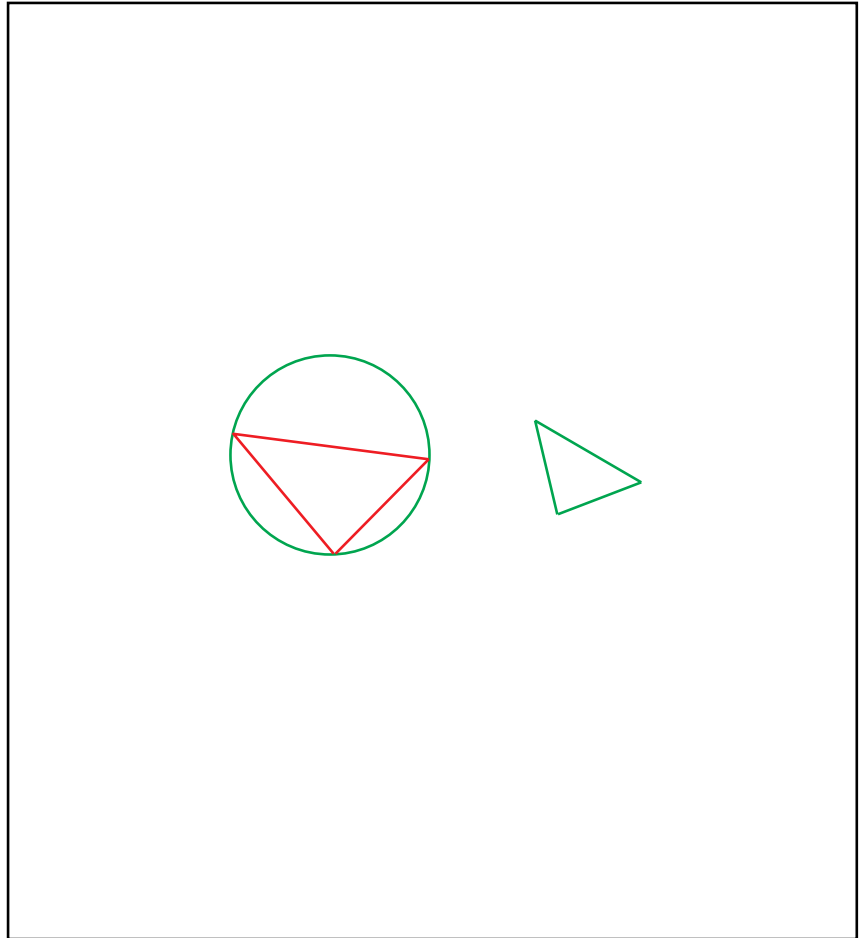


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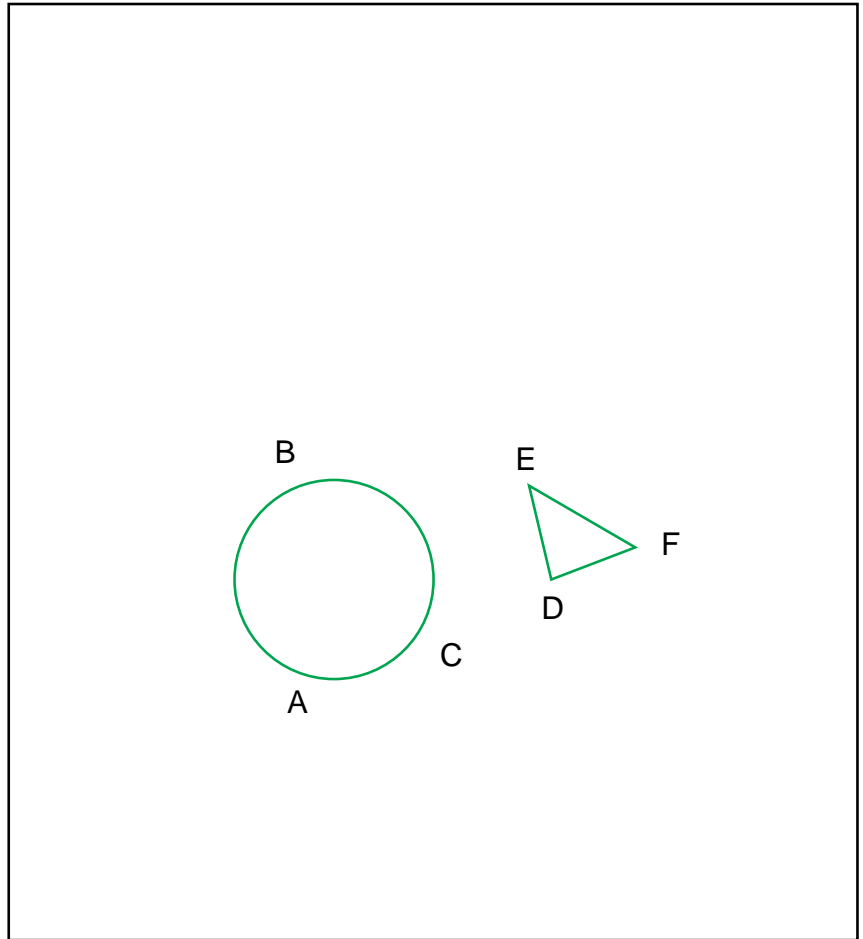
## Construction 24: Book IV, Proposition 2

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*In a given circle to inscribe a triangle equiangular with a given triangle.*



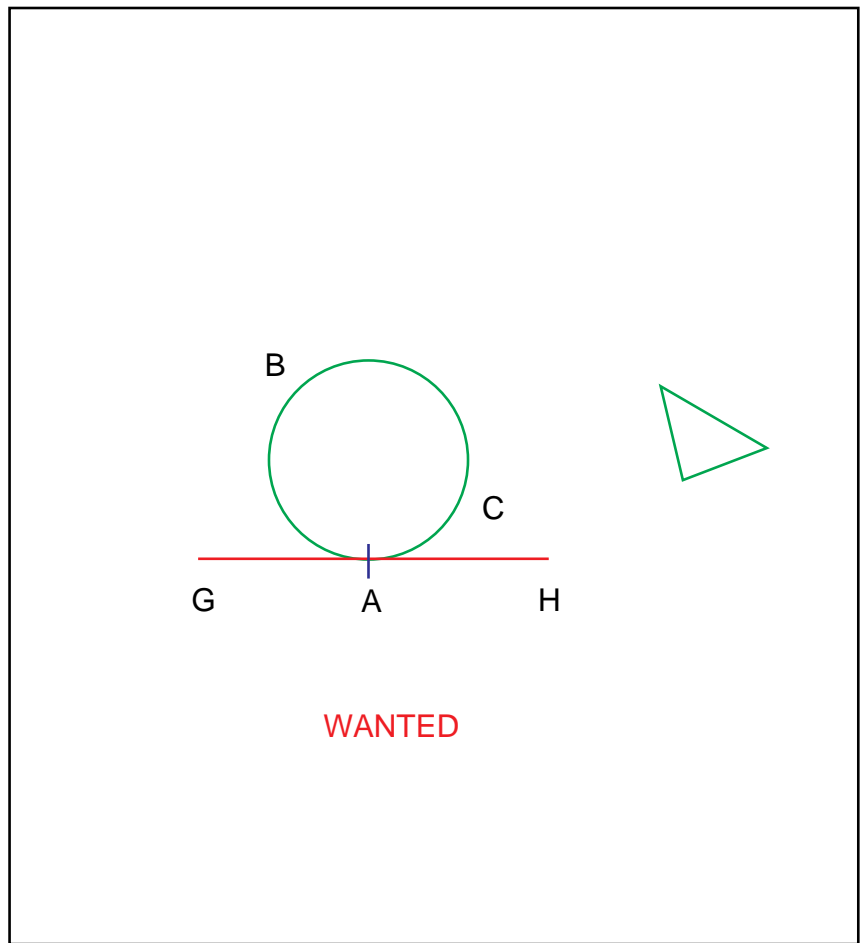
IV.2:3. Let  $ABC$  be the given circle, and  $DEF$  the given triangle;



IV.2:7. Let GH be drawn touching the circle ABC at A [III.16, Por.];

We may take A at random, so let us take it on the bottom.

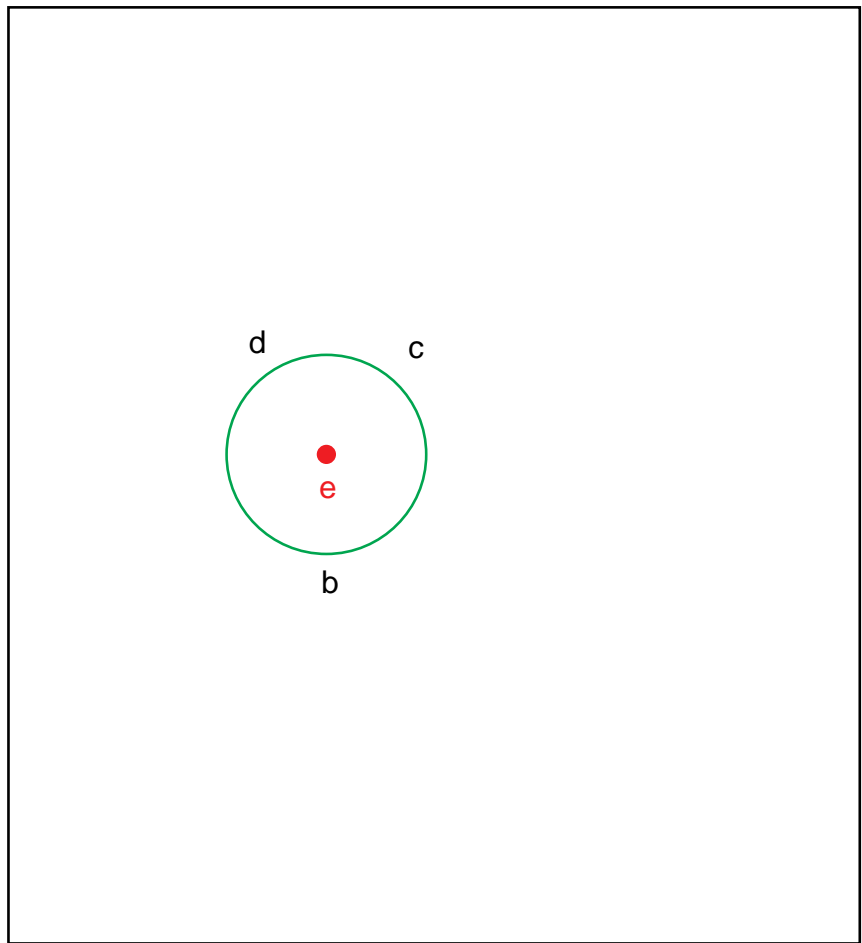
As in C#22 (III.34) we call a special case of C#21 (III.17), which refers to [III.16, Por.]. We may call this C#21B (III.17B).



