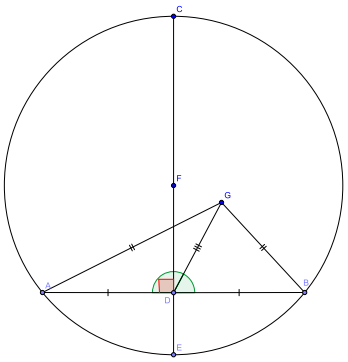
Proposition III.1
Speaker: Jillian Cronin
Scribe: Jacob Georgeson
Artist: Sarah Latino
February 18, 2009



Prop III.1: TO find the center of a given circle
-Let ABC be a circle
-Draw any straight line between two points on the circle, call it AB
-Bisect AB at D (I.10)
-Draw CE perpendicular to AB at D (I.11)
-Bisect CE at F (I.10)
-Claim: F is the center of the circle
-Suppose F is not the center, and let G be the center.
-Connect GA, GD, GB
-$AD = BD$, $GA = GB$ (both are radii), GD is common
-Thus, $\triangle GAD = \triangle GBD$ (I.8)
-Therefore, $\angle GDA = \angle GDB$
-Then, $\angle GDA = \angle GDB$ and both are right angles (Def I.10)
-But, $\angle FDB$ is a right angle, and $\angle GDB$ is contained in $\angle FDB$ so $\angle GDB$ but

be less than a right angle, which leads us to a contradiction
Thus, G is not the center, and F is the center.
QEF
Comments: Points A, B, C are not specified at beginning of proof, and become specified throughout course of the proof. Also, if G lies on CE, the proof still holds, as both would have to be radii of the circle, but one would be greater.
Porism: If in a circle, one straight line cuts another into two equal parts, and at right angles, then the center is on the cutting line.