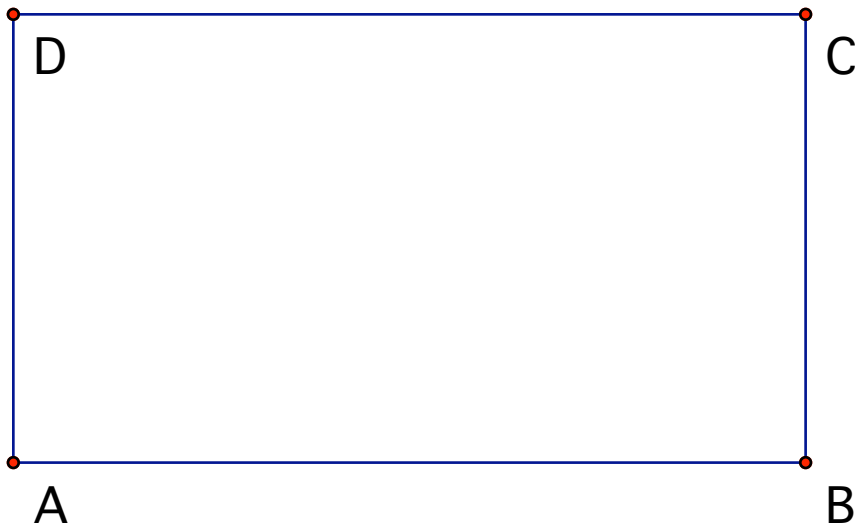


### Construction Portfolio Part 3

Carry out these constructions, each one on a separate side of paper.

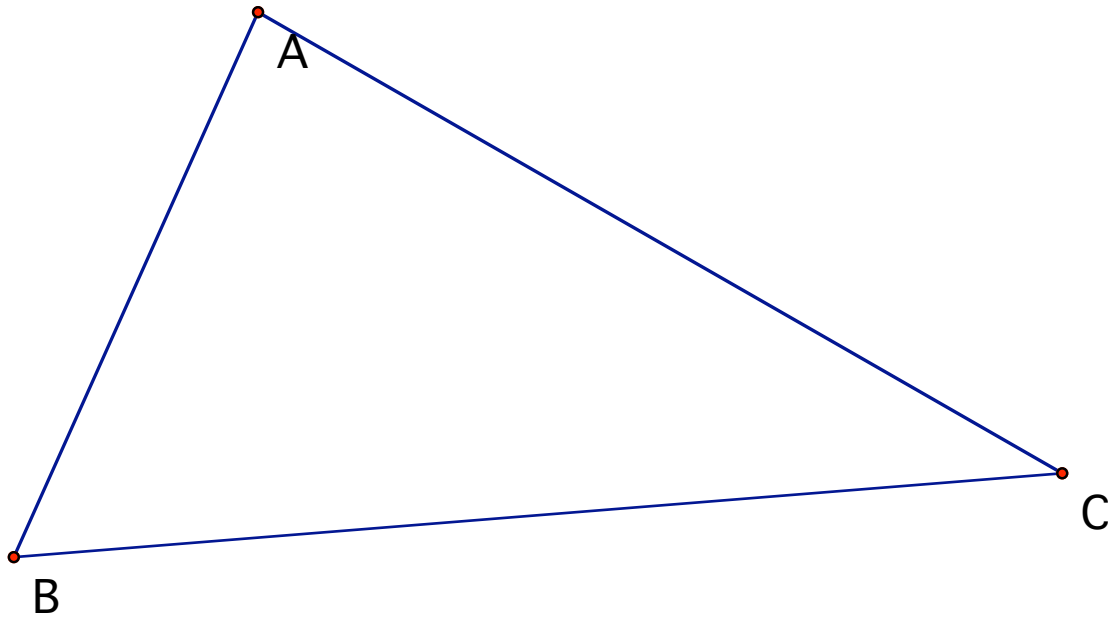
#### ***17: Square area equal to rectangle area***

Construct a square whose area equals the area of rectangle ABCD.