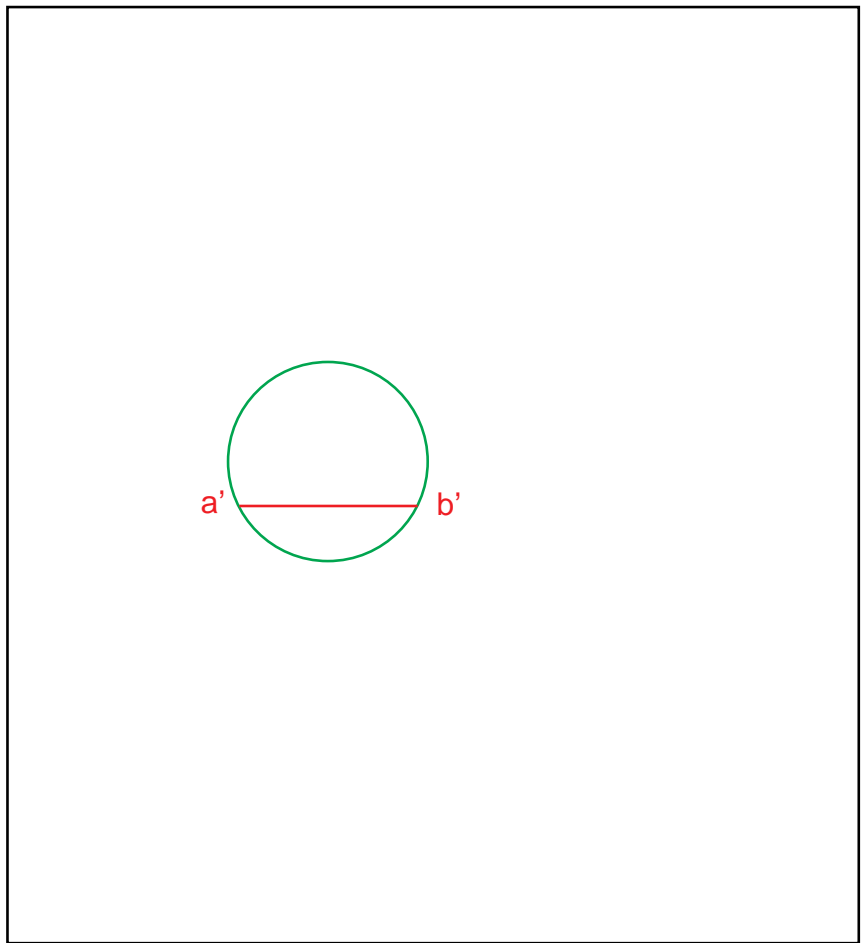
GOSUB III.17  
We follow C#21B.  
Relabel.

III.17:6. For let the centre  $e$  of  
the circle be taken; [III.1]

GOSUB III.1.  
Relabel.

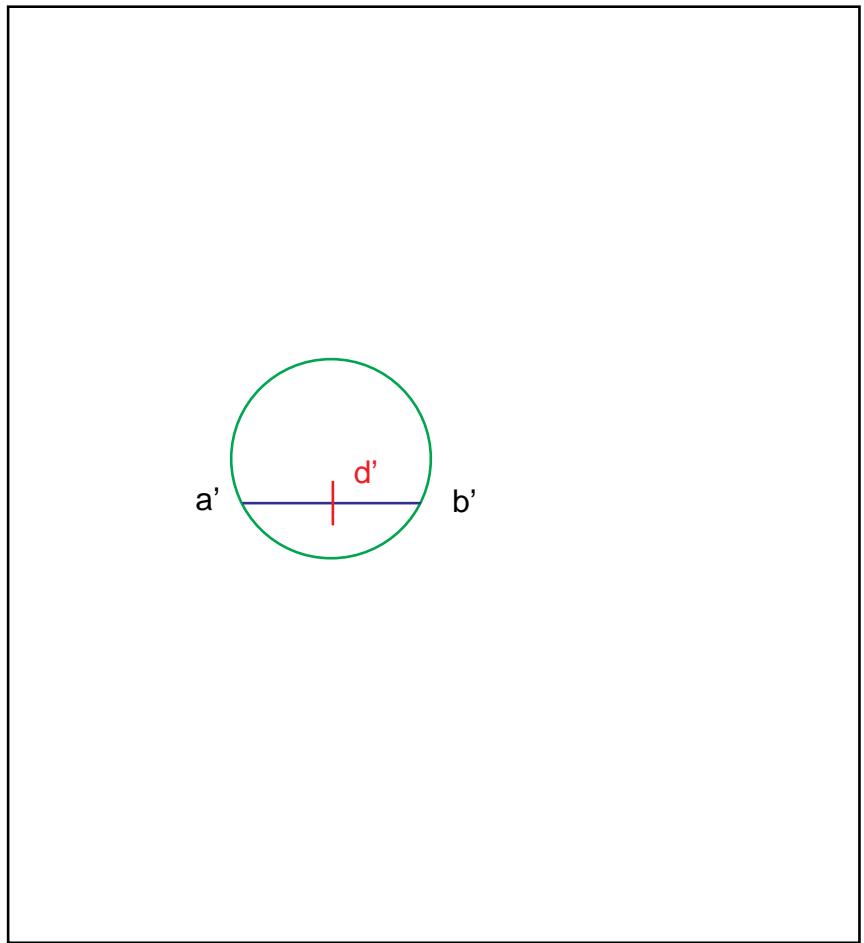


III.1:4. Let a straight line  $a'b'$  be drawn through it at random,

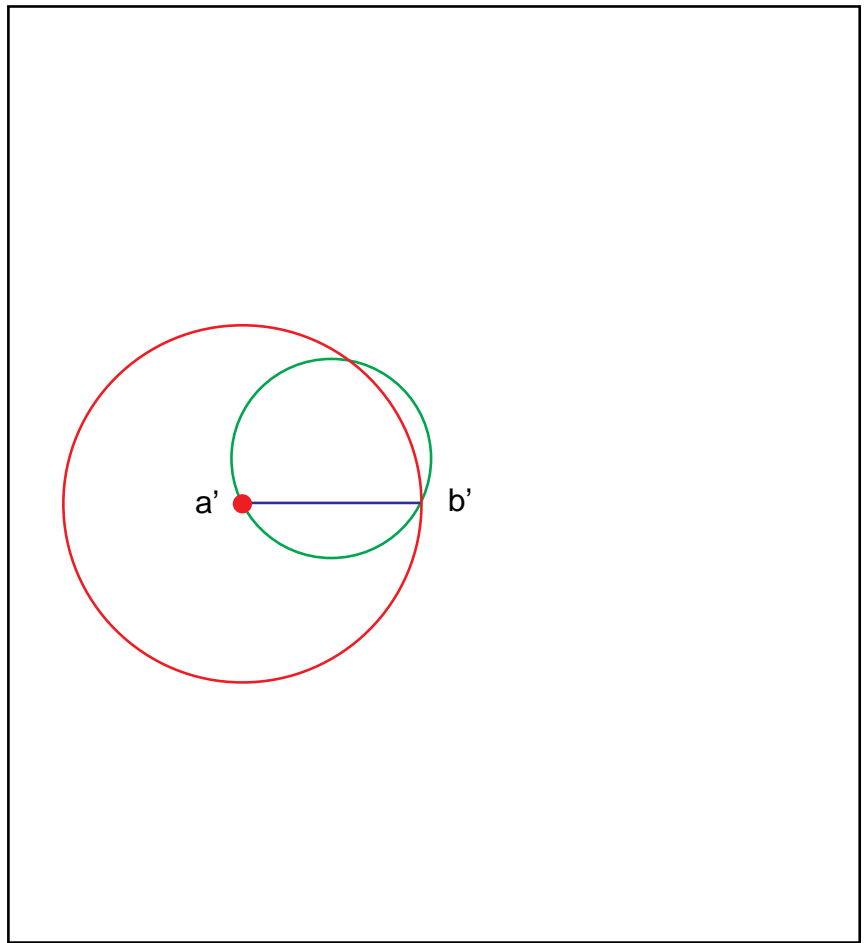


III.1:5. and let it be bisected at  
the point  $d'$ ; ([I.10])

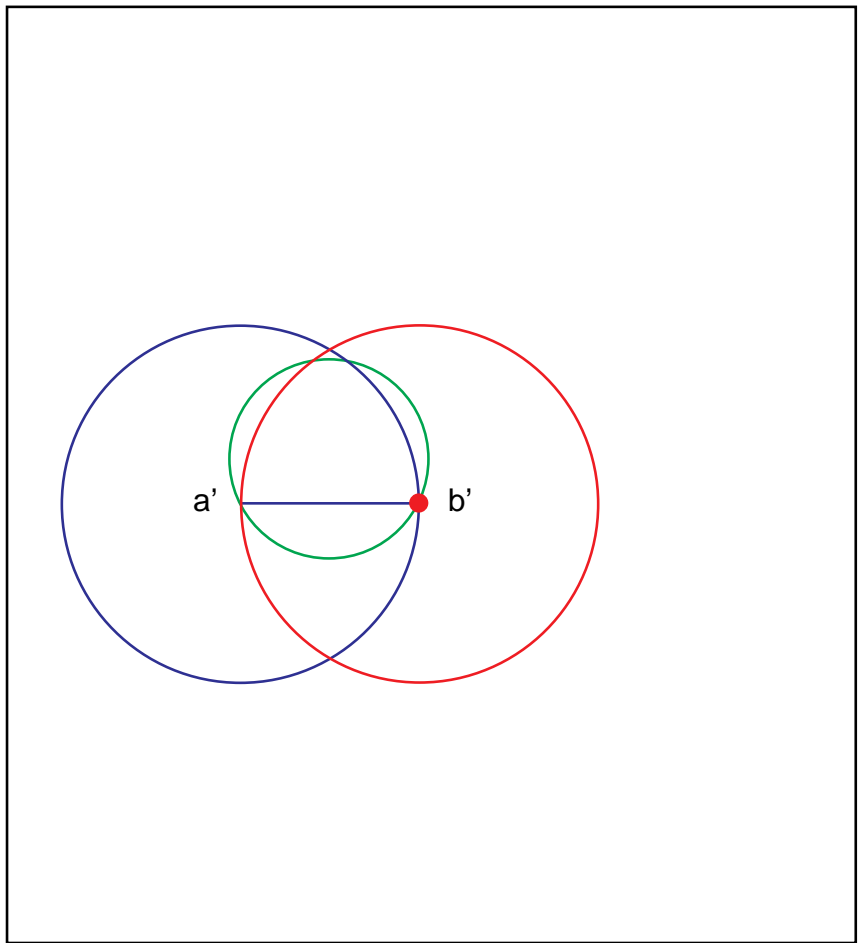
GOSUB I.10.  
Follow C#5B.



