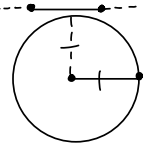
I.
II.
III.



IV. $\angle = \angle$

V.

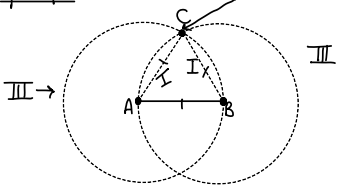
$\angle + \angle < 2\angle$

VI. (V')

Proposition I

- You can make an equilateral triangle with a given line segment as its base.

proof: How do we know C exists?



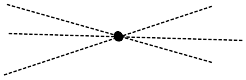
Adding Postulates A & S to I-V still leaves an incomplete system.
eg. points between other points on a line?

Hilbert's Axioms for 3-D geometry have about 20 axioms.
(Stripped down to 2-D only, you get about 17 axioms)

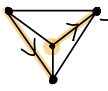
We'll look at two kinds of variations of geometric axioms

1. Toss away axioms having to do with measurement & "betweeneers" &...
   All you keep are points and lines & how they are connected.
   This affine & **projective geometry**

2. Keep measurement & so on, but tinker with Postulate V (or V').
   This gives us **hyperbolic geometry** and **elliptic geometry**



The simplest affine:
geometry: four "points" and six "lines"



→ This satisfies the parallel postulate.