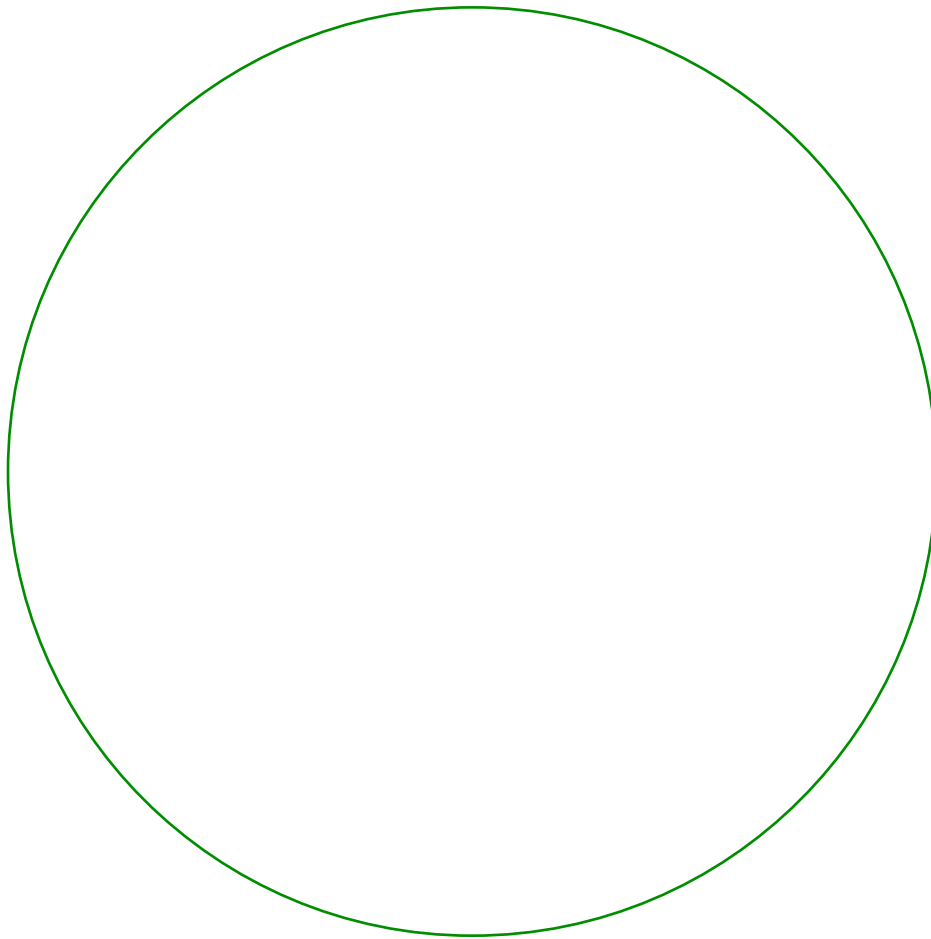
### 18: Medians and Centroid

Construct the 3 medians and the centroid of triangle ABC.



