Construction 3: Book I, Proposition 3

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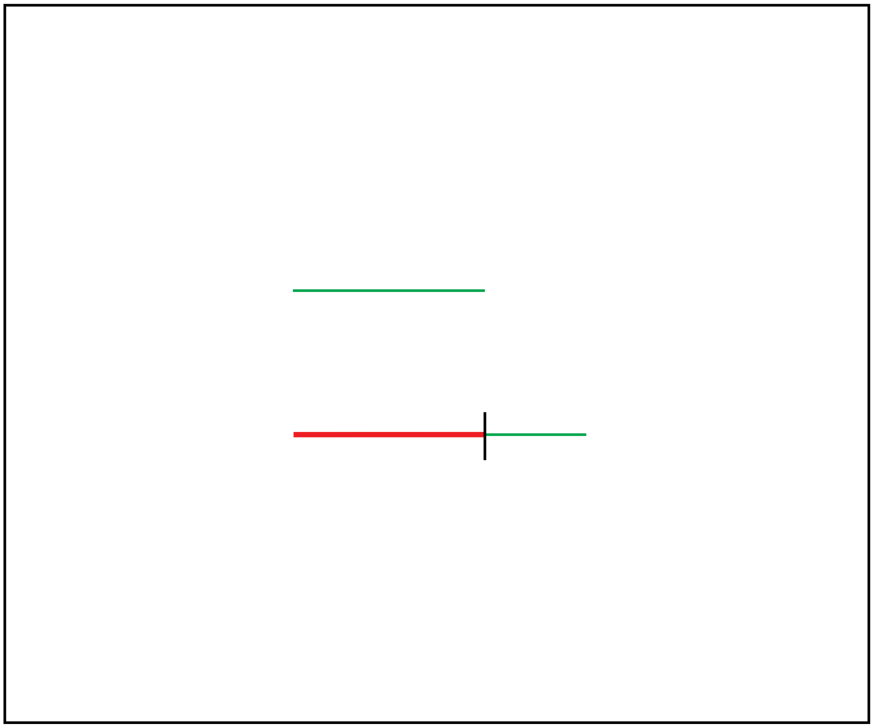
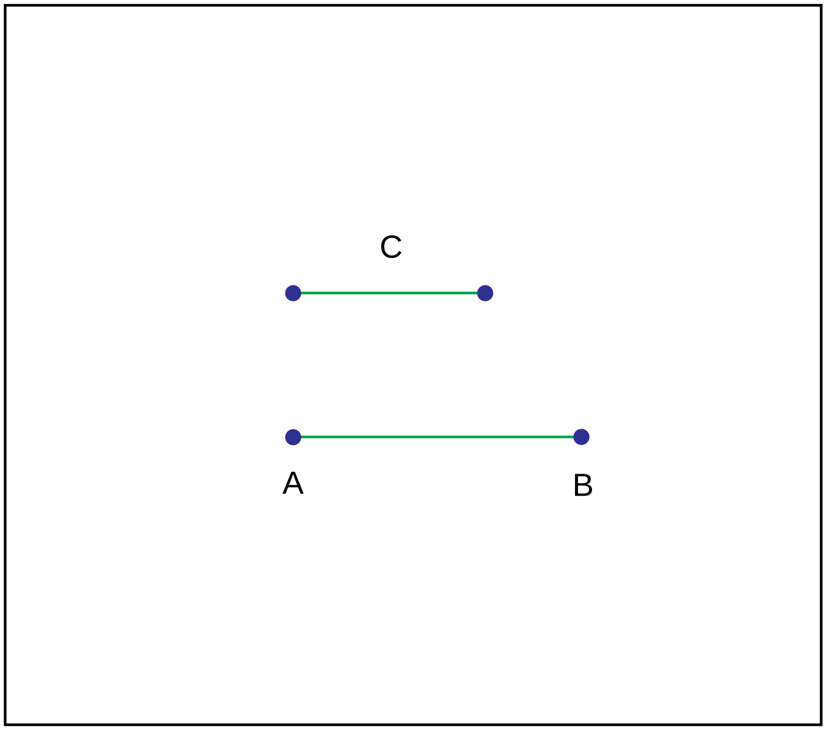
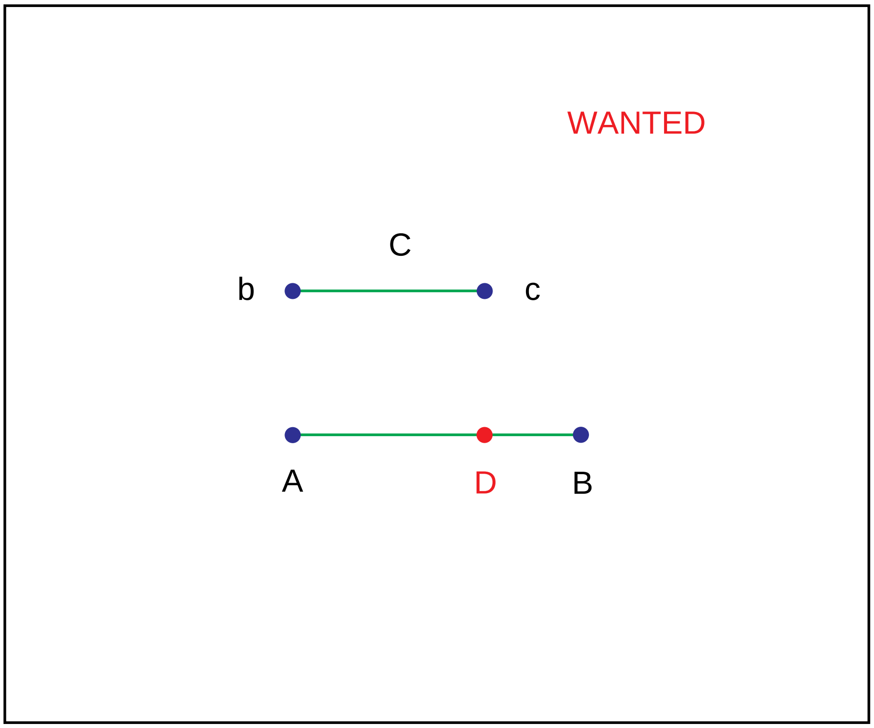
Given two unequal straight lines, to cut off from the greater a straight line equal to the less.