Swing  $a'b'$  around  $a'$ .

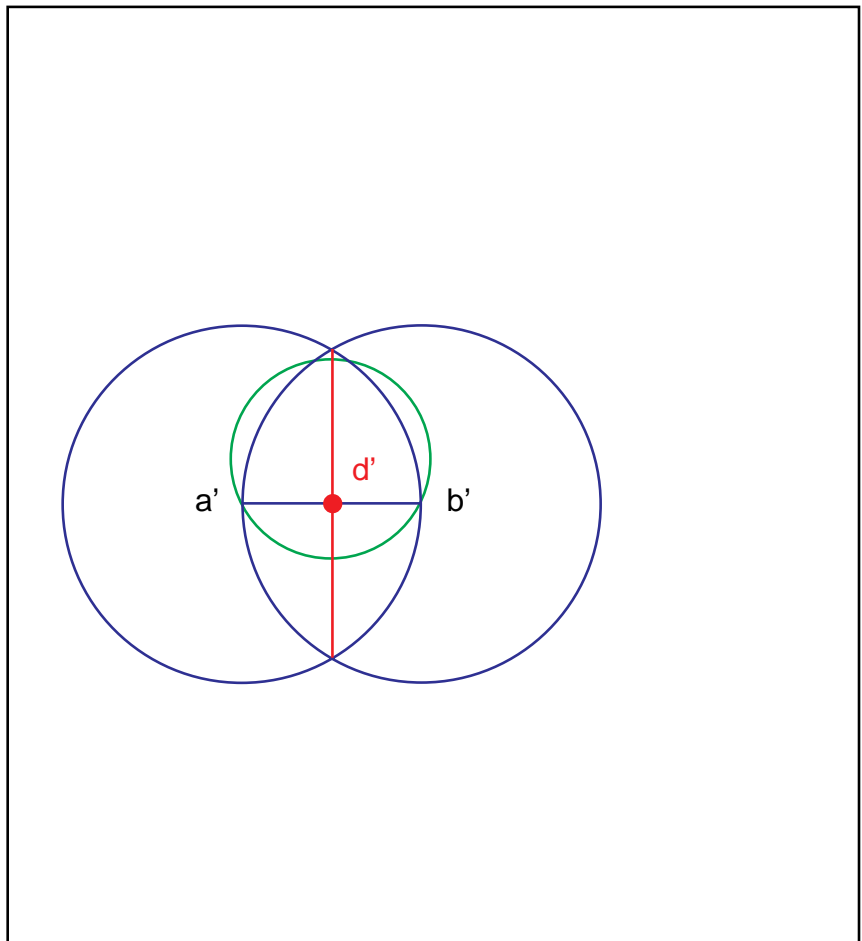


Swing  $b'a'$  around  $b'$ .



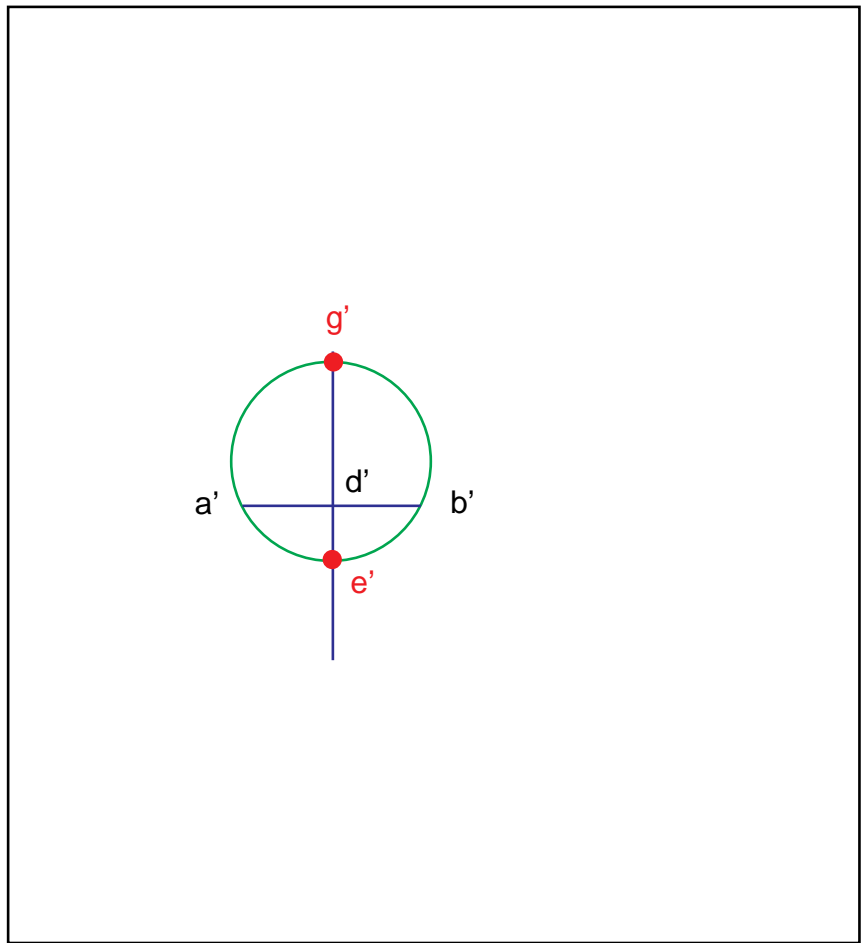


Connect the two crossing points,  
locating the midpoint  $d'$ .



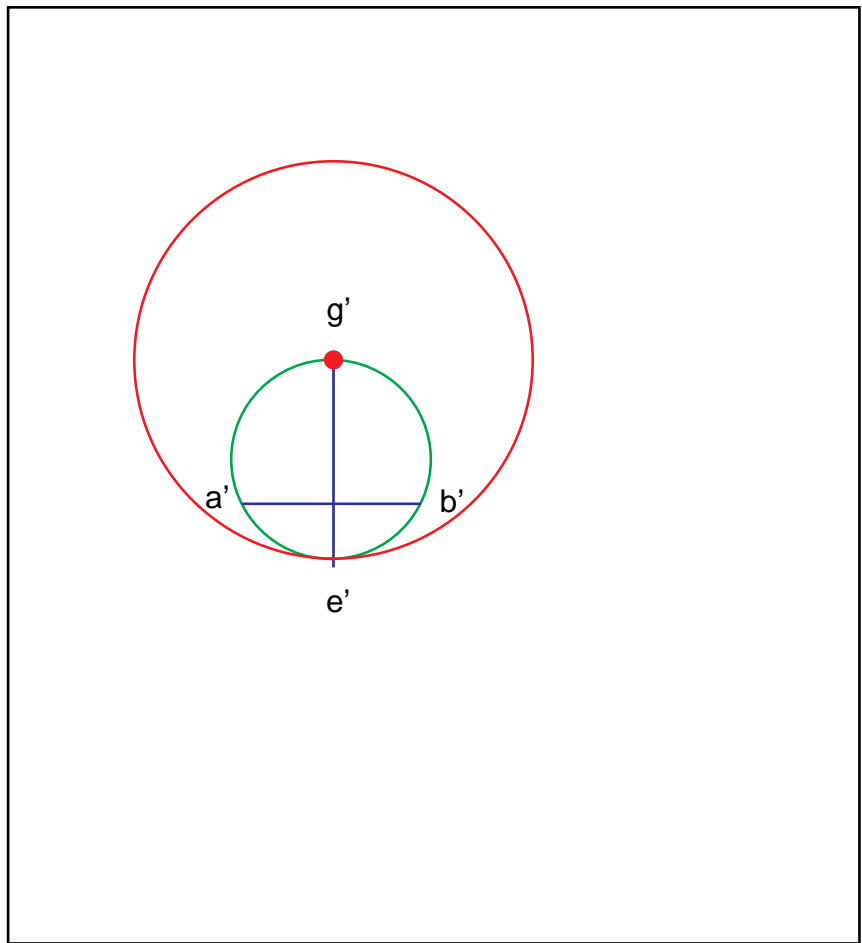
Cleanup, keeping the new line.  
RETURN to III.1 at line 5.

Mark the points  $g'$ ,  $e'$ , in which the new line meets the circle.

