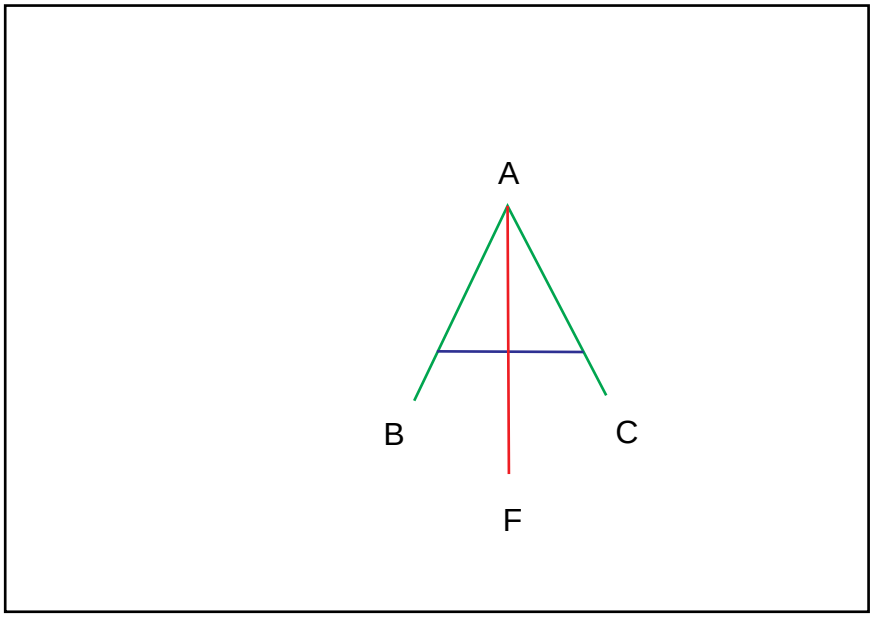
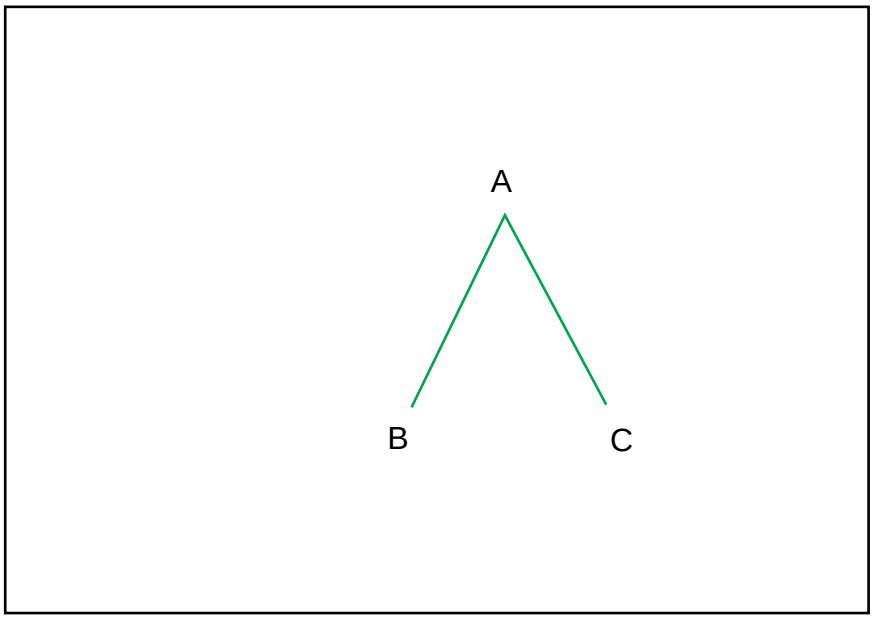
Construction 4: Book I, Proposition 9