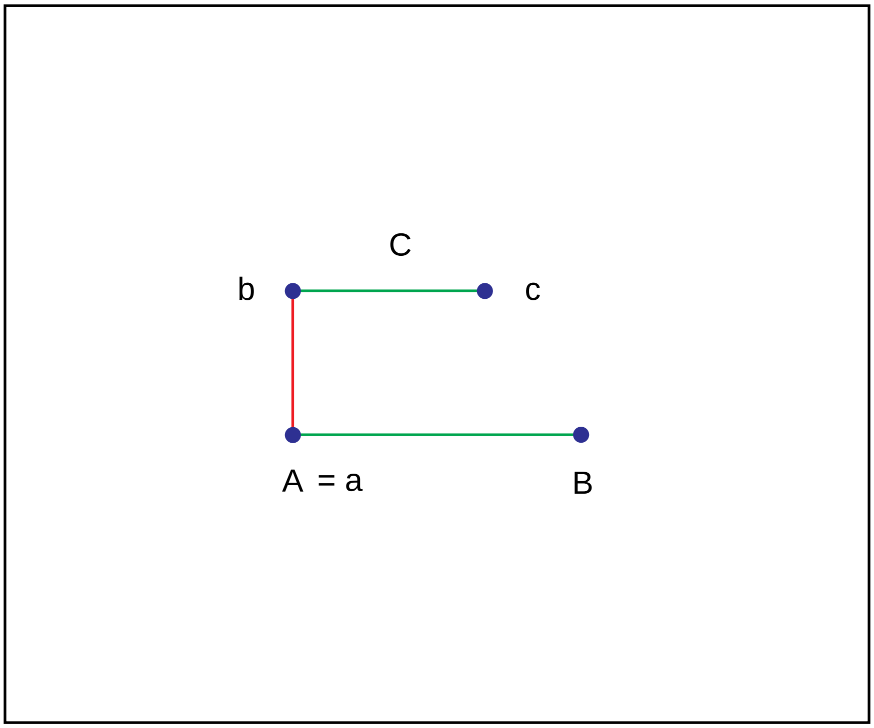
I.3:4. Let AB, C be the two unequal straight lines, and let AB be the greater of them.