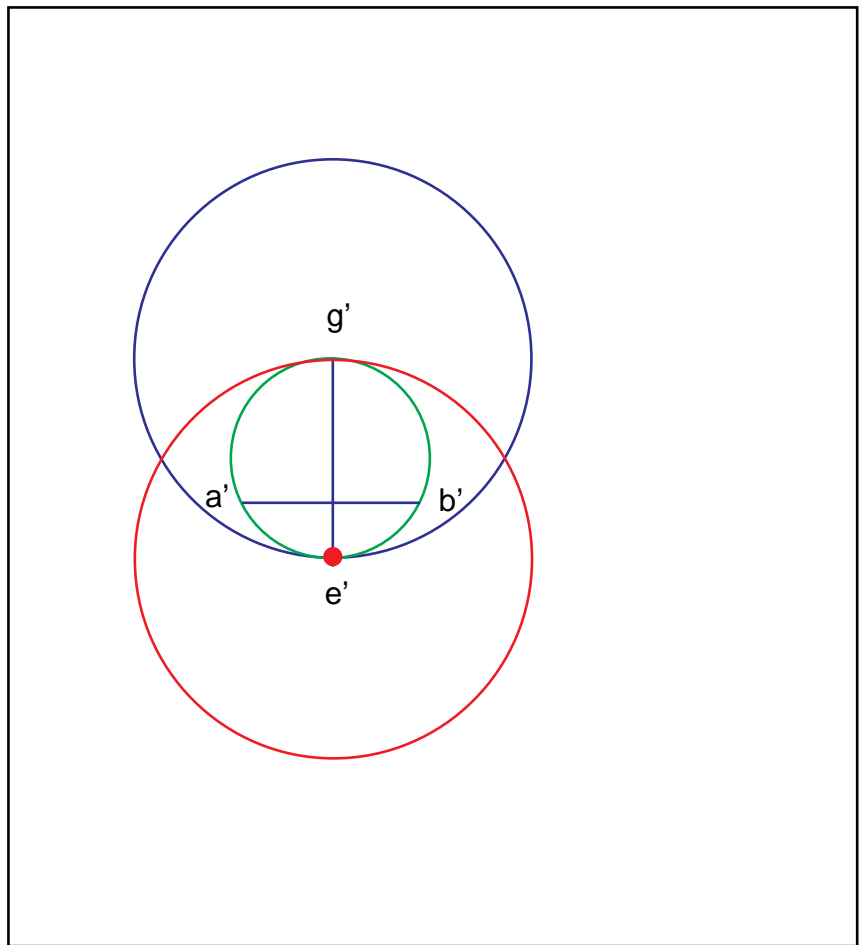


III.1:9. let  $g'e'$  be bisected at  $f'$   
([I.10])

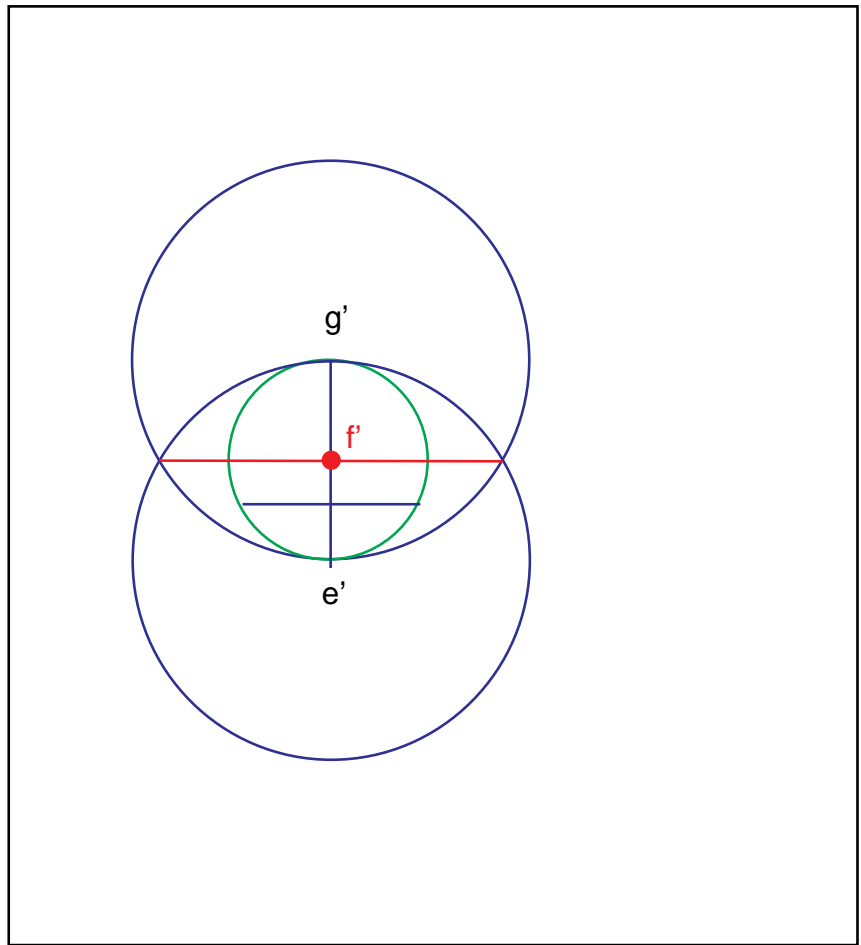
GOSUB C#5B.  
Swing  $g'e'$  around  $g'$ .



Swing  $e'g'$  around  $e'$ .



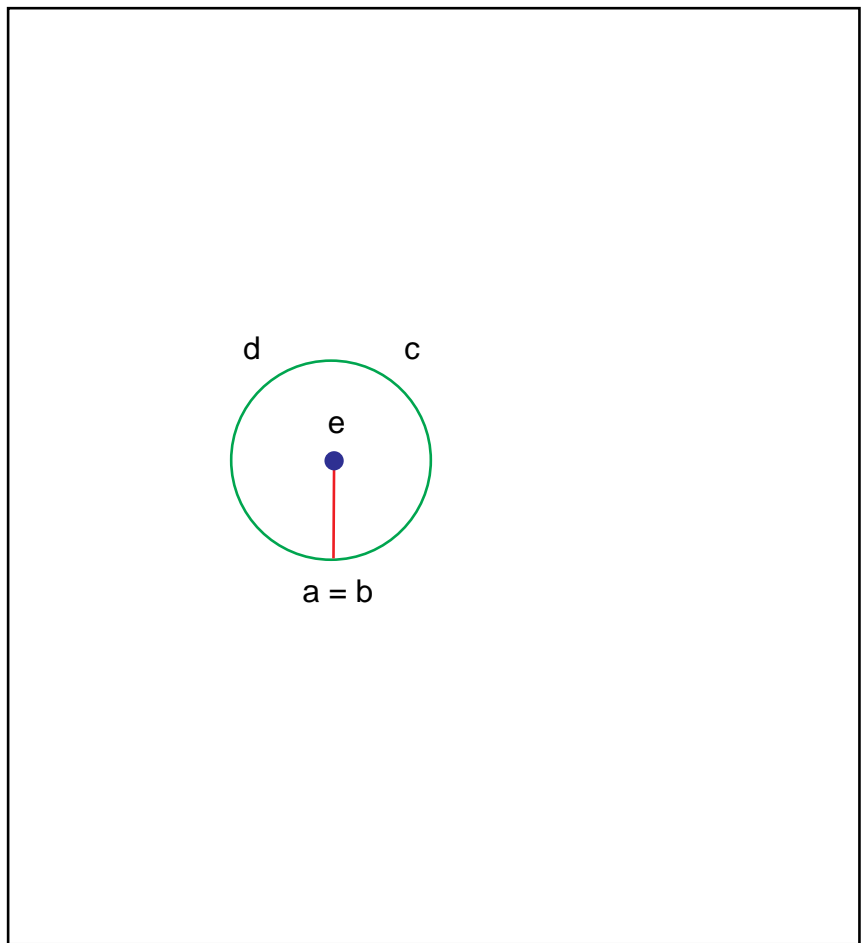
Connect the crossing points and  
mark the point  $f'$ .



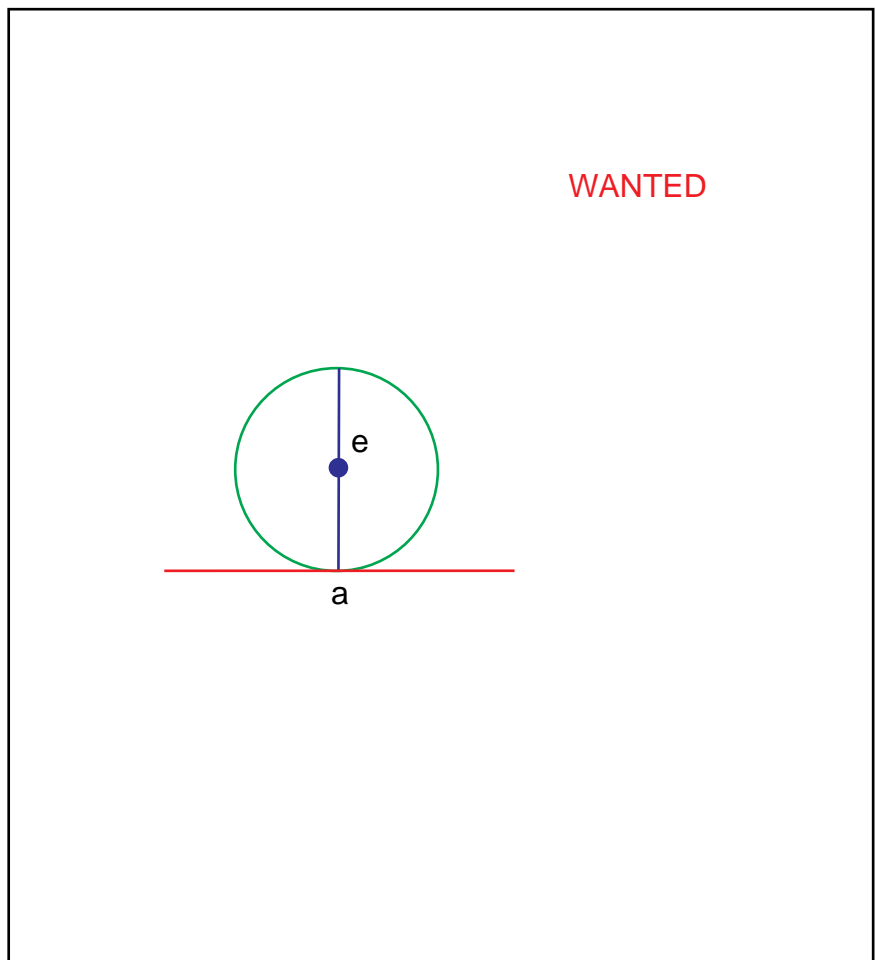
Cleanup.

RETURN to III.17 at line 6.  
Relabel.

