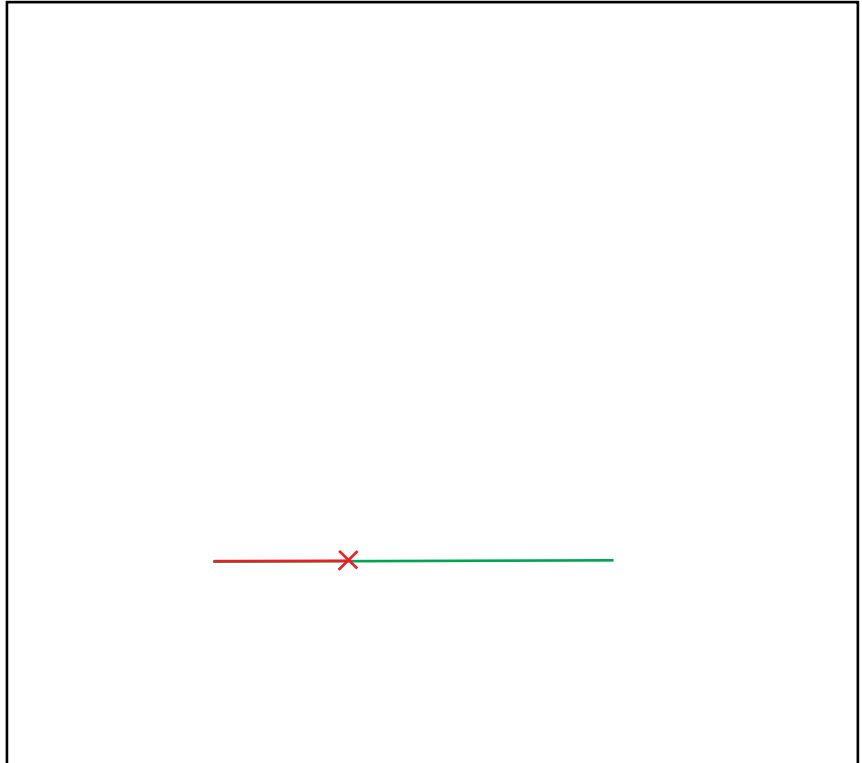

Construction 39: Book VI, Proposition 9

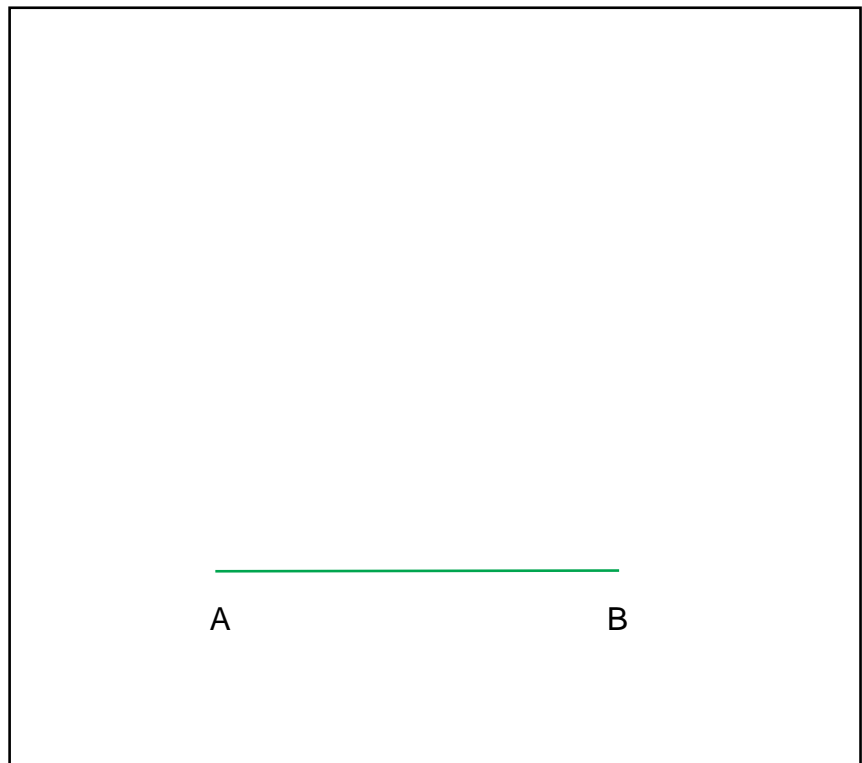
From a given straight line to cut off a prescribed part.