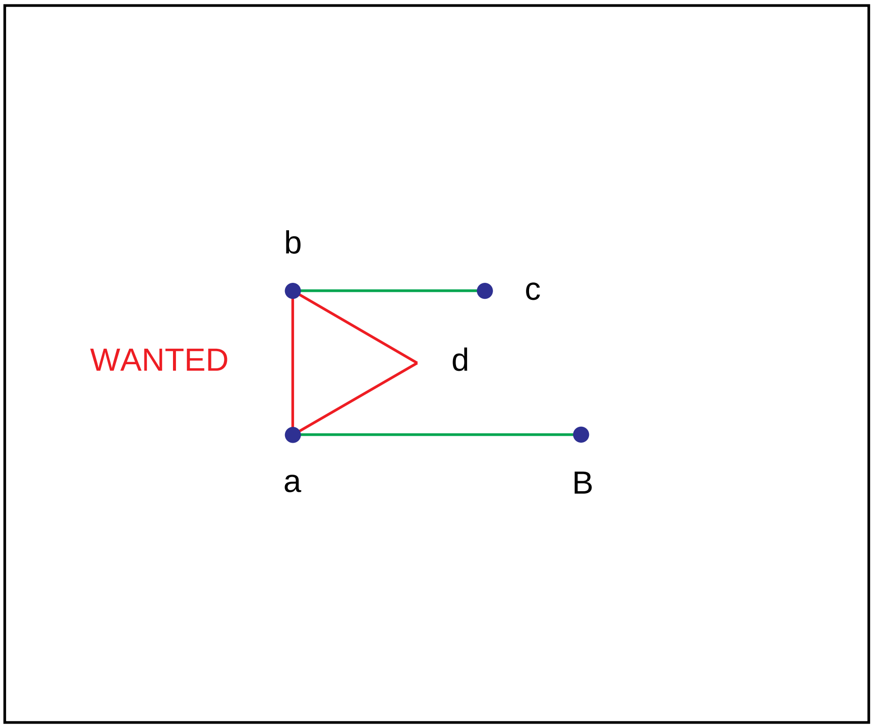
I.3:10. At the point A let AD be placed equal to the straight line C; [I.2]



GOSUB I.2 . Relabel points.
I.2:7. From the point a to the point b let the straight line ab be joined; [Post.1]

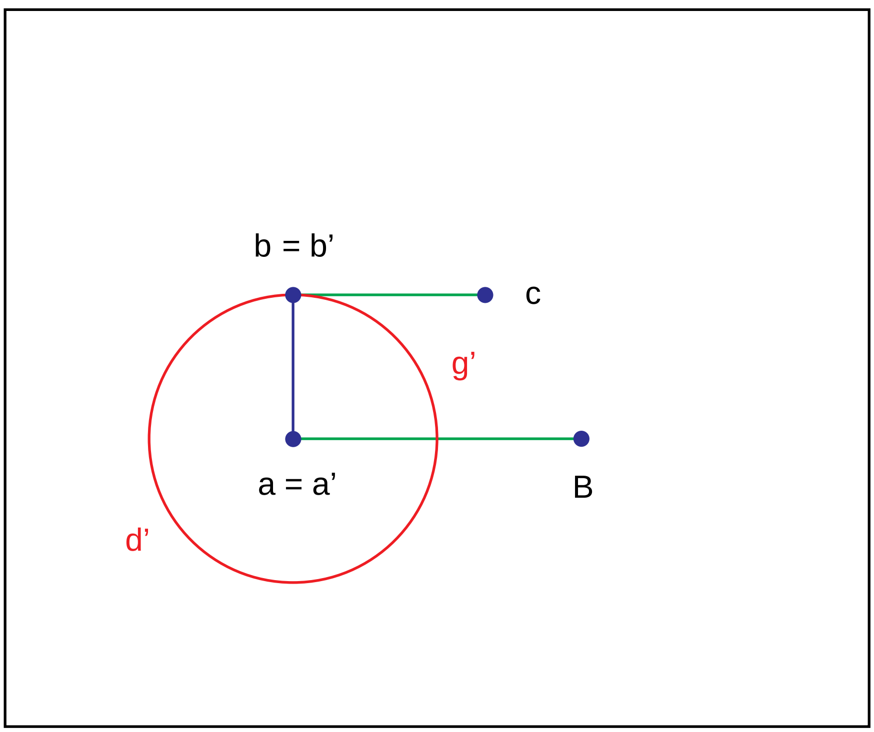


I.2:9. and on it let the equilateral triangle dab be constructed. [I.1]