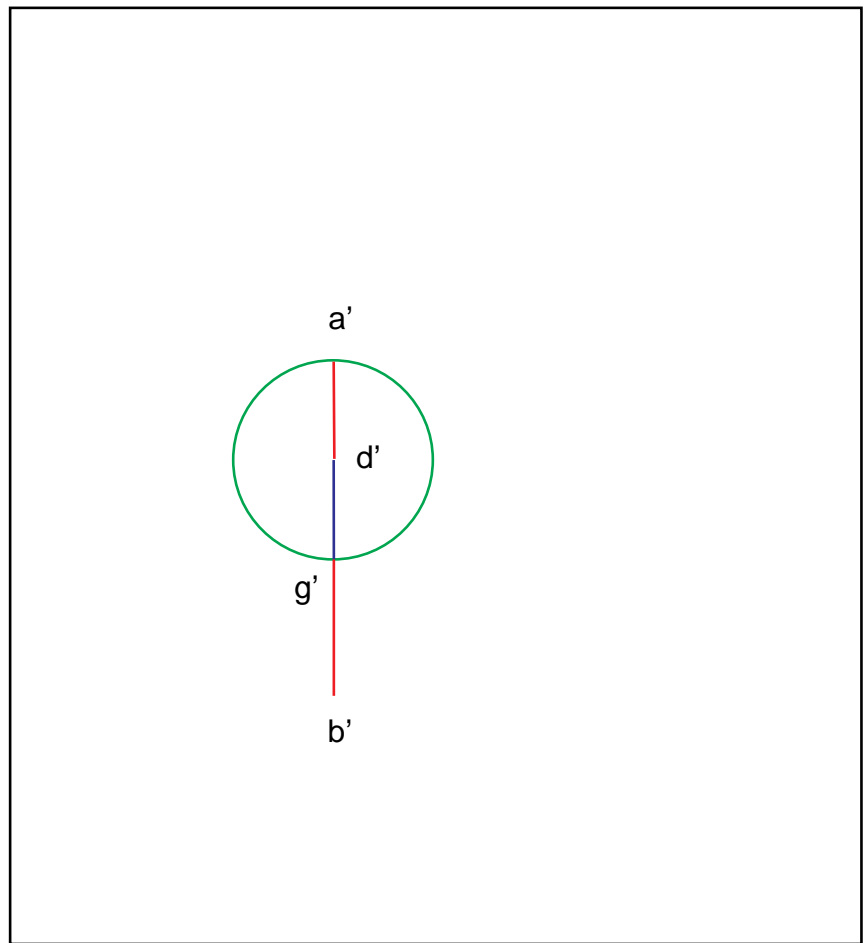
III.17:8. Let  $ae$  be joined.



Draw a straight line  $fg$  at right angles to  $ae$  from the point  $a$  on it.  
(I.11)

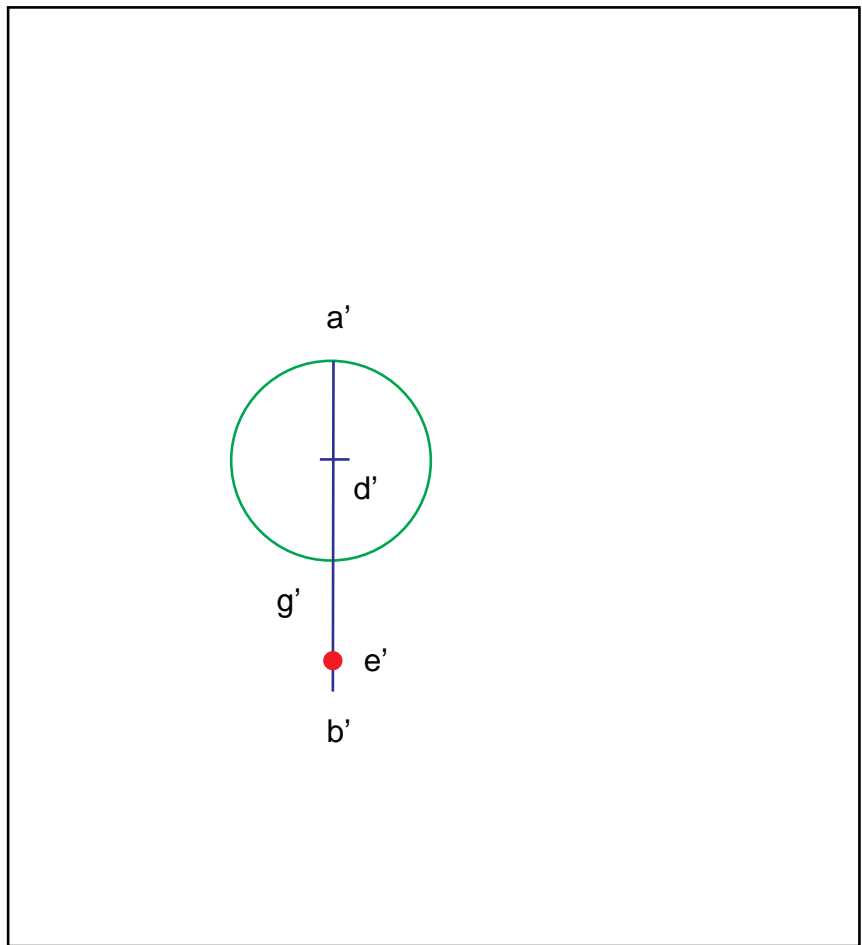


GOSUB I.11.  
Extend the straight line  $ae$ . Relabel.

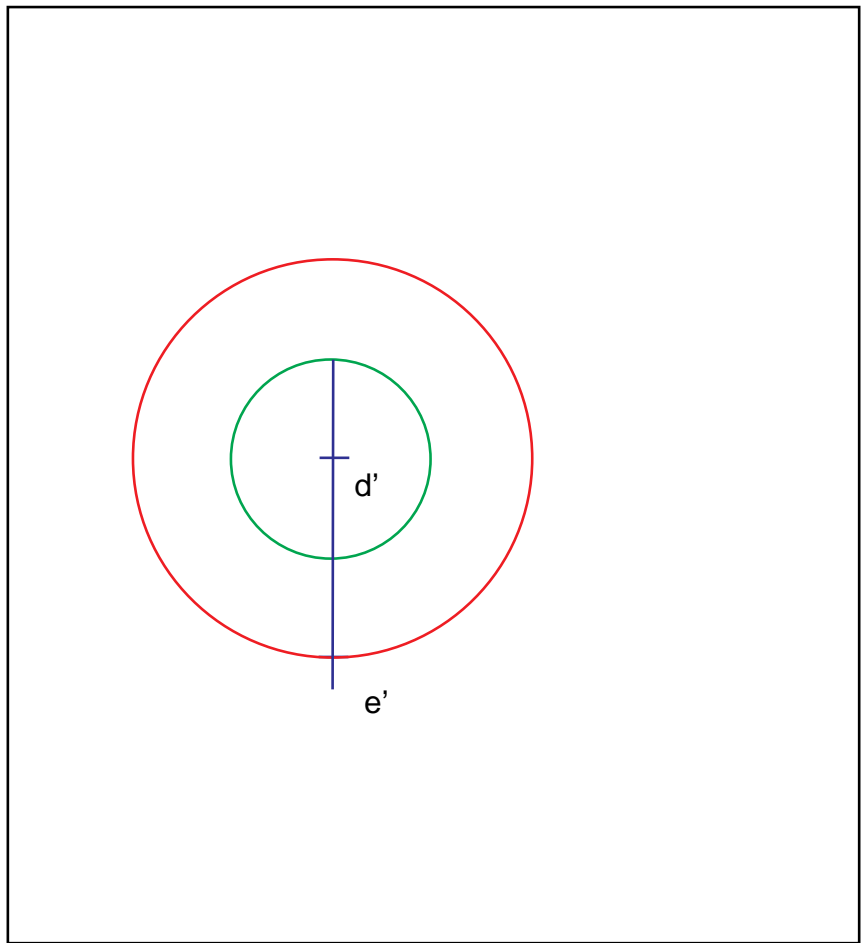




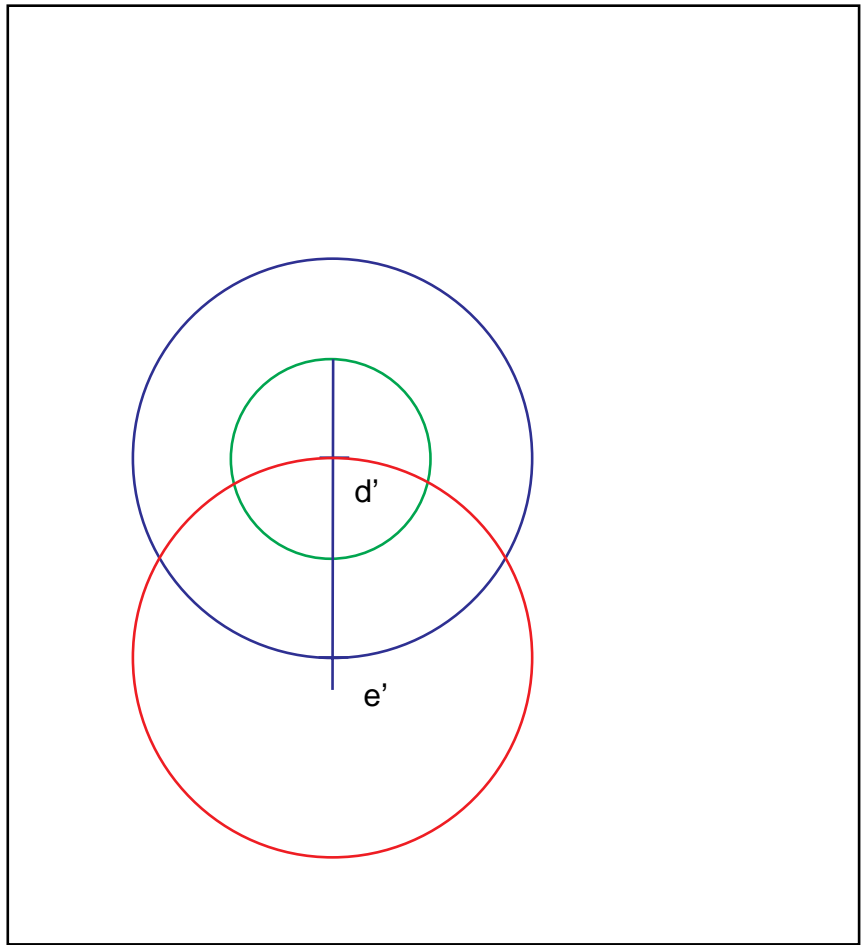
I.11:10. Let  $g'e'$  be made equal to  $g'd'$ ;  
(the rope or compass)



Swing  $d'e'$  around  $d'$ .