Note: see Bk. V Def. 1 for “part”.

A magnitude is a part of a magnitude, the less of the greater, when it measures the greater.



VI.9:2. Let AB be the given straight line;

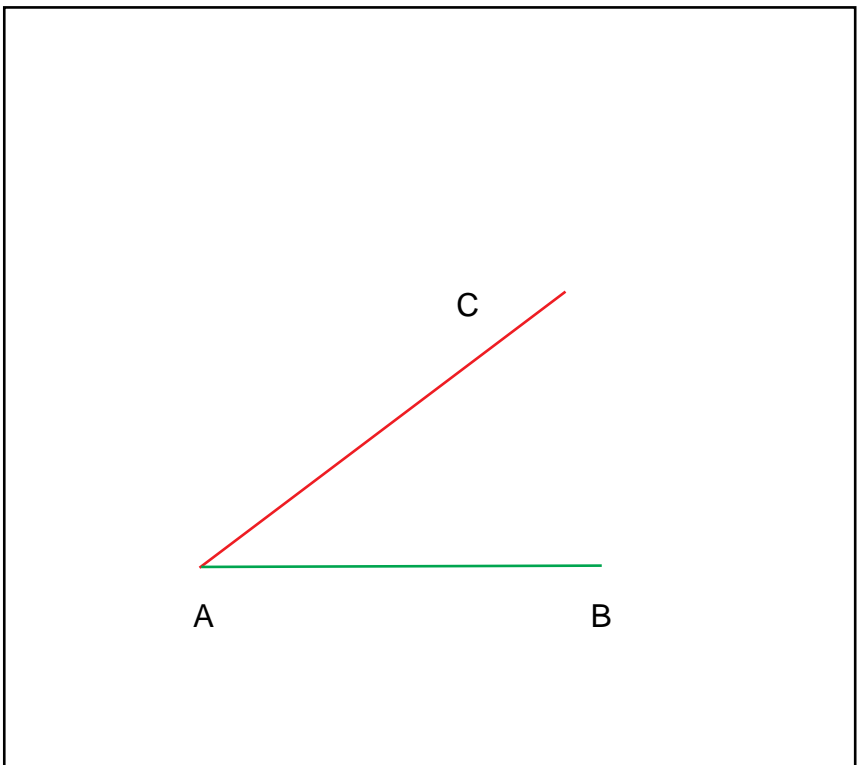


VI.9:4. Let the third part be that

prescribed.

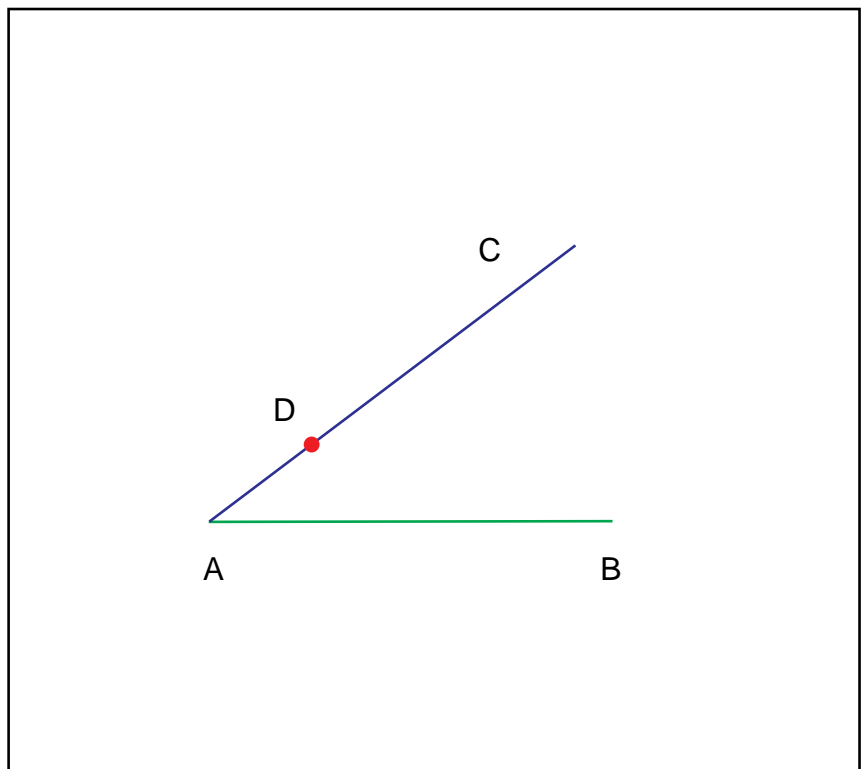


VI.9:5. Let a straight line AC be drawn through from A containing with AB any angle;