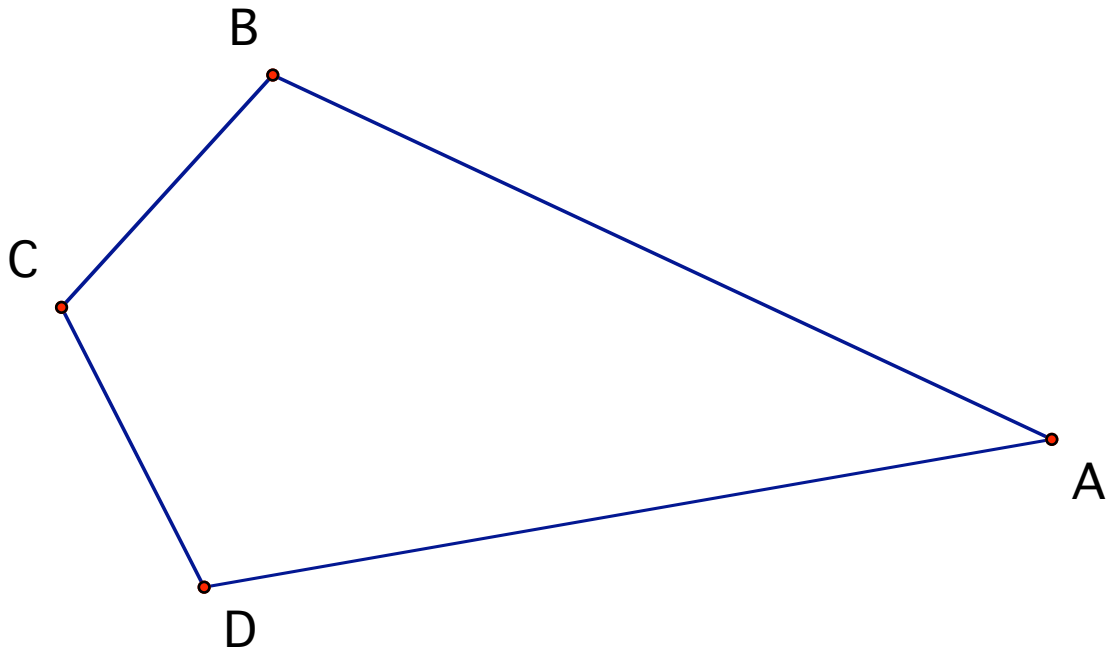
**19: Inscribed Equilateral Triangle**

Construct an equilateral triangle inscribed in this circle. (First, construct the center of the circle!)



