

MT 453 Elements

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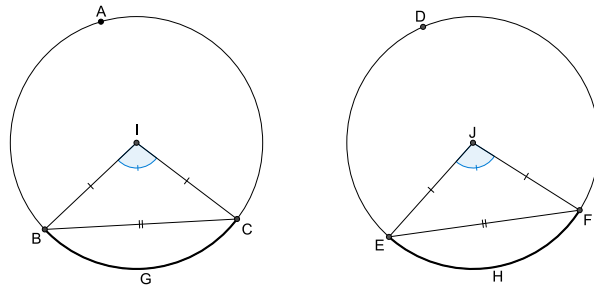
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Proposition III.29

In equal circles, equal arcs are subtended by equal lines.
Draw equal circles $ABGC$ and $DEHF$.



Find the centers I and J of each circle respectively. [III.1]

Cut off from the circles equal arcs BGC and EHF

Draw radii BI, CI, EJ, FJ . [Post 1]

All the radii are equal because they are in equal circles. It is also known that $\angle BIC = \angle EJF$. [III.27]

By Prop. I.4 triangle $BIC =$ triangle EJF , and thus $BC = EF$.

But BC and EF subtend equal arcs BGC and EHF .

Therefore, in equal circles, equal arcs are subtended by equal lines. QED