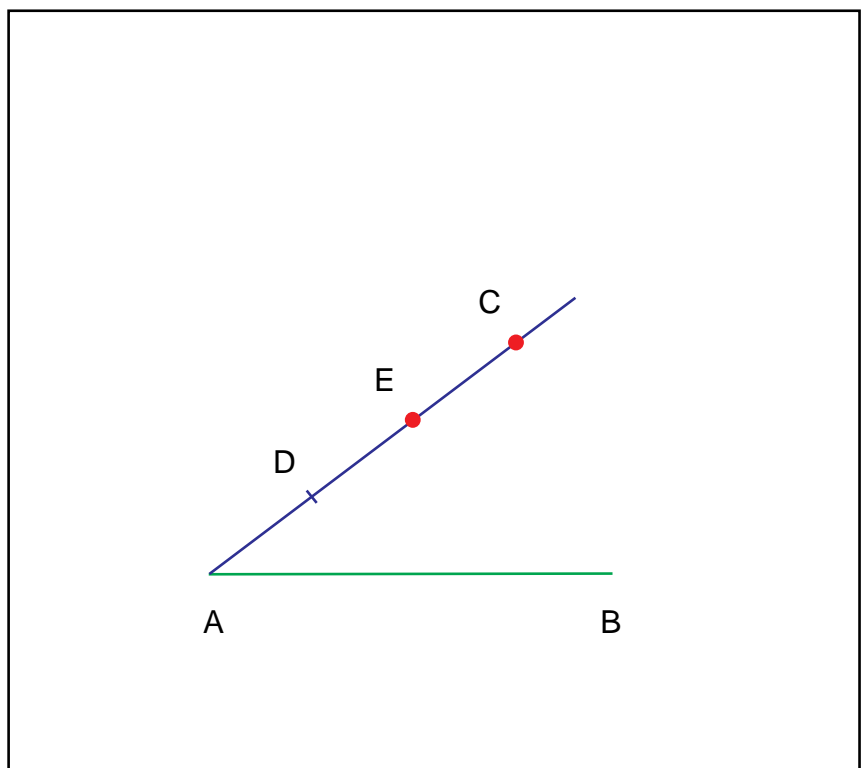


VI.9:7. let a point D be taken at

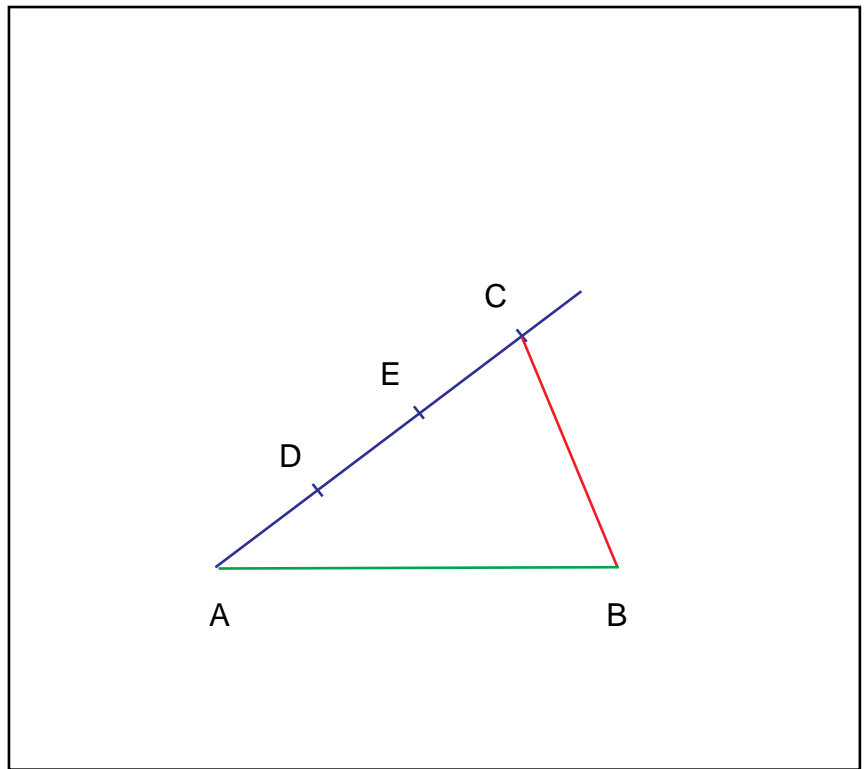
random on AC,



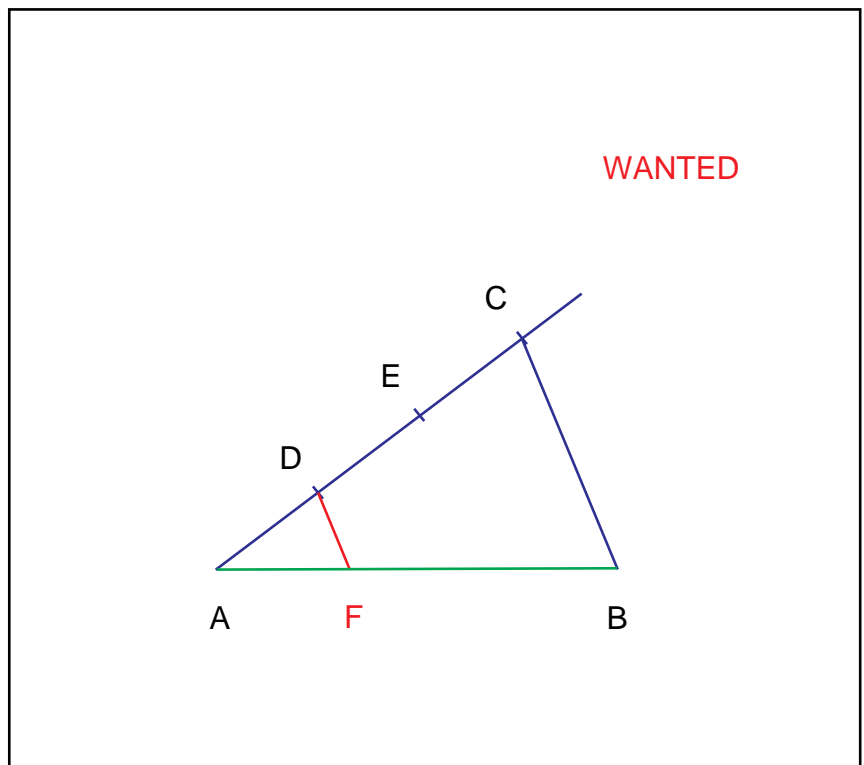
VI.9:8. and let DE, EC be made equal to AD .
