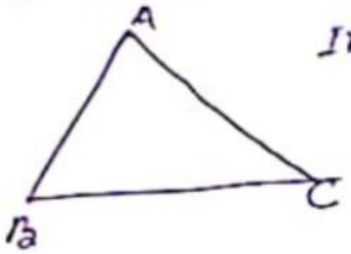
Some important points in triangle.

(1) Sum of any two sides of a triangle is Greater than their third side.



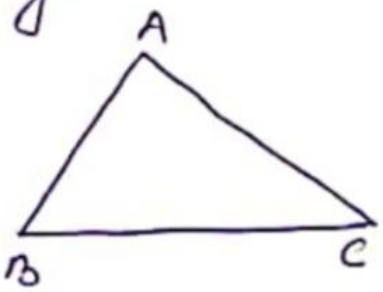
In $\triangle ABC$,

$AB + BC > AC$

$BC + AC > AB$

$AB + AC > BC$

(2.) The difference of any two sides of a triangle is less than their third side.

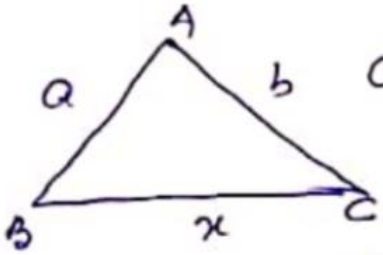


$AB - BC < AC$

$BC - AC < AB$

$AB - AC < BC$

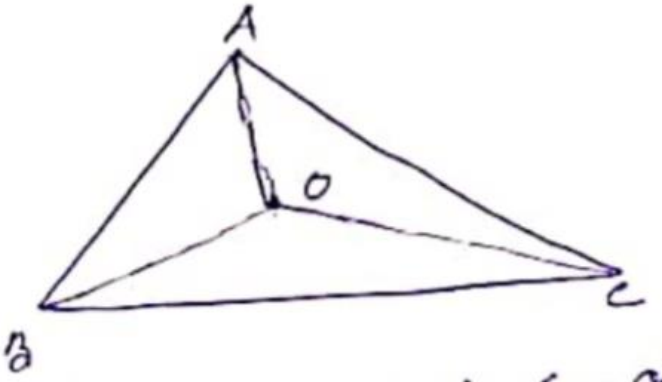
(3.) If length of two sides are given in a triangle



$a - b < x < a + b$

The value of x is lie between a-b and a+b.

Q. In $\triangle ABC$, O is interior point. Then show that $OA+OB+OC > \frac{1}{2}(AB+BC+AC)$



Proof We know that sum of any two sides of a triangle is ~~then~~ Greater than their third side.

In $\triangle AOB$.

$OA+OB > AB$ ——— (I)

In $\triangle BOC$,

$OB+OC > BC$ ——— (II)

In $\triangle AOC$

$OA+OC > AC$ ——— (III)

Adding (I), (II) and (III)

$OA+OB+OB+OC+OA+OC > AB+BC+AC$

$2(OA+OB+OC) > AB+BC+AC$

$\therefore OA+OB+OC > \frac{1}{2}(AB+BC+AC)$

Proved.