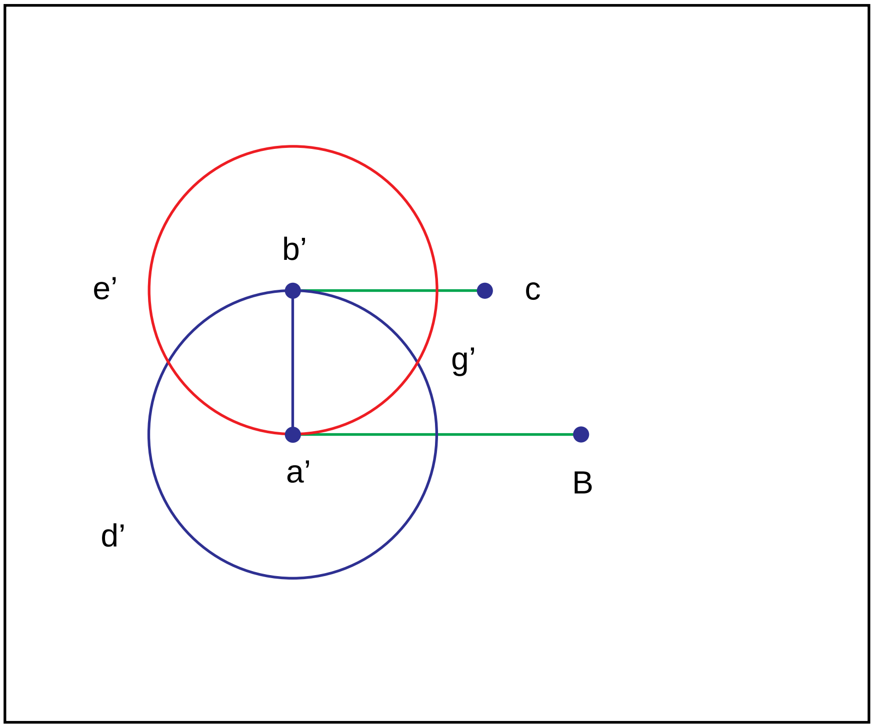


GOSUB I.1. Relabel points.

I.1:7. With centre a’ and distance a’b’ let the circle b’g’d’ be described; [Post.3]

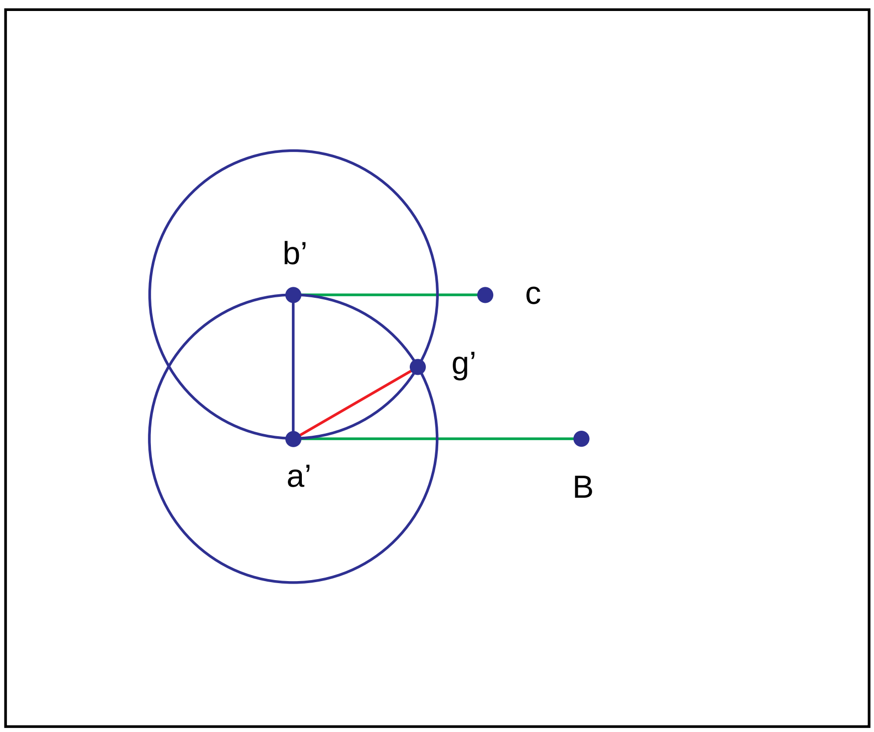


I.1:10. again with centre b' and distance b'a' let the circle a'g'e' be described; [Post.3]