[I.3]



VI.9:10. Let BC be joined,



VI.9:10. and through D let DF be drawn parallel to it. [I.31]



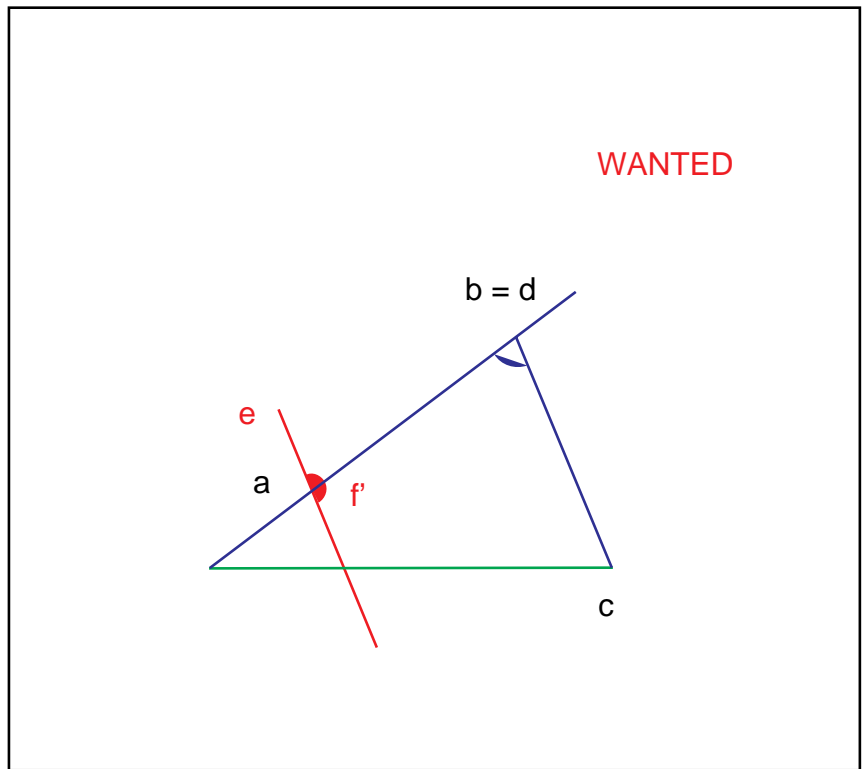
GOSUB I.31, C#10
Relabel.
I.31:3. Let a be the given point

