6. In like manner it can be shewn that BAC, ACB, and also CAB, ABC, are less than two right angles.

CONCLUSION.—Therefore any two angles, &c. (*See Enunciation.*) *Which was to be shewn.*

PROPOSITION 18.—THEOREM.

The greater side of every triangle is opposite to the greater angle.

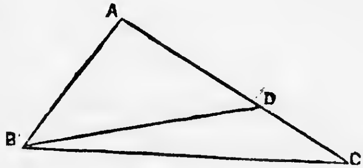
HYPOTHESIS.—Let ABC be a triangle, of which the side AC is greater than the side AB.

SEQUENCE.—The angle ABC shall be greater than the angle BCA.

CONSTRUCTION.—

1. Because AC is greater than AB, make AD equal to AB. (*Prop.* 3, *Book* I.)

2. Join BD.



DEMONSTRATION.—

1. Because ADB is the exterior angle of the triangle BDC, it is greater than the interior and opposite angle BCD. (*Prop.* 16, *Book* I.)

2. But because the triangle ABD is an isosceles triangle, for the side AB is equal to the side AD. (*Construction.*)

3. The angle ADB is equal to the angle ABD. (*Prop.* 5, *Book* I.)

4. Therefore the angle ABD is greater than the angle BCD (*or ACB.*)

5. Much more, then, is the angle ABC (*which is greater than the angle ABD*) greater than the angle ACB.

CONCLUSION. — Therefore, the greater side, &c. (*See Enunciation.*) *Which was to be shewn.*

PROPOSITION 19.—THEOREM.

The greater angle of every triangle is subtended by the greater side, or has the greater side opposite to it.

HYPOTHESIS.—Let ABC be a triangle, of which the angle ABC is greater than the angle BCA.

SEQUENCE.— The side AC shall be greater than the side AB.

DEMONSTRATION.—

1. If AC be not greater than AB, it must either be equal to or less than AB.