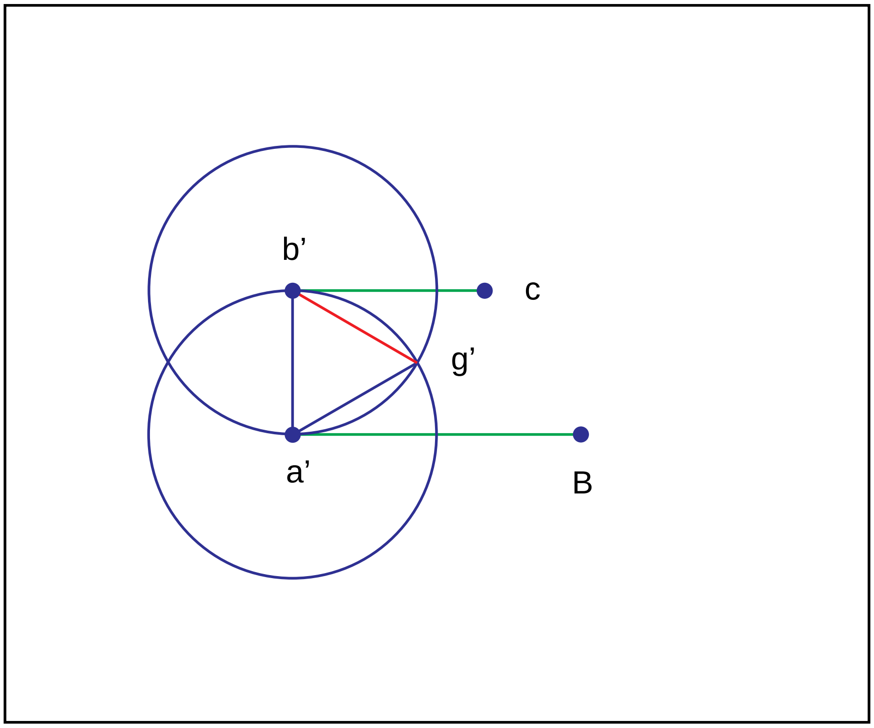


I.1:13. And from the point g,' in which the circles cut one another, to the points a', b', let the straight lines g'a', g'b' be joined. [Post.1]

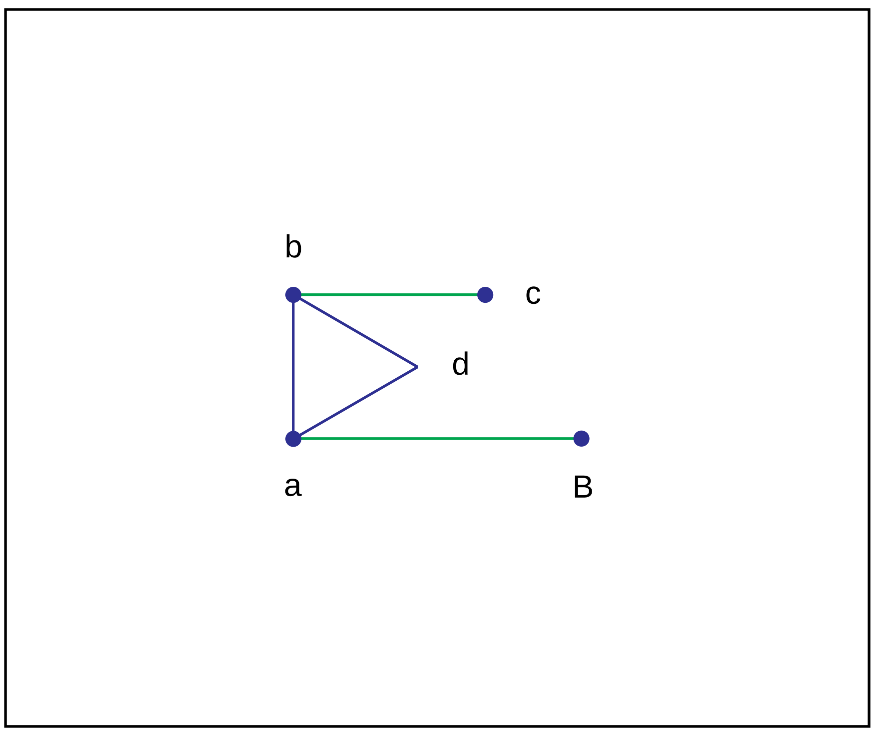
(First, a'g'.)



(Next, b’g’.)

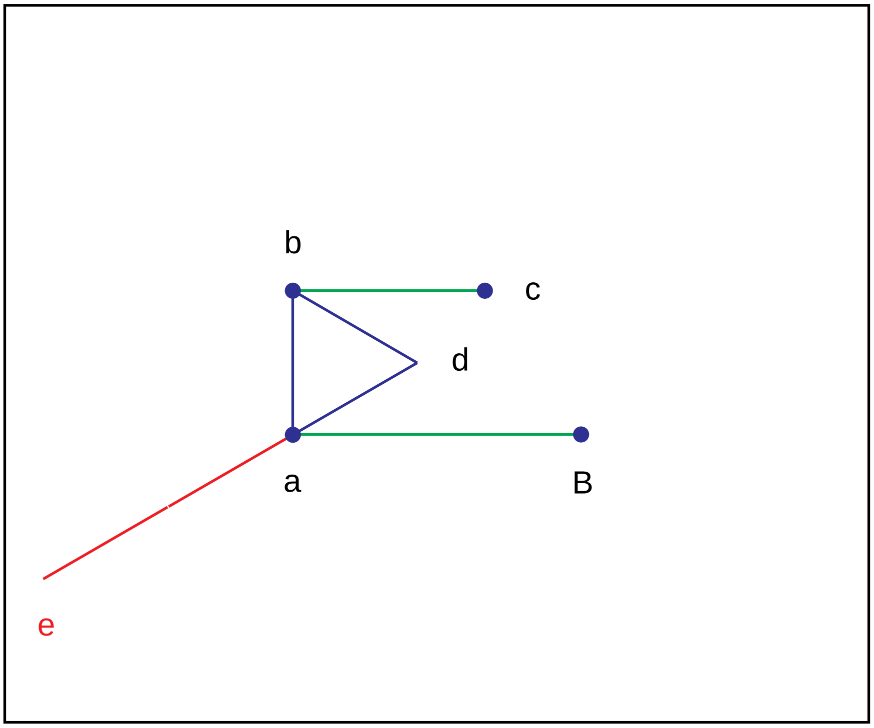


Cleanup. Relabel points.
RETURN to I.2 at line 11.