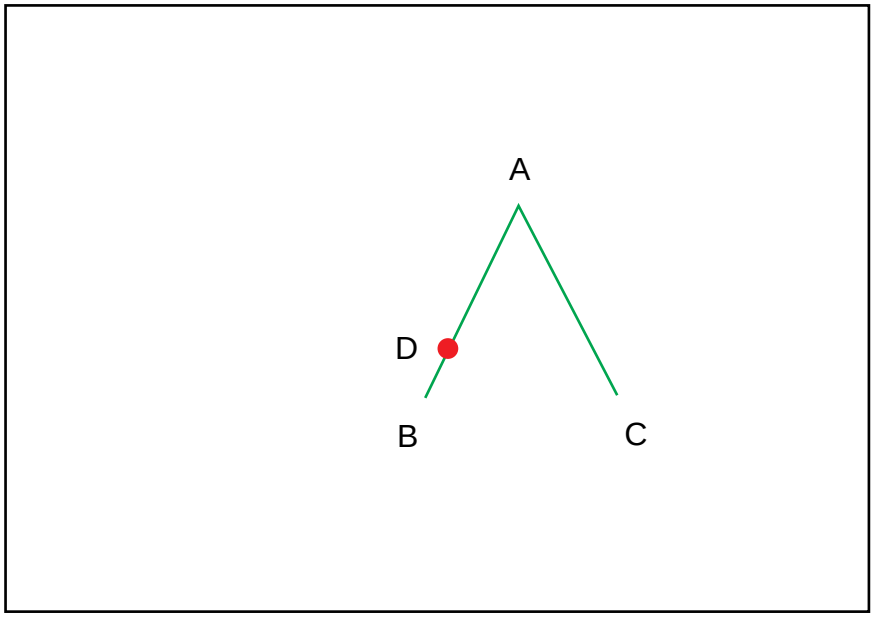
To bisect a given rectilineal angle.



I.9:2. Let the angle BAC be the given rectilineal angle.

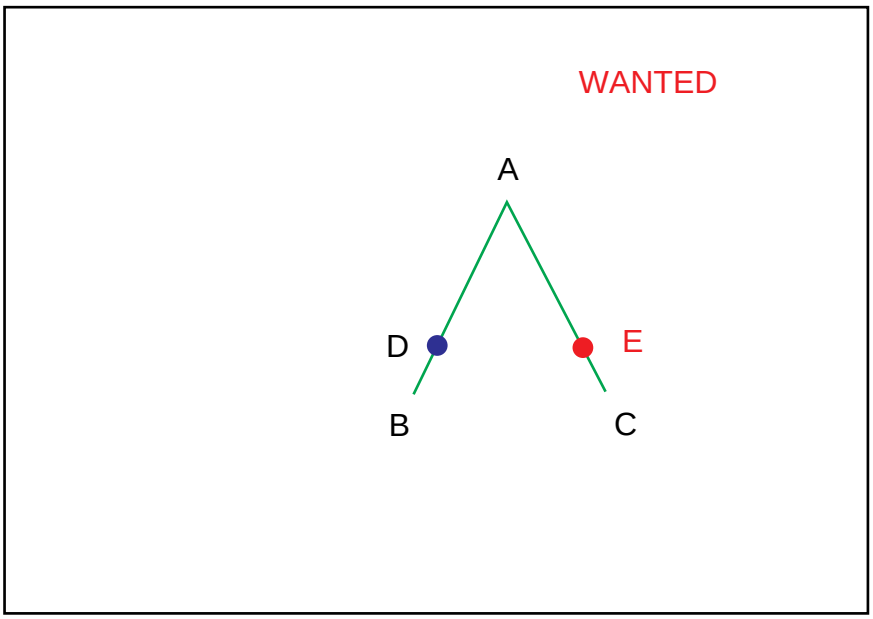


I.9:4. Let a point D be taken at random on AB;