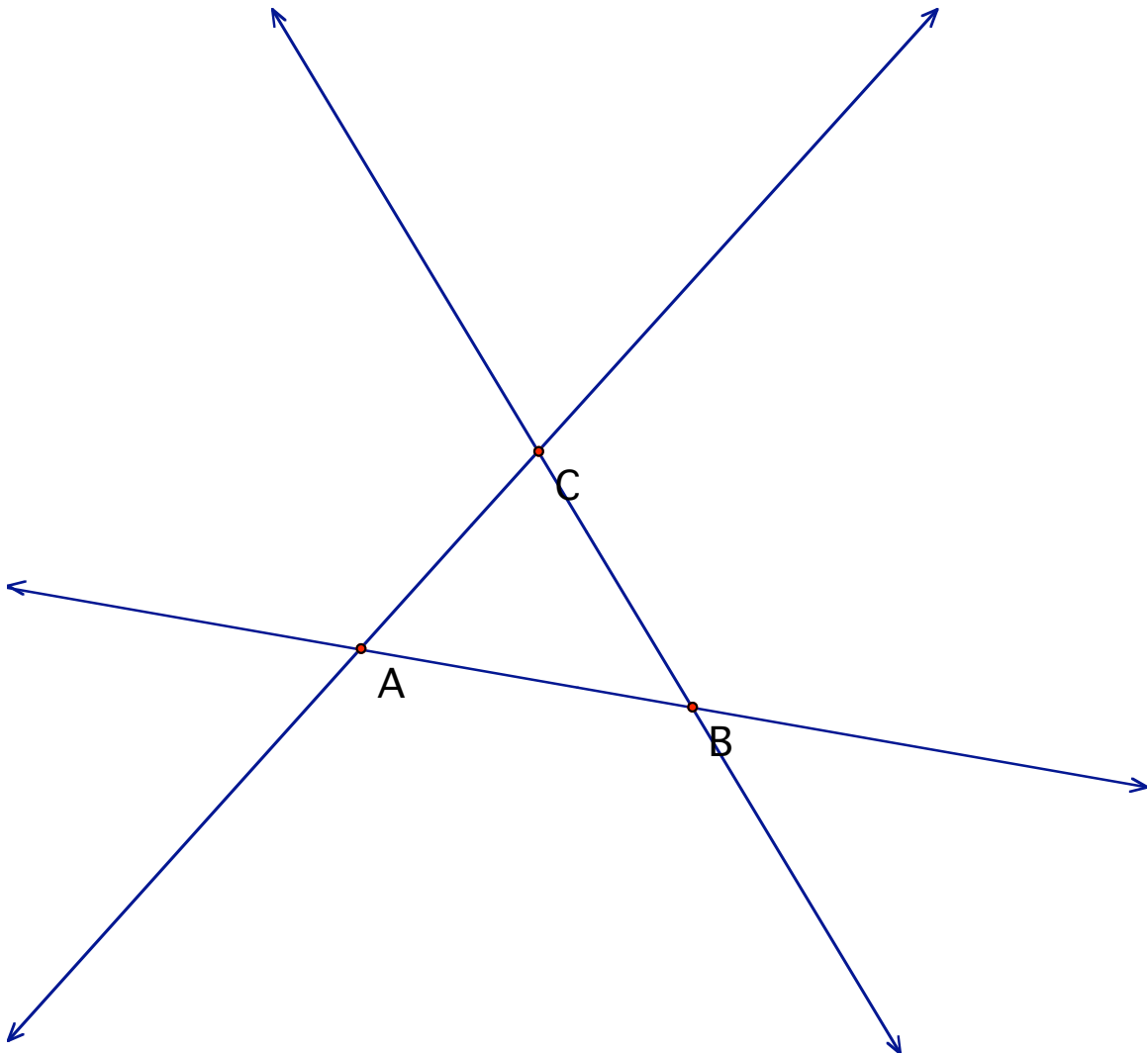
**20: Inscribed Circle in Kite**

Construct a circle inscribed in kite ABCD.



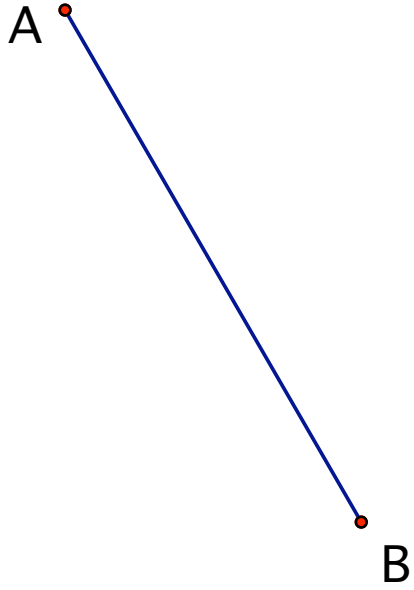
## 21: Incircles and Ecircles

Construct all 3 interior and all 3 exterior angle bisectors, then use these bisectors to construct the circle inscribed in triangle ABC and the 3 circles escribed in triangle ABC (i.e., all 4 circles are tangent to all 3 lines that are the extended sides of ABC).