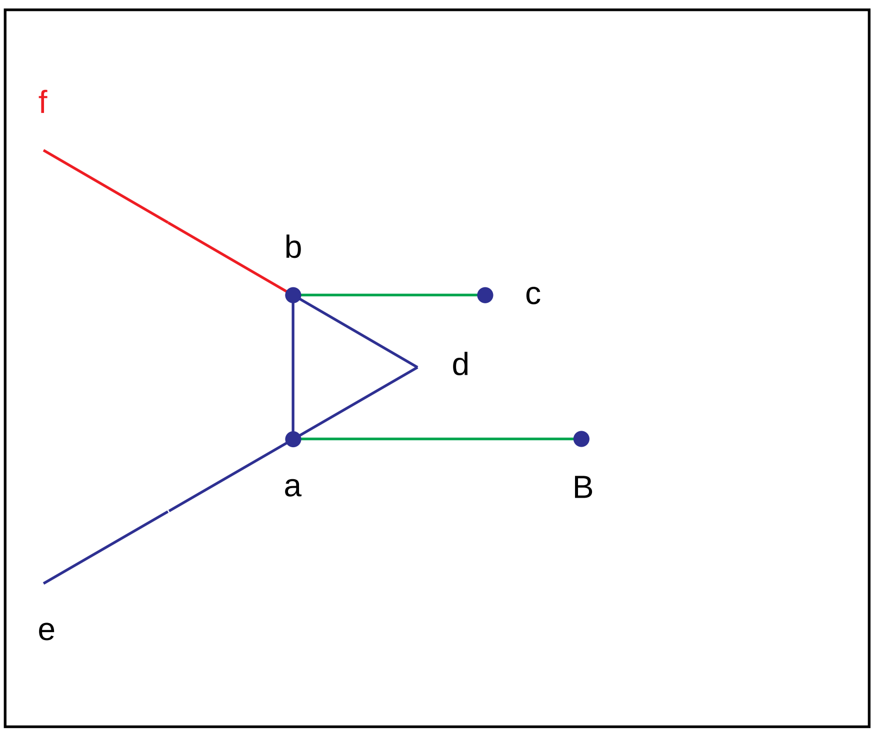


I.2:11. Let the straight lines ae, bf be produced in a straight line with da, db;

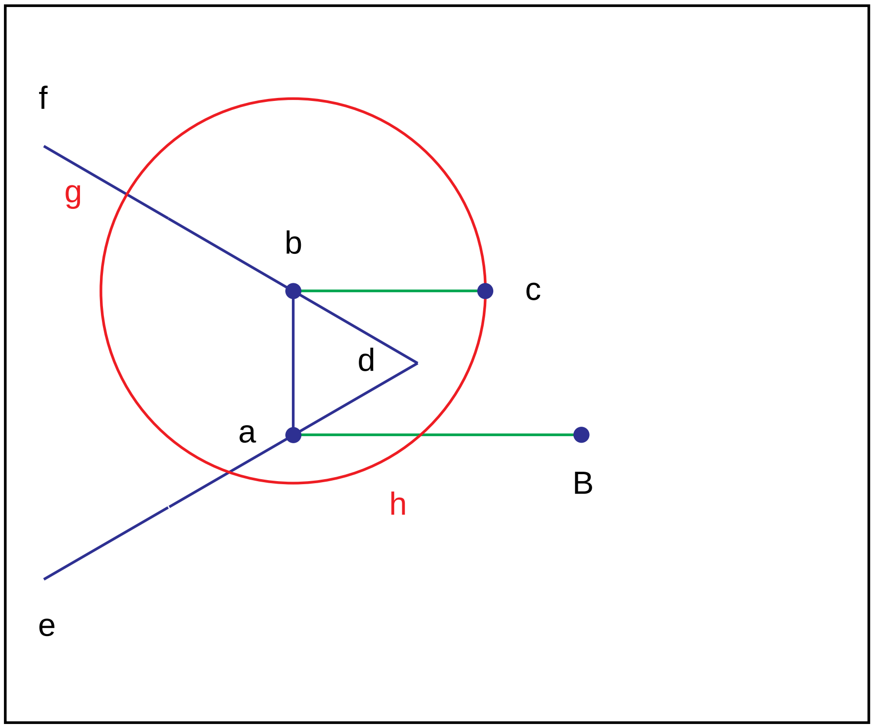
(First, ae.)



