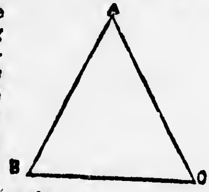
Let ABC be an equilateral triangle, then, since the triangle is equilateral, the side AB is equal to the side AC; and, by *Proposition* 5, the angle ABC is equal to the angle ACB, being angles at the base BC of the isosceles triangle ABC (*for an equilateral triangle is also an isosceles triangle*); for the same reason the angle BCA is equal to the angle CAB, and the angle BAC to the angle ABC. The three angles of the equilateral triangle ABC are then equal to one another, and the triangle is therefore equi-angular.



Proposition 6. Theorem.

If two angles of a triangle be equal to one another, the sides also which subtend, or are opposite to, the equal angles, shall be equal to one another.

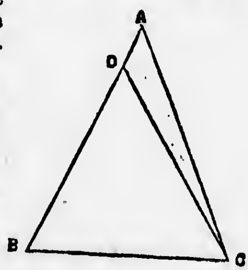
Hypothesis. Let ABC be a triangle having the angle ABC equal to the angle ACB.

Sequence. The side AB shall be equal to the side AC.

If AB be not equal to AC, one of them must be greater than the other. Let AB be the greater. (False Hypothesis.)

Construction—1. From AB the greater, cut off a part DB, equal to AC the less. (*Prop.* 3, *Book* I.)

2. Join DC.



Demonstration—1. Because in the triangles DBC, ACB, DB is equal to AC, and BC common to both.

2. Therefore the two sides DB, BC, are equal to the two sides AC, CB, each to each.

3. And the angle DBC is equal to the angle ACB. (*Hypothesis.*)

4. Therefore the base DC is equal to the base AB. (*Prop.* 4, *Book* I.)

5. And the triangle DBC is equal to the triangle ABC (*Prop.* 4, *Book* I.)

The less to the greater, which is absurd.

6. Therefore AB is not unequal to AC; that is, AB is equal to AC.