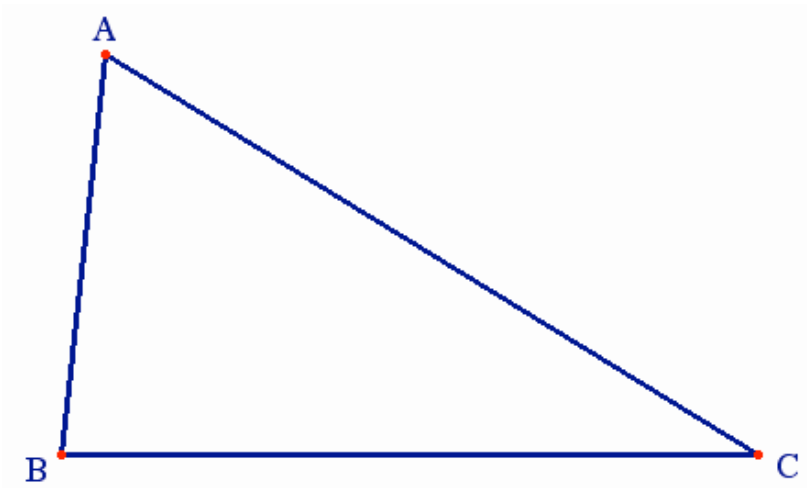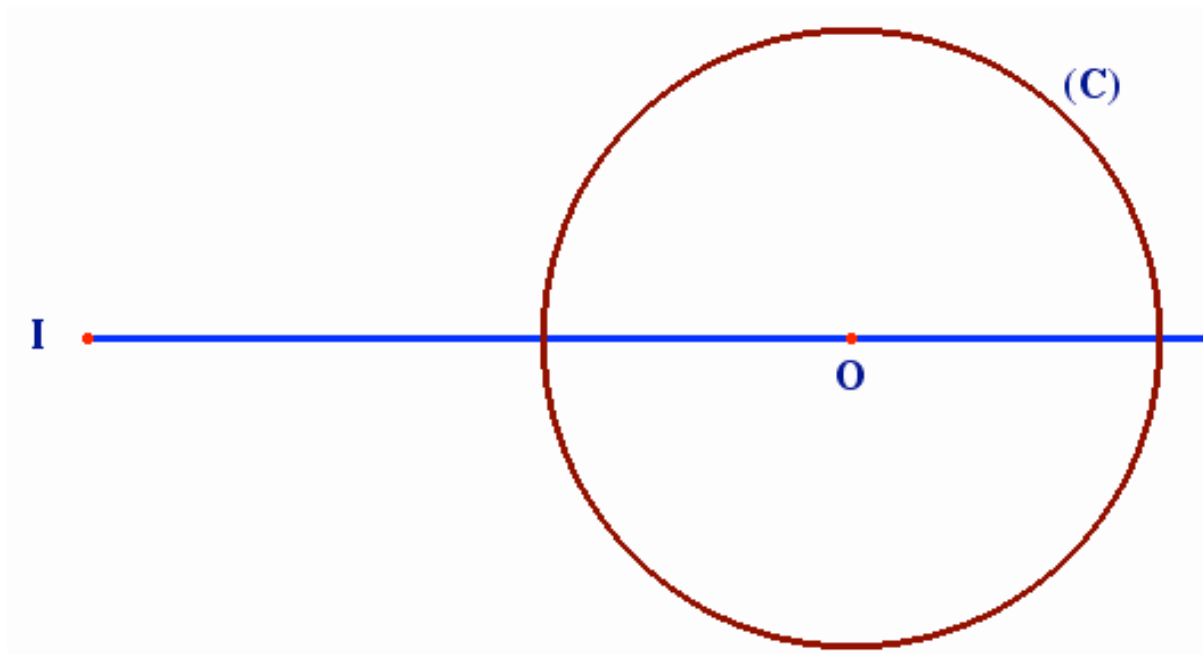**Problem 1** : use a compass and a ruler to carefully build the circle inscribed in this triangle *(show the construction lines and explain your construction).*