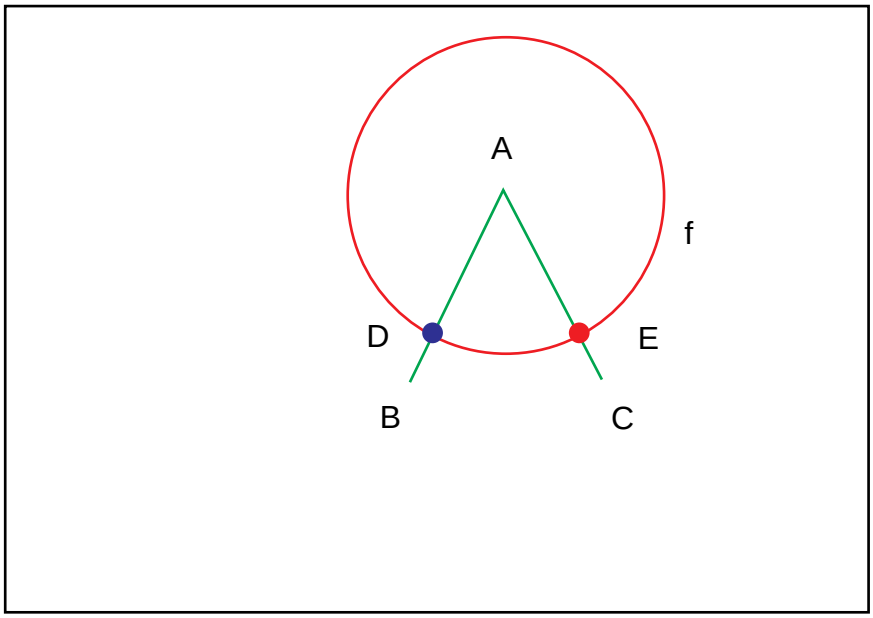
I.9:5. Let AE be cut off from AC equal to AD; [I.3]

GOSUB (We trim I.3.)

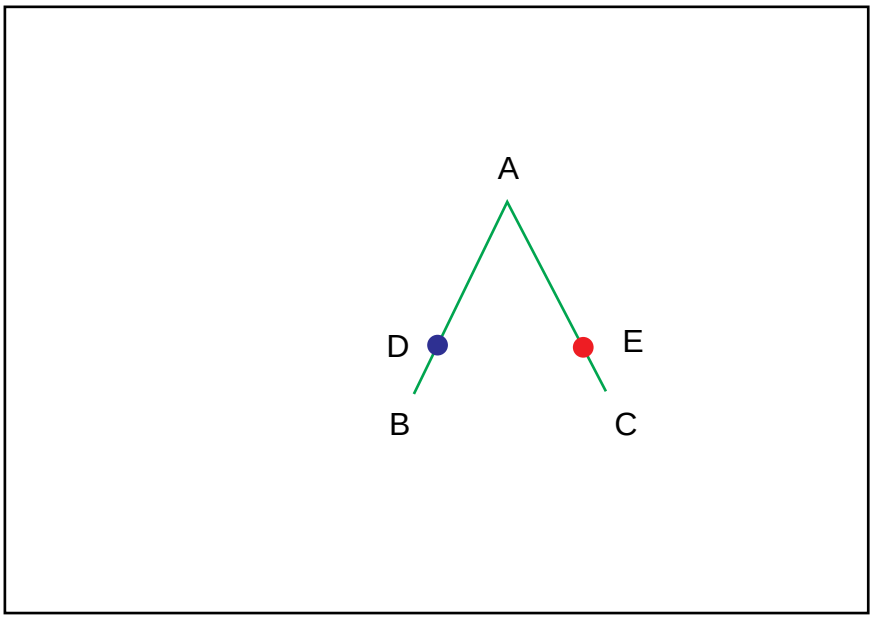


I.3:12. With centre A and distance AD let a circle DEf be described.