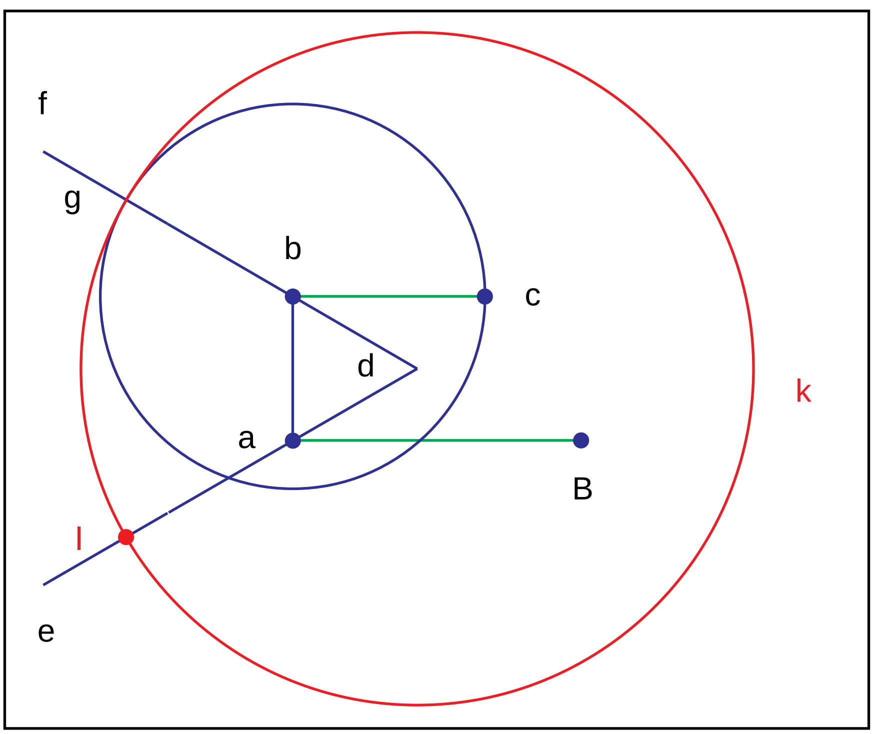
(Next, bf.)



I.2:14. with centre b and distance bc let the circle cgh be described;



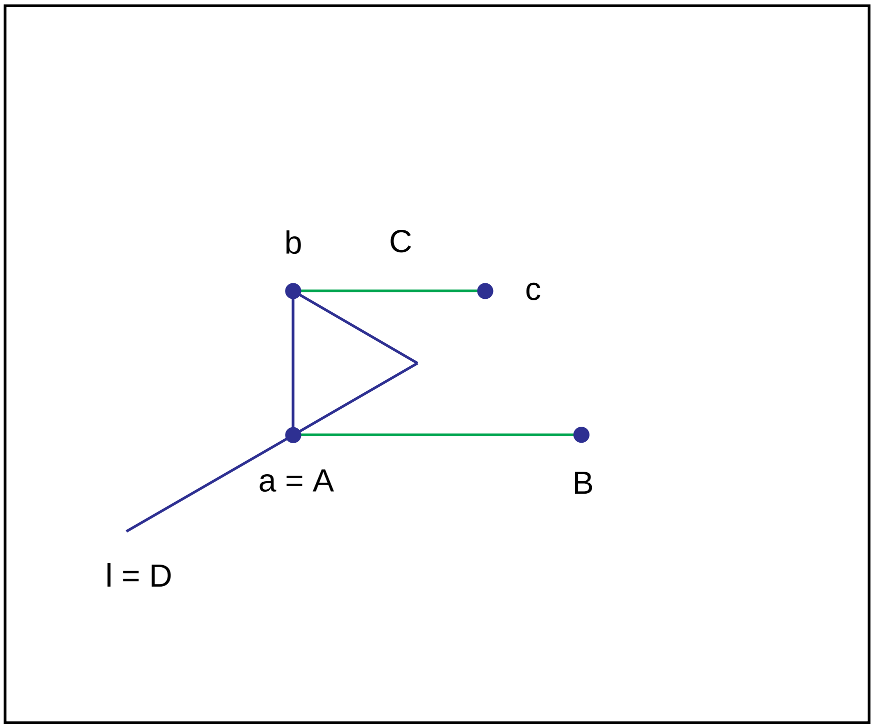
I.2:16. and again, with centre d and distance dg let the circle gkl be described. (The point l is where the new circle cuts de.).