**Problem 2** : given the circle (C), and a point I outside (C), use a compass and a ruler to carefully <u>construct</u> the two tangent lines to the circle from I. [*find the points K and K' on (C) so that the lines (IK) and (IK') be tangent to (C)*]
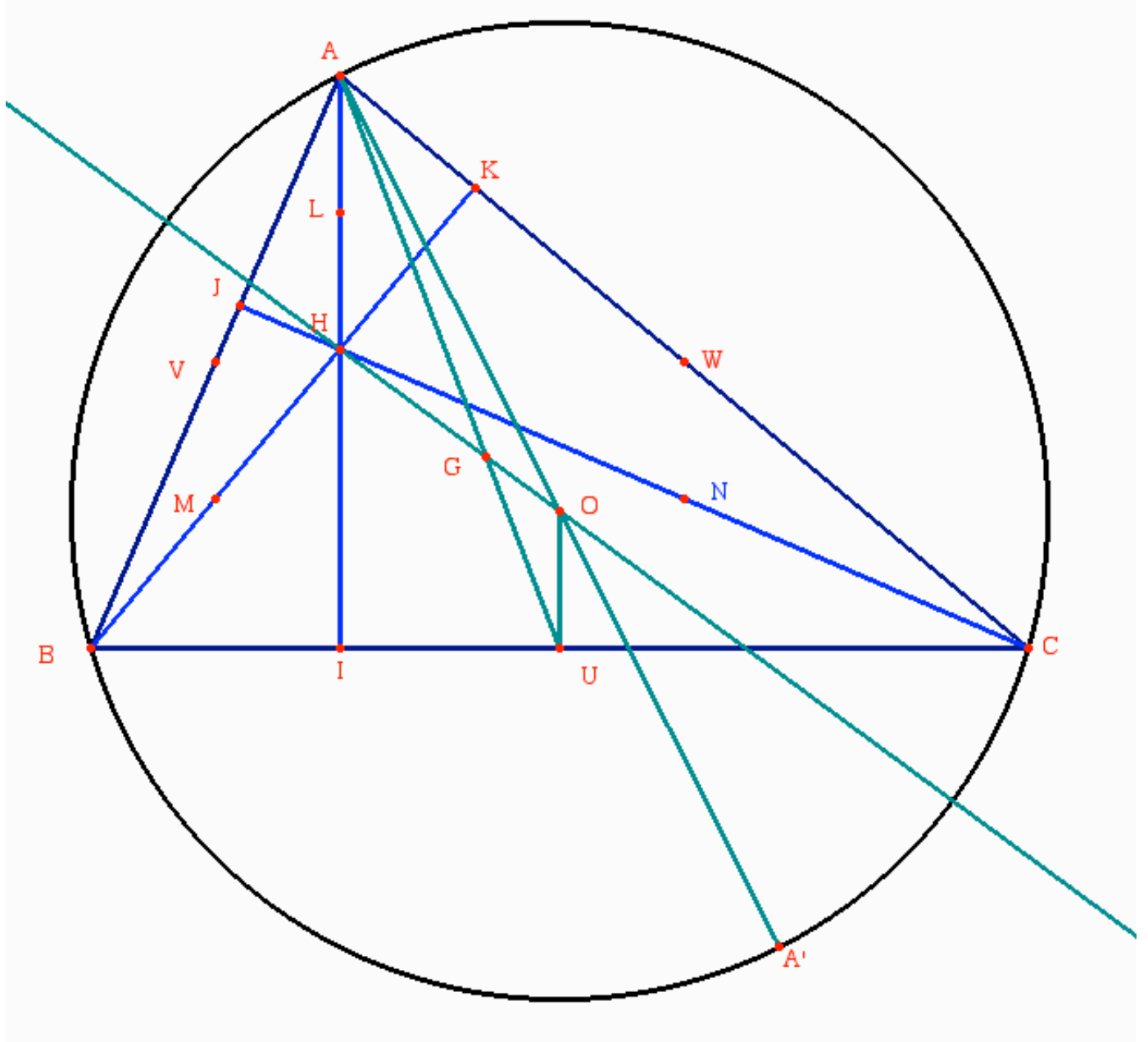
**Problem 3** : given the triangle ABC, let H be the interception of its Heights, and
　　　　　O be the center of the circumscribed circle, U the middle of BC,
　　　　　and G the intersection of OH and AU.
1°) Prove carefully *(on back of the page)* that GH = 2 GO.
2°) Show why G is the center of gravity of the triangle.
　　　　　[ *The line joining O,G,H is called* Euler's *line of the triangle*]

**Problem 4** : given the triangle ABC, let H be the intercection of its Heights, and
O be the center of the circumscribed circle, L the middle of AH, and
P be the middle of OH.

1°) Prove carefully *(on back of the page)* that PL = PU = PI.

2°) By the same method prove that the circle centered in P and of r = R/2 where
R is the radius of (C), contains the 9 points : I,J,K,U,V,W,L,M,N
*(this circle is named "Euler circle" of the triangle)*