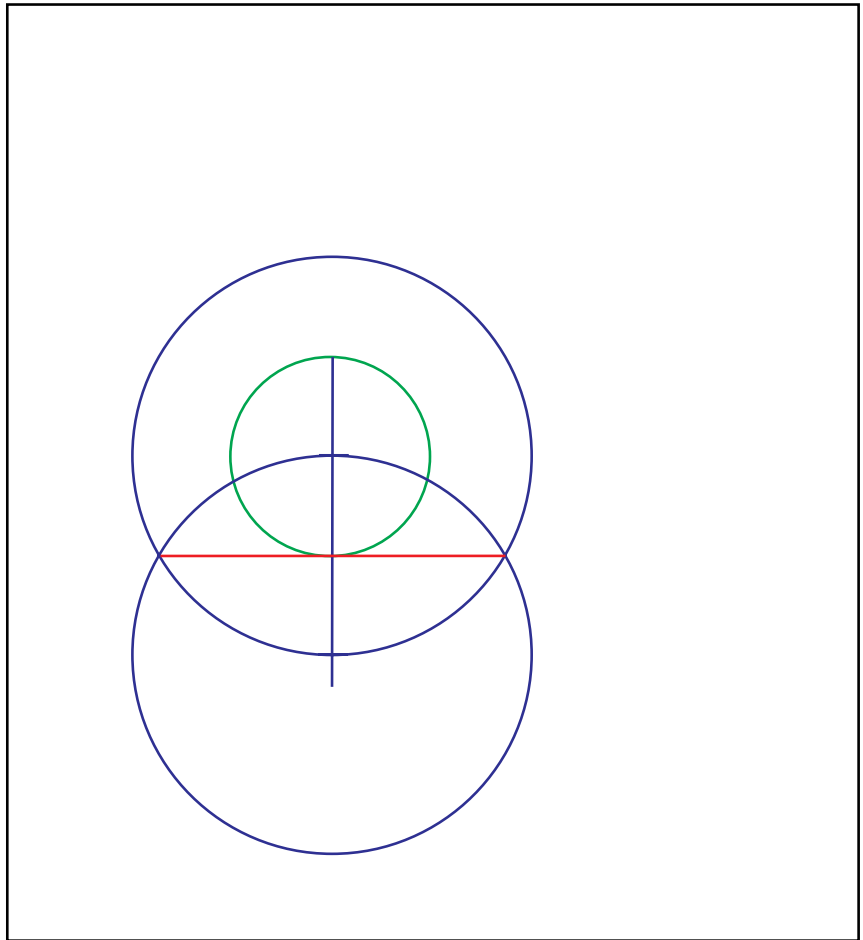


Swing  $e'd'$  around  $e'$ .

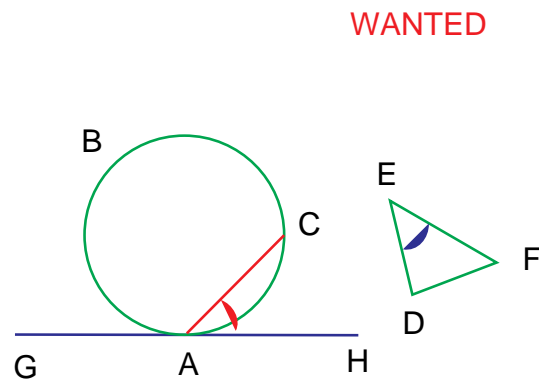


Connect the crossing points.

Cleanup.  
RETURN to IV.2 at line 7.

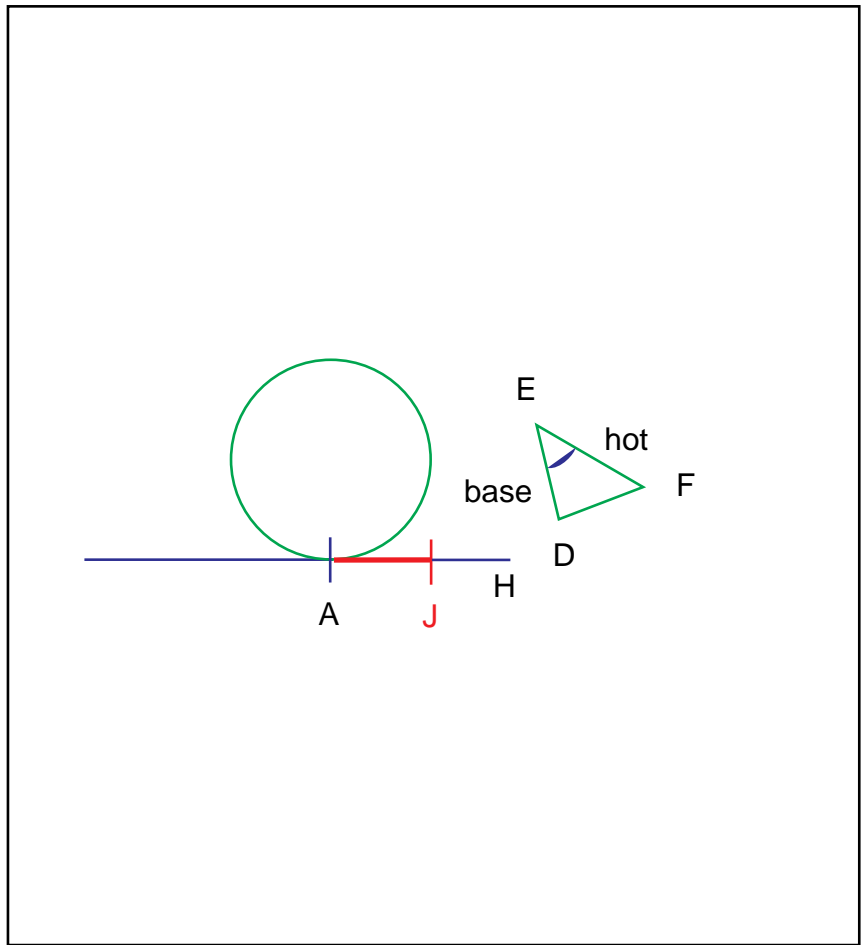


IV.2:8. on the straight line AH,  
and at the point A on it, let the  
angle HAC be constructed equal  
to the angle DEF, ([I.23])

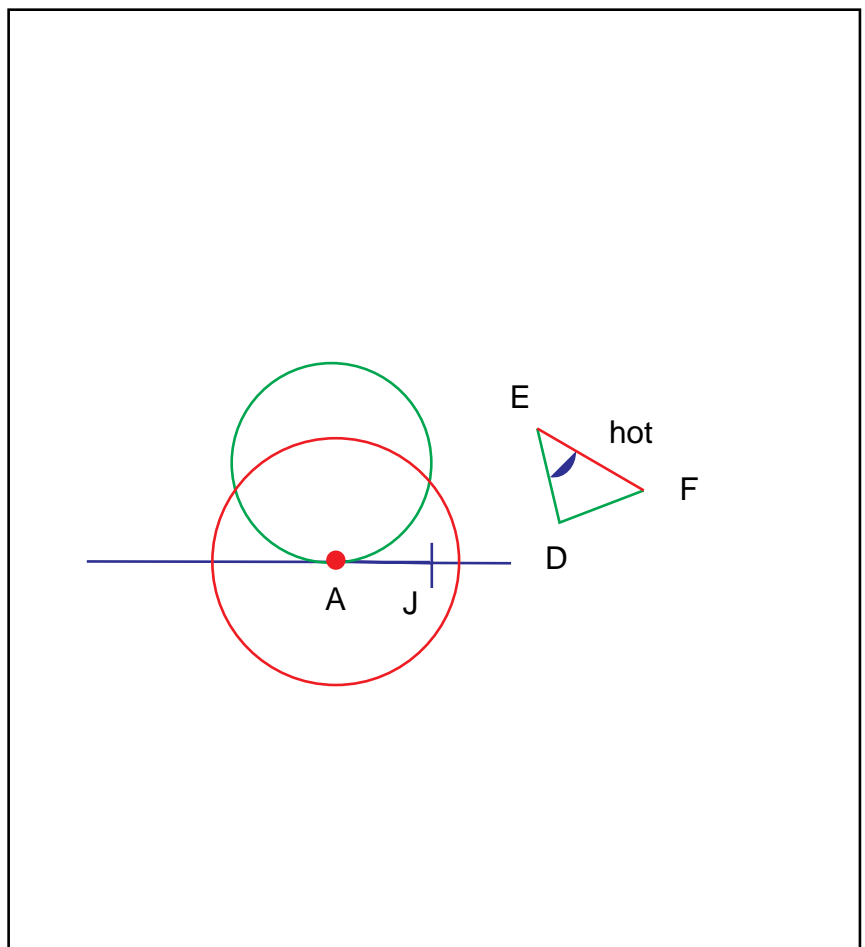


GOSUB I.23 (C#9).  
We will use C#8P, to move a tri-  
angle after Proclus.