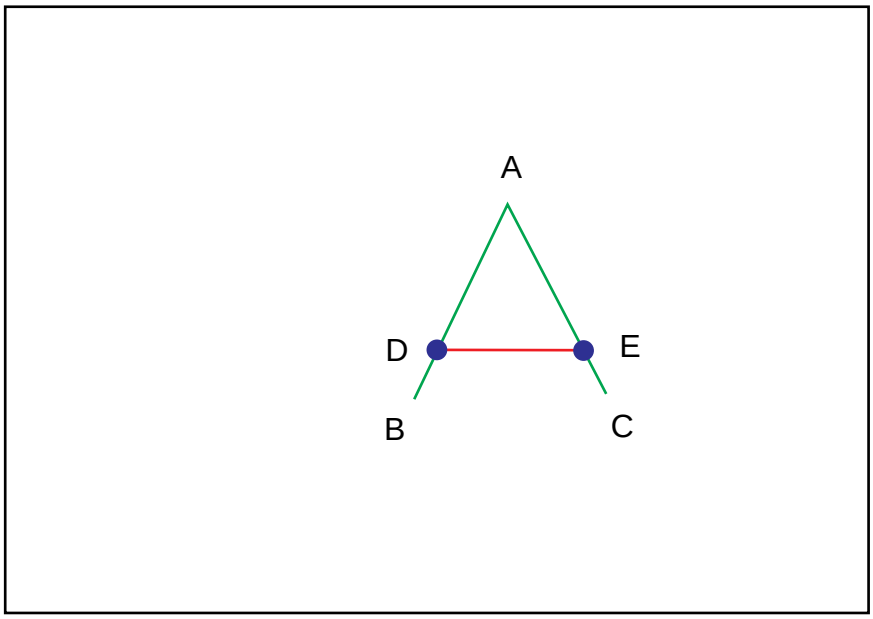
(The point E is located by the crossing of the circle DEf and the line AC.)



RETURN to I.9 at line 5 and clean up.



I.9:6. Let DE be joined,



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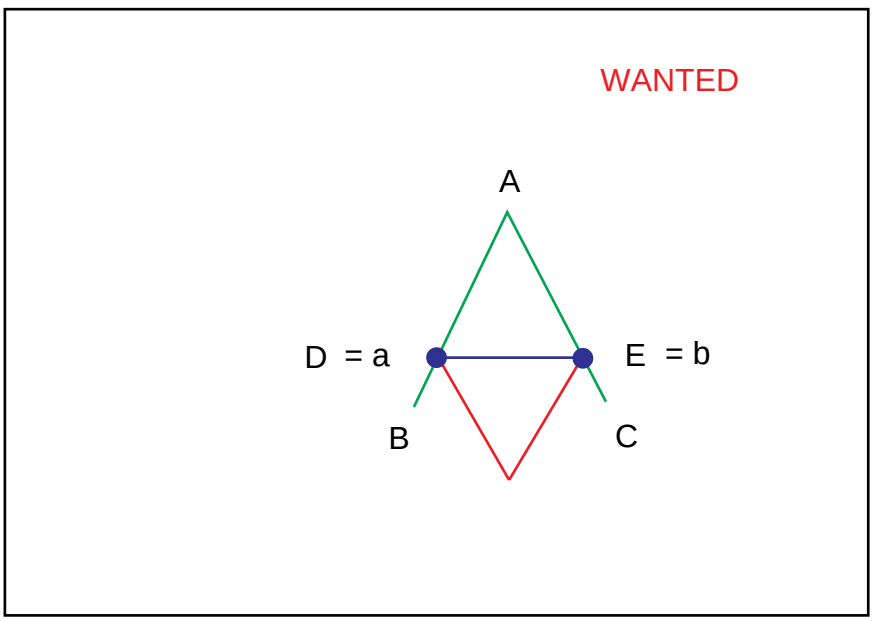
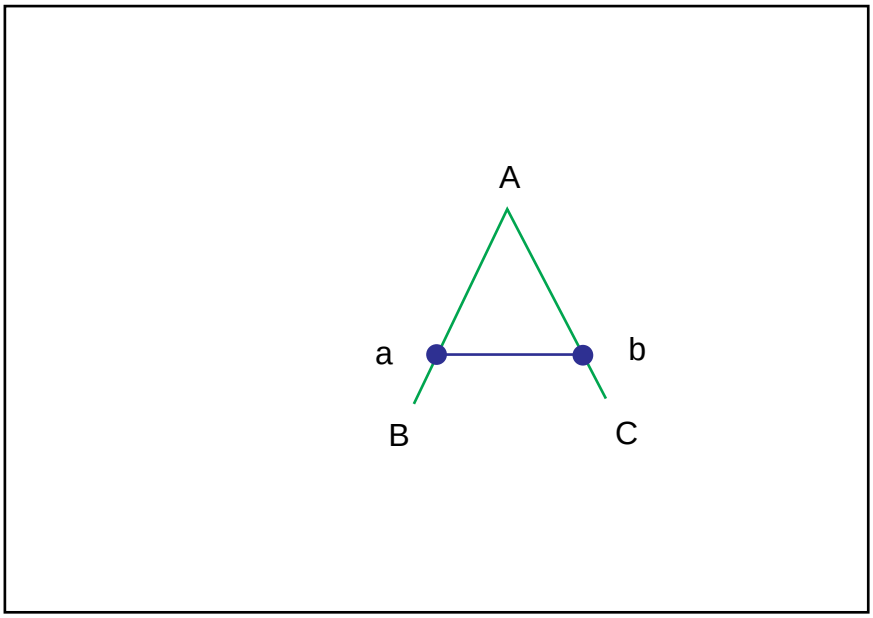
.9:6. and on DE let the equilat-
eral triangle DEF be con-
structed; [I.1]