and bc the given straight line.

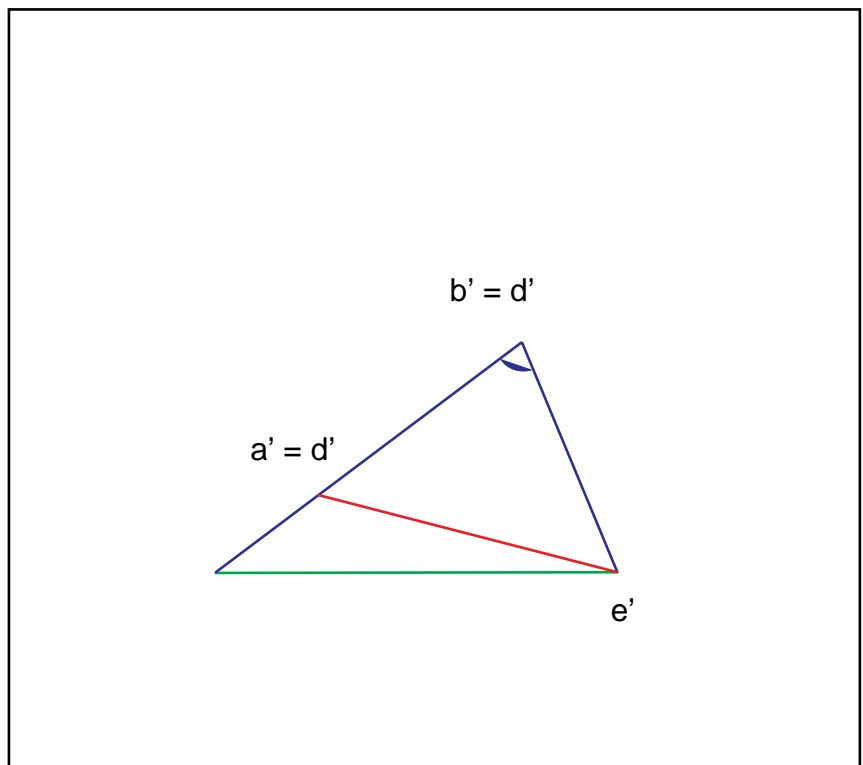
I.31:7. Let a point d be taken at random on bc, [we take $d = b$] and let ad be joined (we have ad already)..

I.31:8. on the straight line da and at the point a on it, let the angle dae be constructed equal to the angle adc [I.23];

GOSUB I.23, C#9, relabel.



