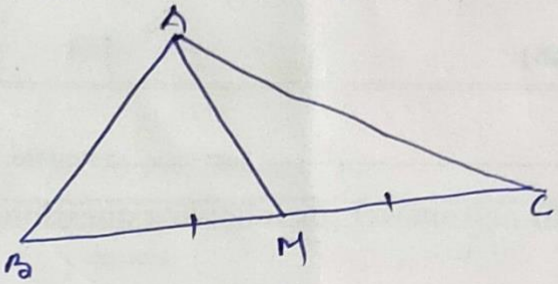
Q. AM is a median of $\triangle ABC$, Prove that

$AB + BC + AC > 2AM$



Proof :- We know that

Sum of any two sides of a triangle is Greater than their side.

In $\triangle ABM$,

$AB + BM > AM$ ——— (i)

In $\triangle AMC$

$AC + MC > AM$ ——— (ii)

Adding eqn (i) and (ii)

$AB + BM + AC + MC > AM + AM$

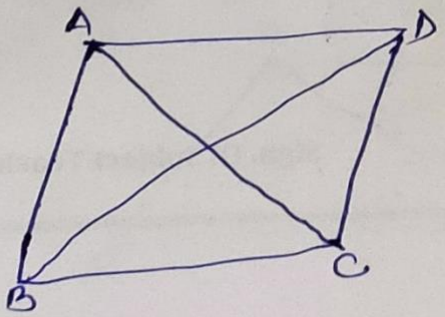
$AB + AC + (BM + MC) > 2AM$

$\therefore AB + AC + BC > 2AM$

Proved.

(4) ABCD is a quad. than Show that

$AB + BC + AD + CD > AC + BD$.



Proof We know that Sum of any two sides of a triangle is greater than their side.

In $\triangle ABC$,

$AB + BC > AC$ ——— (I)

In $\triangle ADC$

$AD + DC > AC$ ——— (II)

In $\triangle ABD$

$AB + AD > BD$ ——— (III)

In $\triangle BCD$

$BC + CD > BD$ ——— (IV)

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

$2AB + 2BC + 2AD + 2CD > 2AC + 2BD$

$\Rightarrow 2(AB + BC + CD + AD) > 2(AC + BD)$

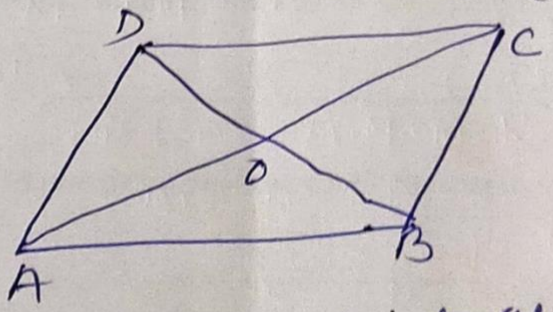
$\therefore \quad AB + BC + CD + AD > AC + BD$

Proved

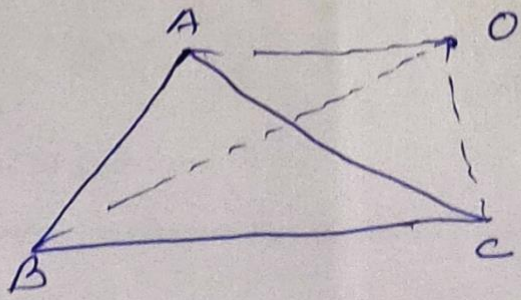
Do your Self

(I) ABCD is a quad. then prove that

$AB + BC + CD + DA < 2(AC + BD)$



(II) O is an exterior point of $\triangle ABC$. Show that



$OA + OB + OC > \frac{1}{2}$ (Perim
of $\triangle$