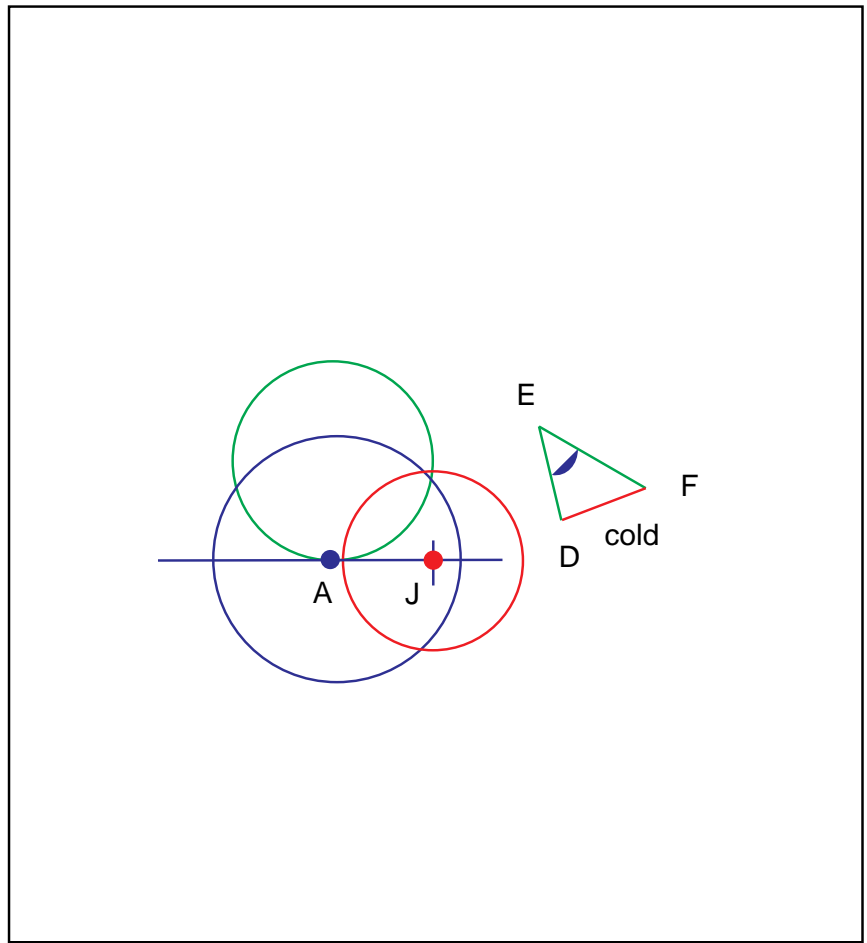
Move the base ED to AJ.



Swing the hot arm EF around the hot end A of the moved base.



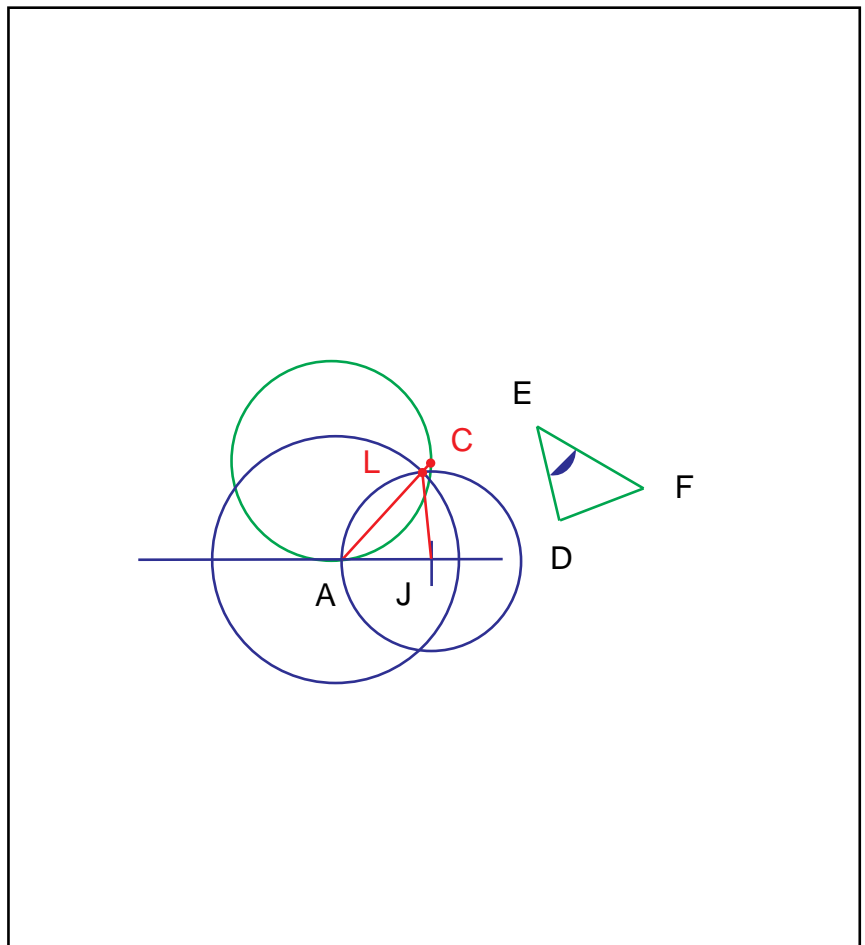
Swing the cold arm DF around  
the cold end J of the moved base.



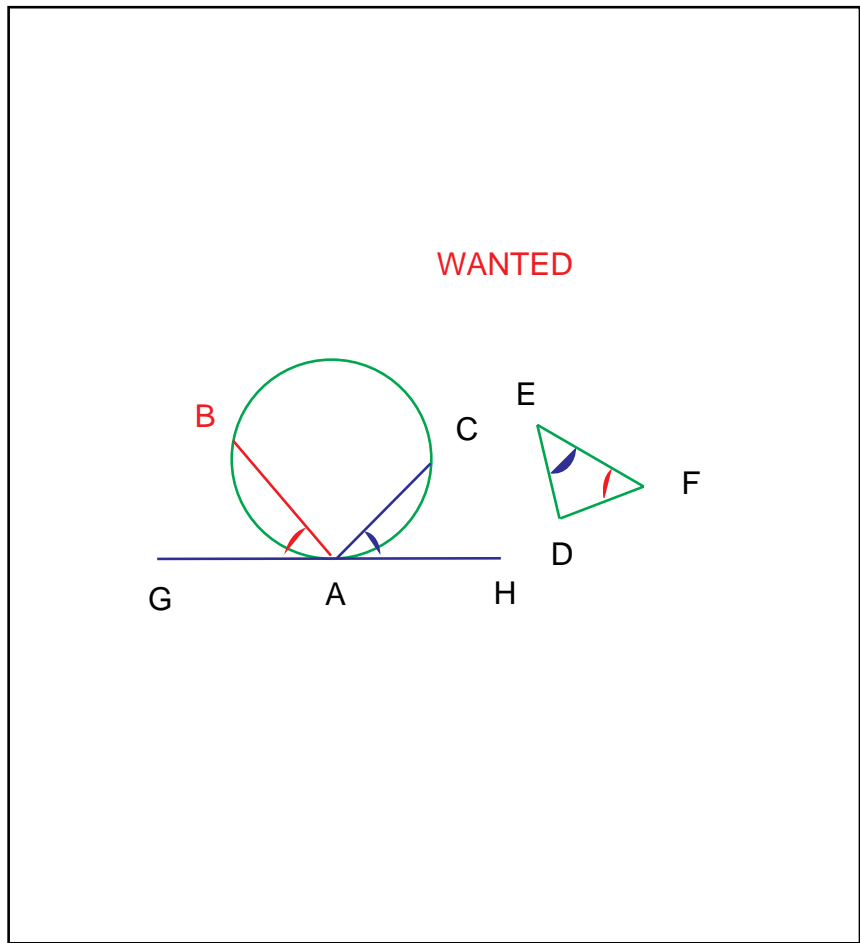


Join the upper crossing point L to the two ends of the moved base, A, J. Locate C where LA extended meets the circle ABC.

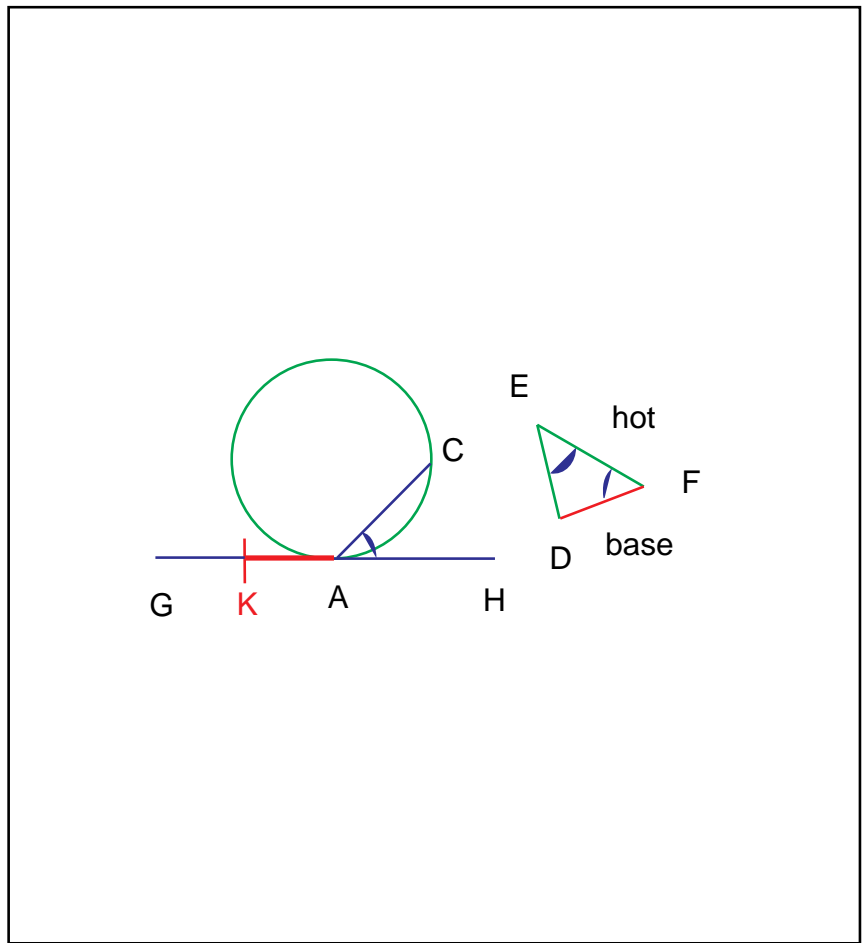
Cleanup.  
RETURN to IV.2 at line 8.