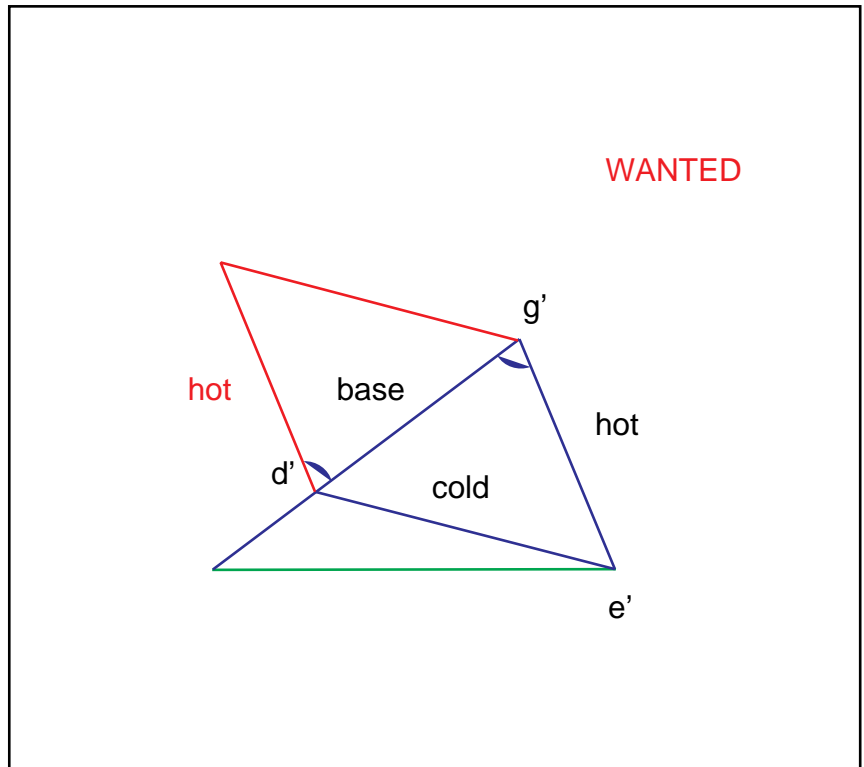
I.23:10. let $d'e'$ be joined.



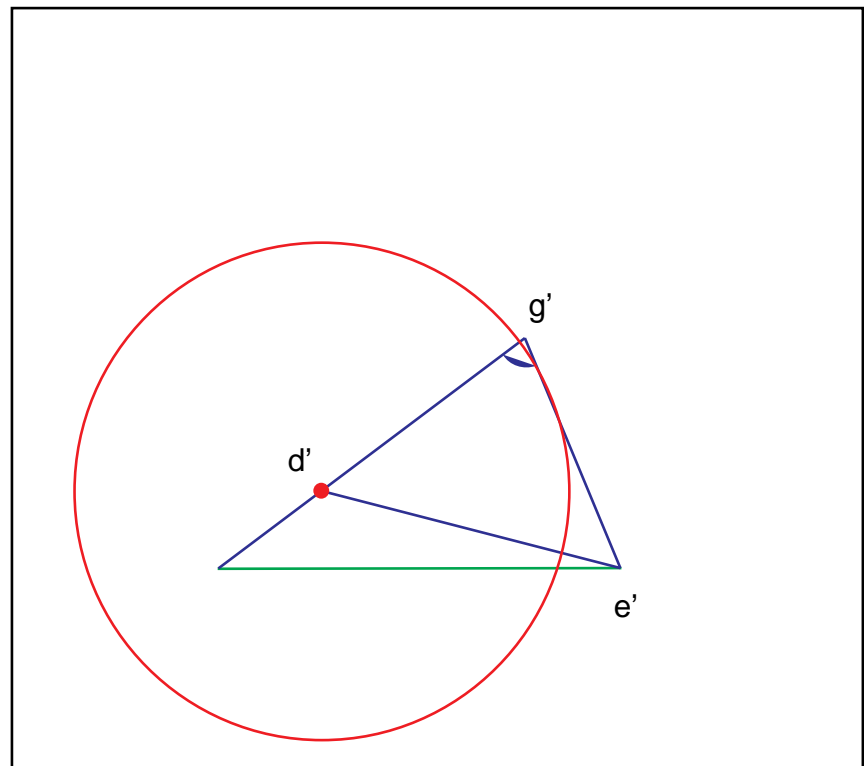
I.23:11. (paraphrase).

Move the triangle $g'd'e'$, base $g'd'$, $g'e'$ is hot.

GOSUB C#8P.

