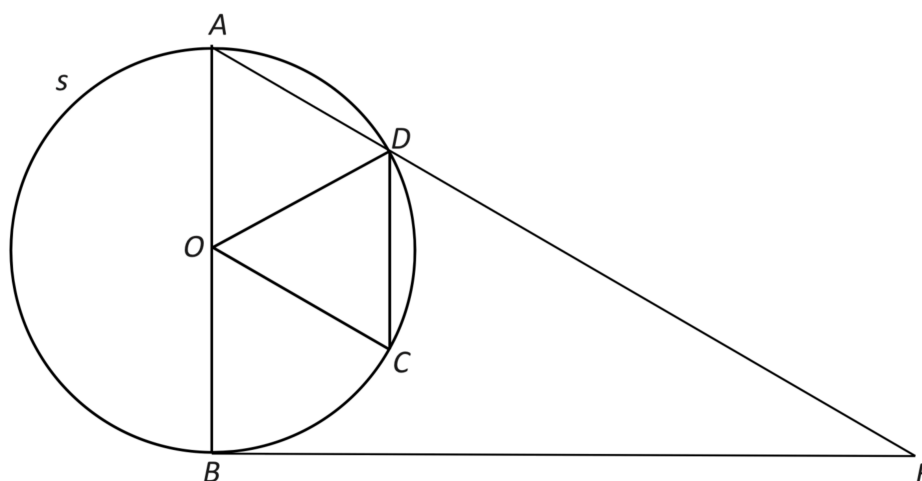
Question 5

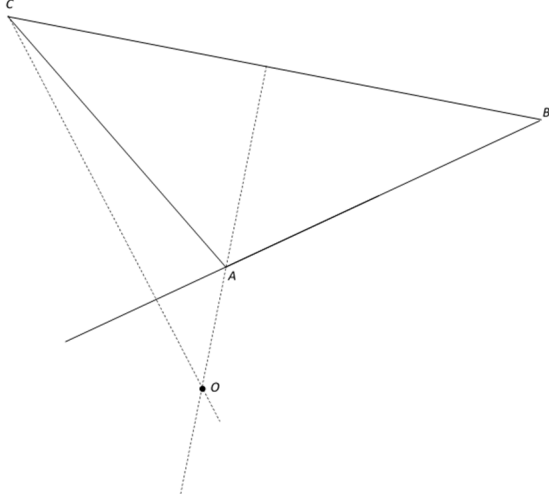
(25 marks)

- (a) Construct and **label** the orthocentre of the triangle ABC in the diagram below. Show any construction lines or arcs clearly.



- (b) In the diagram below O is the centre of circle s . $[AB]$ is a diameter of s . BE is a tangent to s at point B . $[CD]$ is a chord of circle s . $|CD| = \frac{1}{2} |AB|$ and CD is parallel to AB . Find, with justification, $|\angle BEA|$.



Q5	Model Solution – 25 Marks	Marking Notes
(a)	<p>Standard Orthocentre Construction</p> 	<p>Scale 15D (0, 5, 7, 11,15)</p> <p><i>Low Partial Credit:</i> Some correct element of construction Some evidence of understanding of term orthocentre</p> <p><i>Mid Partial Credit</i> One correct altitude</p> <p><i>High Partial Credit:</i> Two correct altitudes but not intersecting.</p>
(b)	<p>$DC = OB$ Given $\Rightarrow DC = \text{Radius}$</p> <p>$\Rightarrow \triangle ODC$ is equilateral $\Rightarrow \angle ODC = 60$</p> <p>$\Rightarrow \angle AOD = 60$ Alternate</p> <p>$\triangle AOD$ is isosceles as $OA = OD$ $\angle OAD = \angle ODA = \frac{120}{2} = 60$</p> <p>$\angle ABE = 90^\circ$ as BE tangent</p> <p>$\angle BEA = 180 - 90 - 60 = 30^\circ$</p>	<p>Scale 10D (0, 4, 5, 8, 10)</p> <p><i>Low Partial Credit:</i> 1 relevant step listed or shown on diagram</p> <p><i>Mid Partial Credit</i> 3 relevant steps listed or shown on diagram</p> <p><i>High Partial Credit:</i> All valid steps included but with no justification</p>