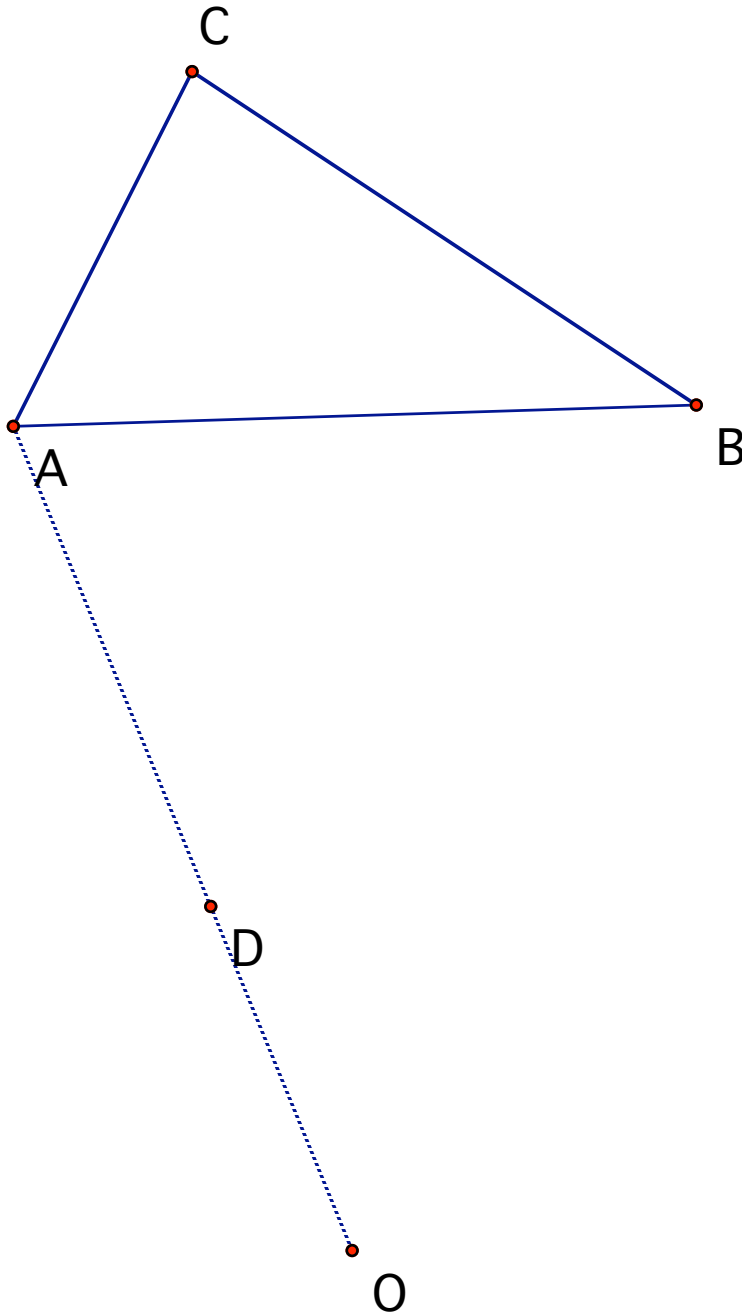
## 22: Ratios internal and external

Divide AB internally and externally in the ratio 5:2, i.e., construct two points P and Q for which  $|AP/BP| = |AQ/BQ| = 5/2$ .



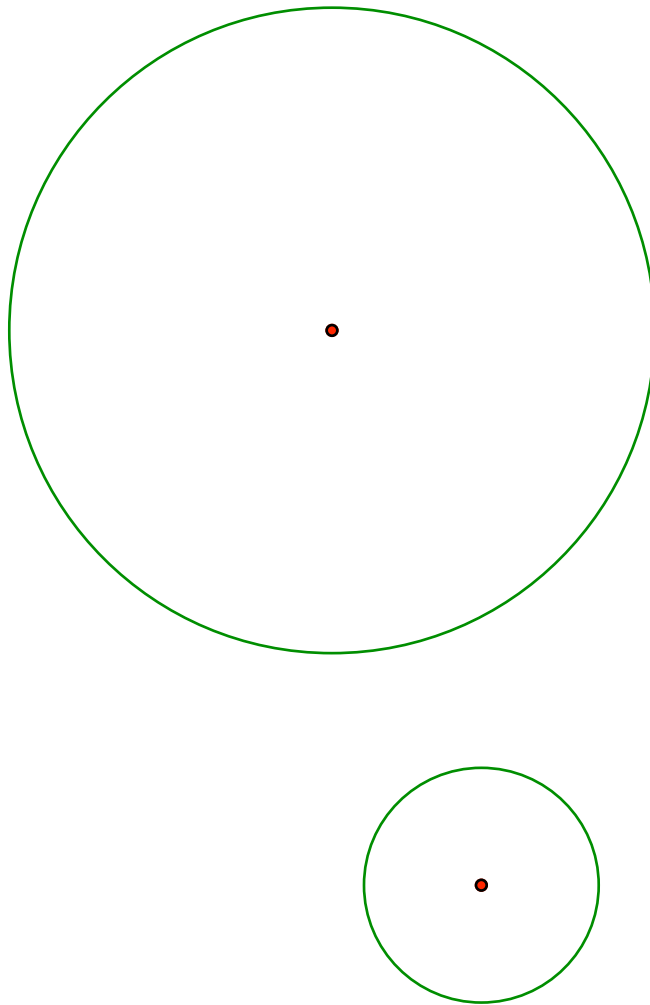
### 23: Dilation of Triangle

Let  $T$  be the dilation with center  $O$  that dilates point  $A$  to point  $D$ . Construct points  $E = T(B)$  and  $F = T(C)$  so that triangle  $DEF$  is the dilation by  $T$  of triangle  $ABC$ .



## 24: Common Tangents

Construct all 4 lines that are common tangents of these two circles.





### 25: Golden Rectangle

Given segment AB, construct C, D so that ABCD is a golden rectangle with longer side AB.



**26: Regular Pentagon**

Given segment AB, construct C, D, E so that ABCDE is a regular pentagon.