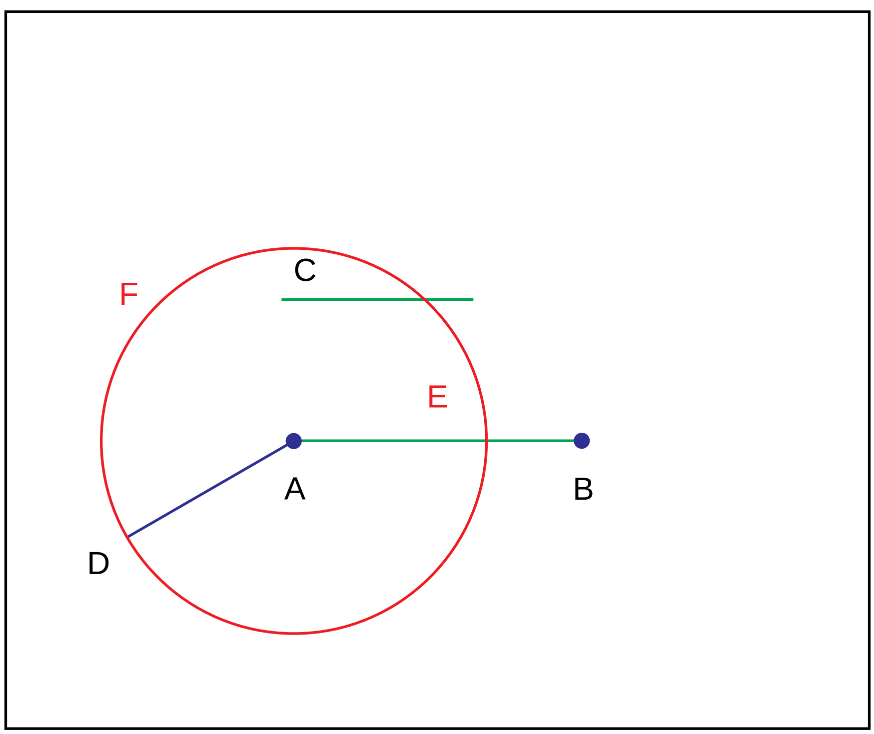
The line al is equal to bc and is at a, so clean up.

RETURN to I.3 at line 10.

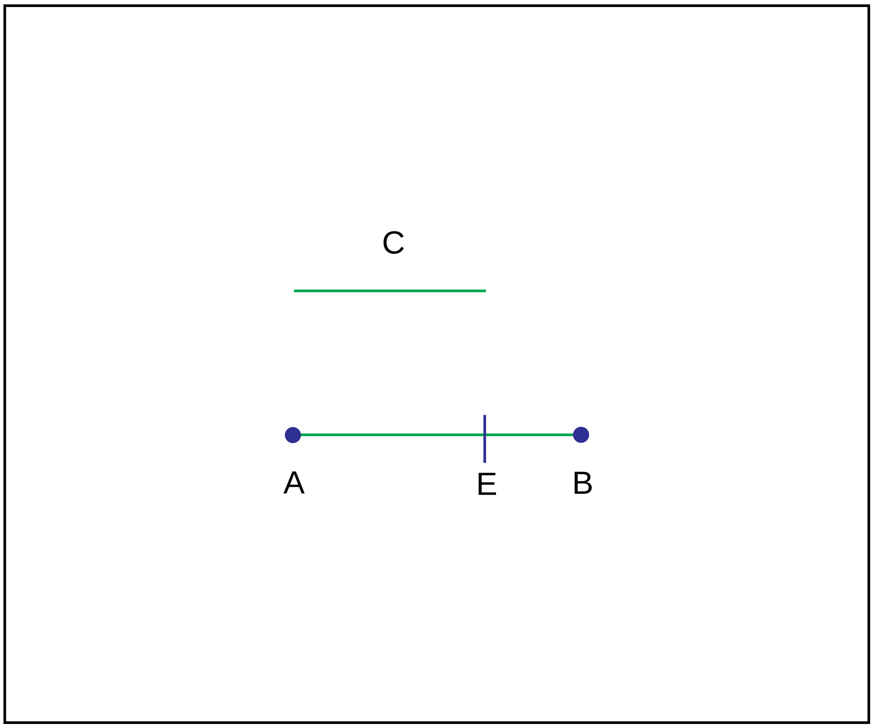
Relabel l as D.



I.3:12. and with centre A and distance AD let the circle DEF be described. [Post.3] (The point E is determined by the crossing of DEF through AB.)



I.3:19. From AB the greater, AE has been cut off equal to C, the less.



Q.E.F.