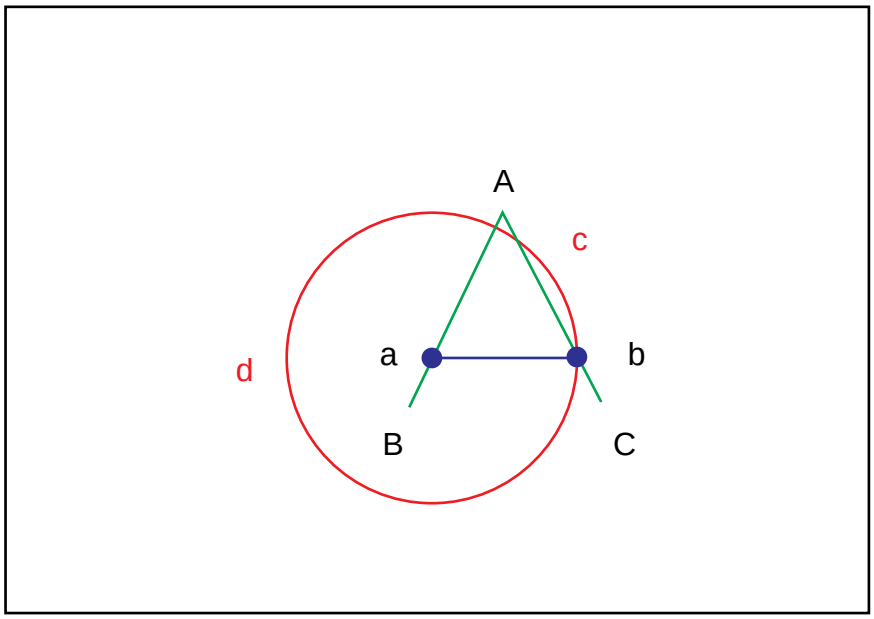


GOSUB I.1.