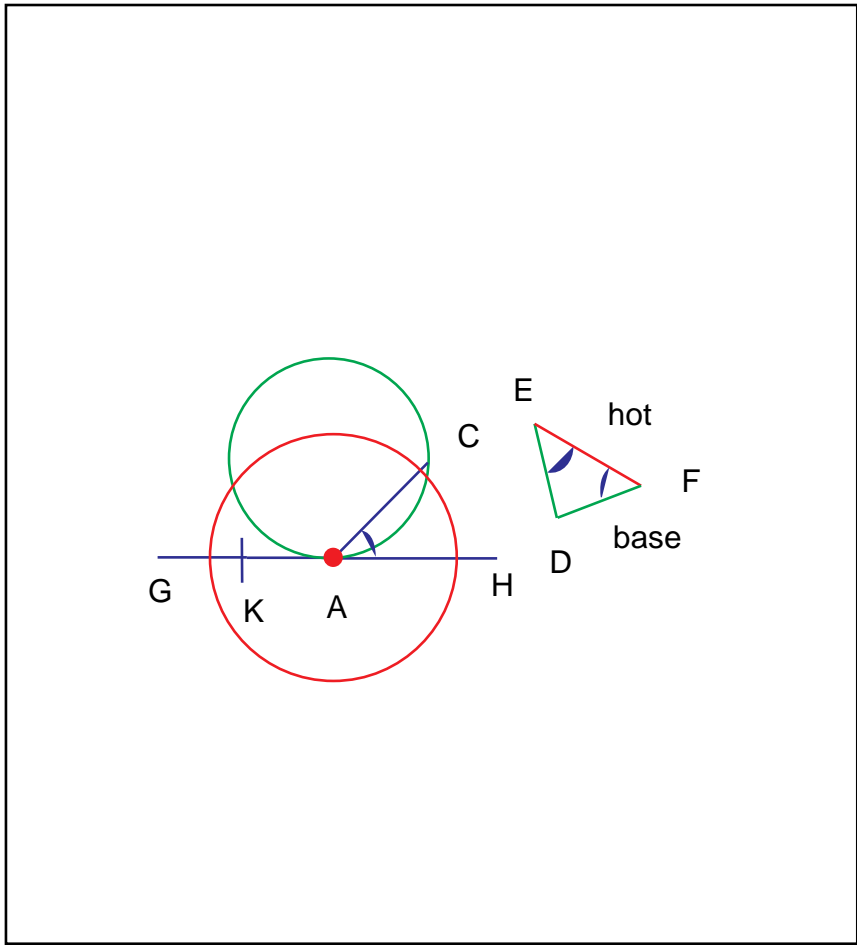
IV.2:10. and on the straight line AG, and at the point A on it, let the angle GAB be constructed equal to the angle DFE; [I.23]



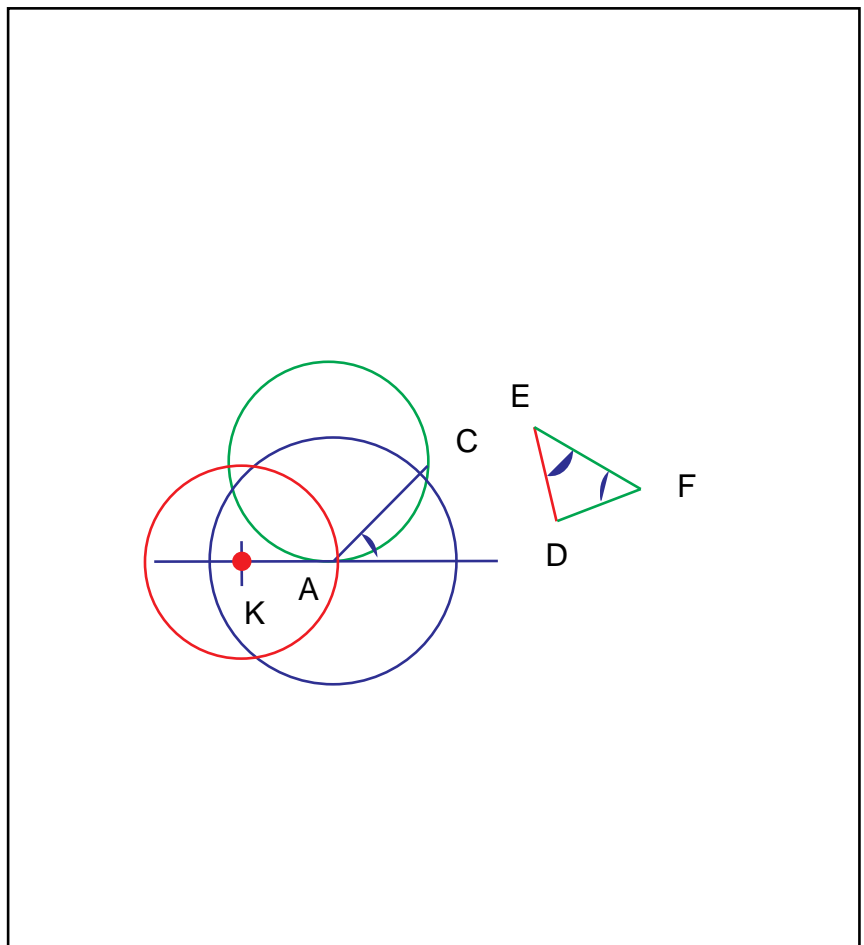
GOSUB I.23 (C#8B) again.  
 Move the base DF to KA. (the rope.)



Swing the hot arm EF around the hot end A of the moved base AK (Reuse step 10.)

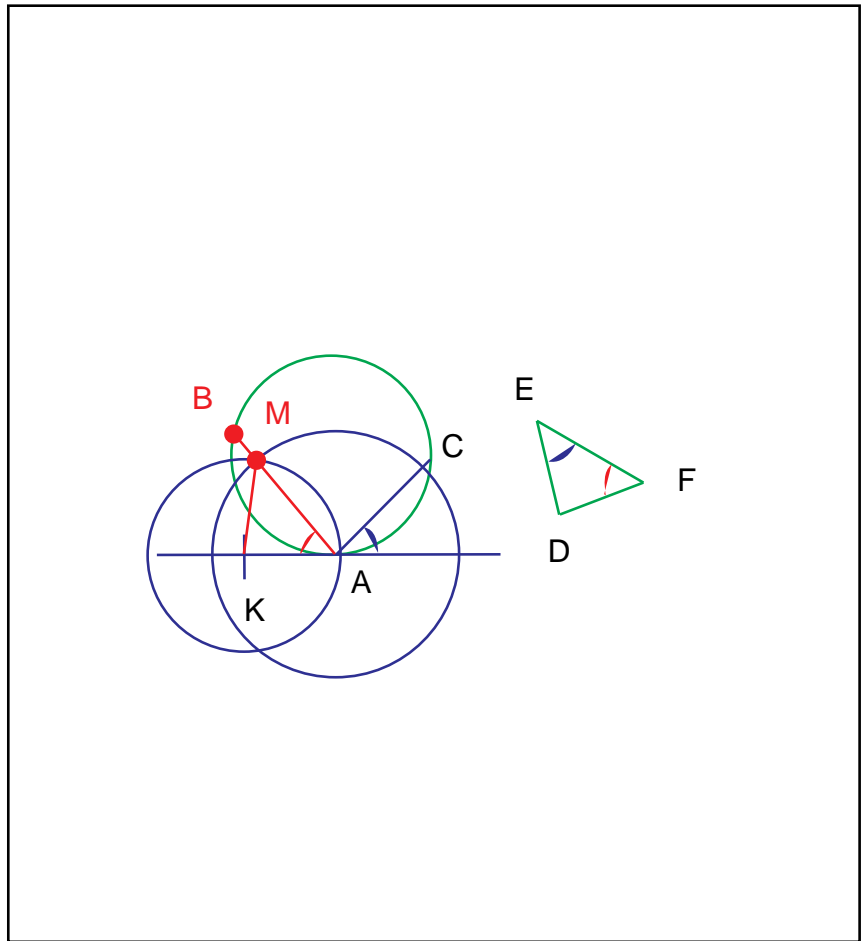


Swing the cold arm ED around the cold end K of the moved base KA.

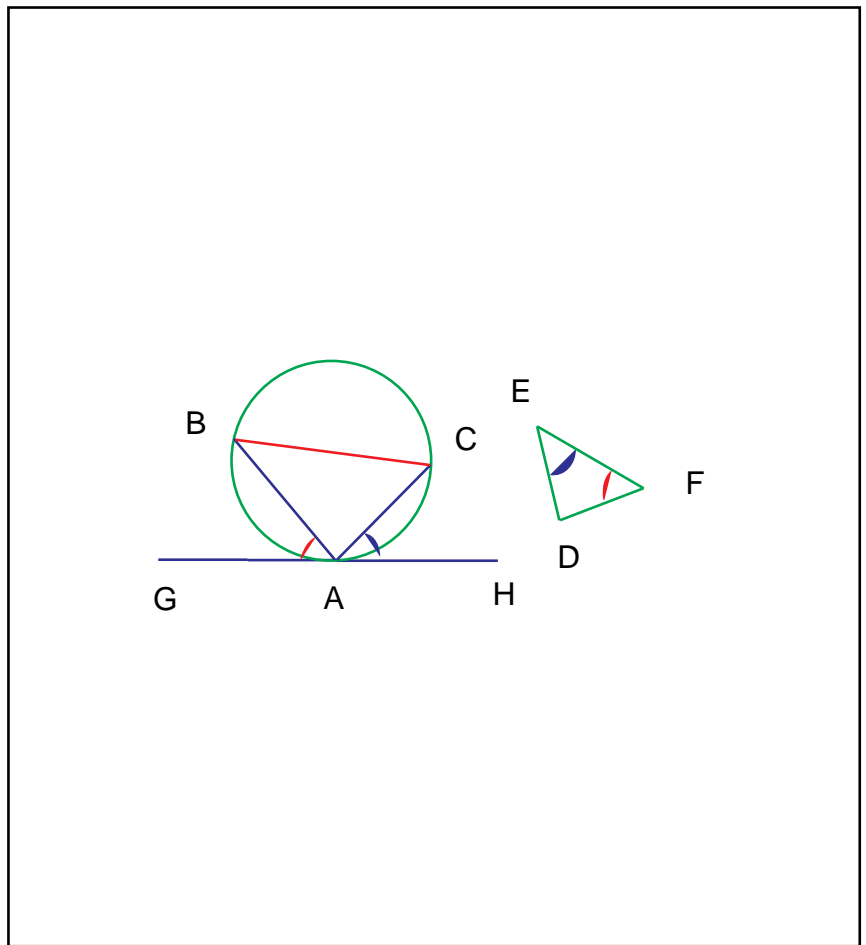


Connect the upper crossing point M of the two new circles to both end points of the moved base K, A. Extend the line MA to meet the given circle ABC, to locate the point B.

Cleanup.  
RETURN to IV.2 at line 10.



IV.2:13. let BC be joined.



Q.E.F.

DONE