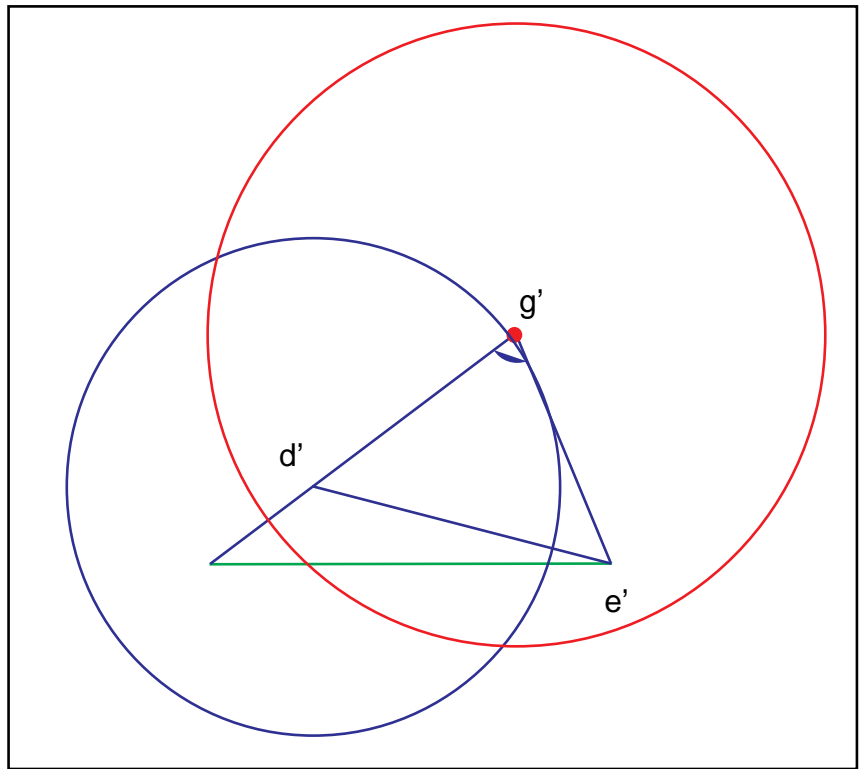


Swing the hot arm $g'e'$ around the hot end d' of the base $g'd'$.



Swing the cold arm $d'e'$ around

the cold end g' of the base $d'g'$.



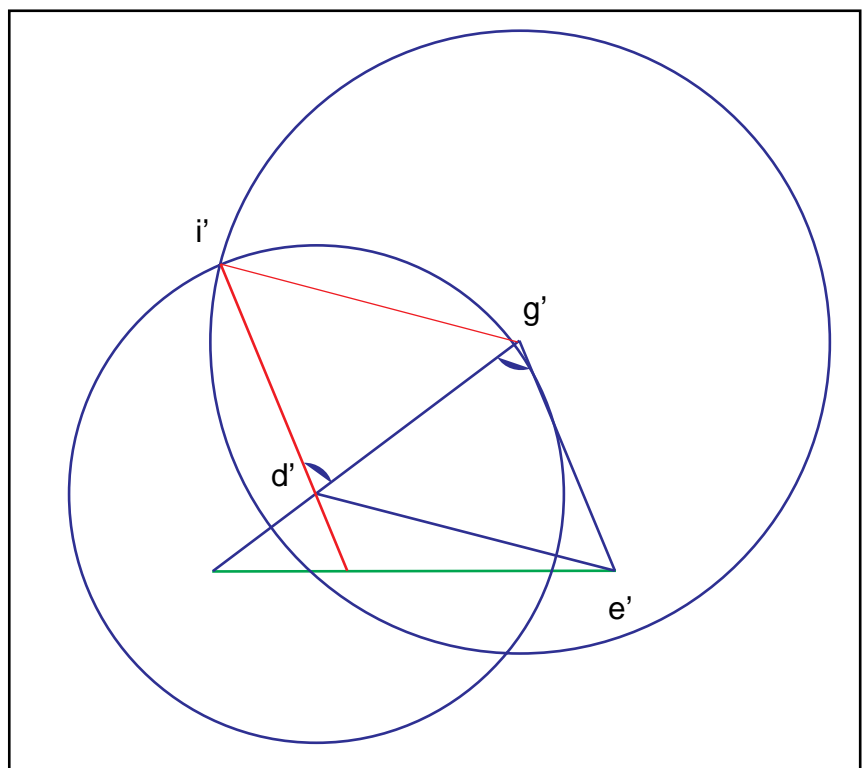
Connect the upper crossing, i' , to both centers. (Only the line $i'd'$ is needed.) Extend i' downward.

RETURN to I.23:11.

RETURN to I.31:3.

RETURN to VI.9:10.

Cleanup, relabel.



VI.9:18. Therefore from the

given straight line AB the prescribed third part AF has been cut off.

Q.E.F.