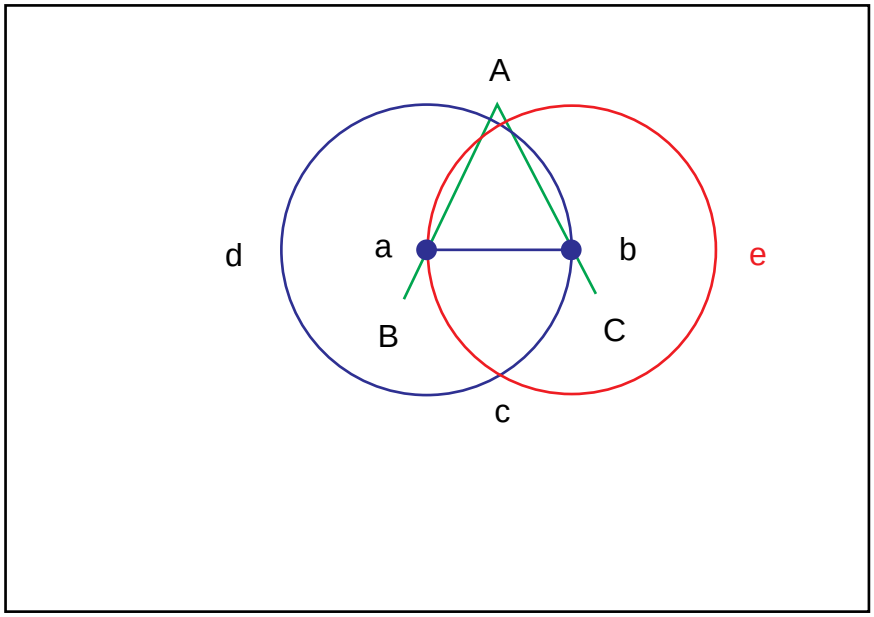
Relabel.



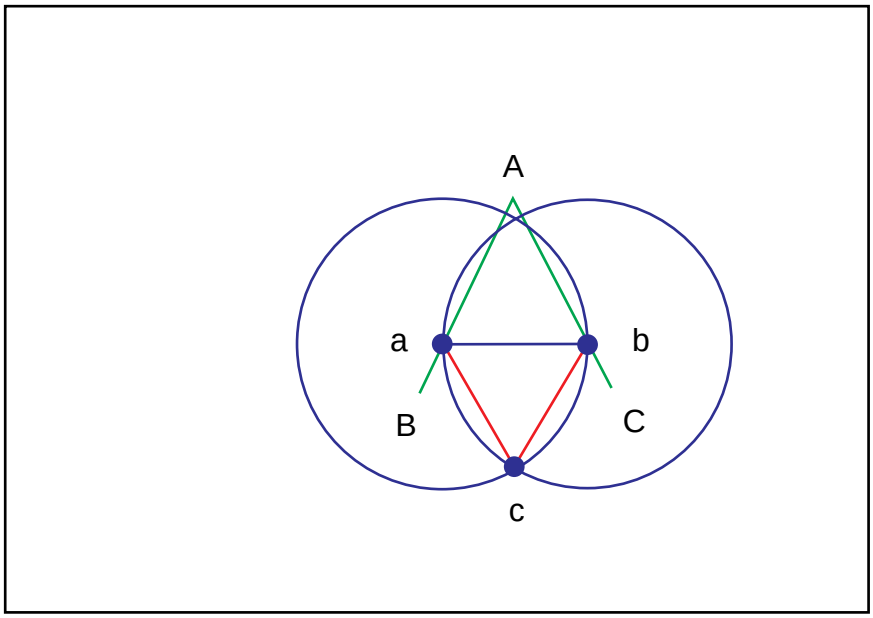
I.1:7. With centre a and distance ab let the circle bcd be described; [Post.3]



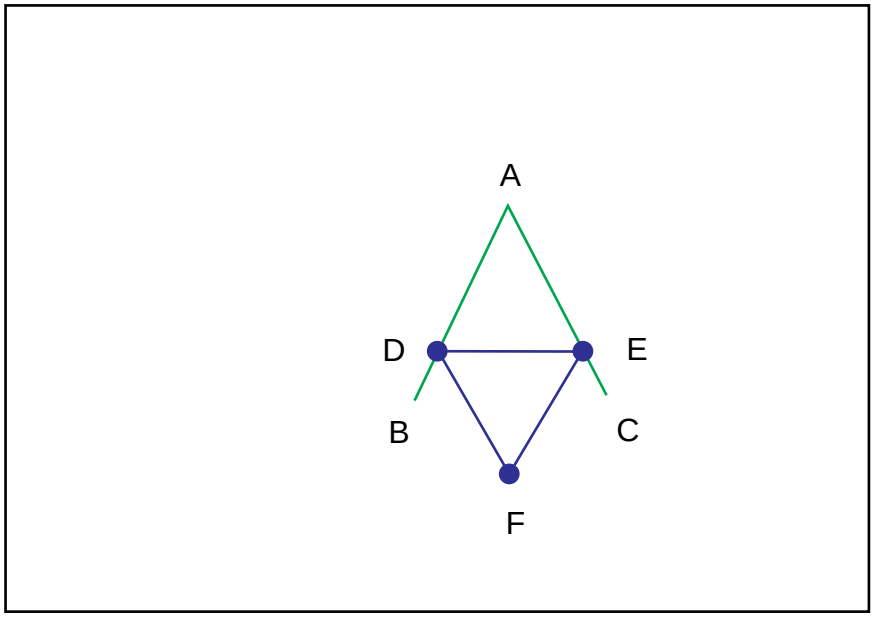
I.1:10. again, with centre b and distance ba let the circle ace be described; [Post.3]



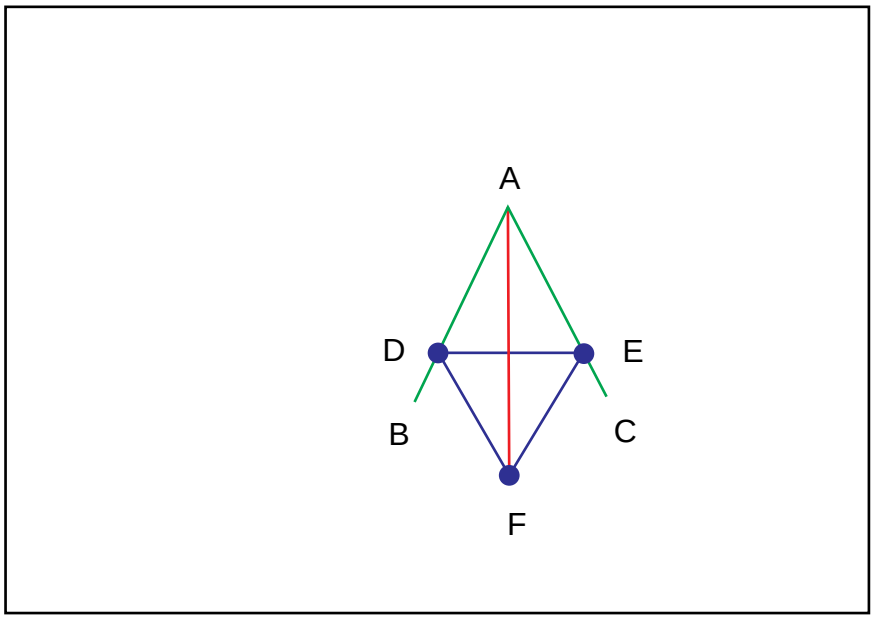
I.1:13. and from the point c, in which the circles cut one another, to the points a, b let the straight lines ca, cb be joined. [Post.1]



RETURN to I.9 at line 6, cleanup, and relabel.



I.9:8. Let AF be joined.



I.9:17. Therefore the given rectilineal angle BAC has been bisected by the straight line AF.

Q.E.F