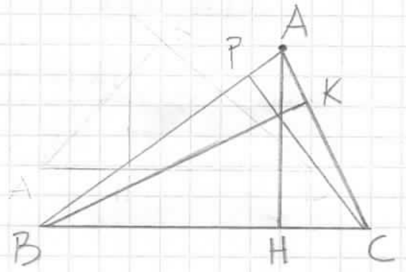
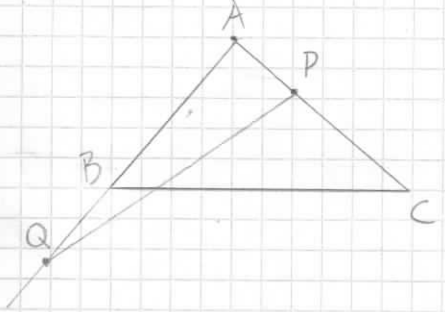
PAG 667 da 153 a 158



Th

$$\frac{AB + AC + BC}{2} > AB/AC/BC$$

154.



Th

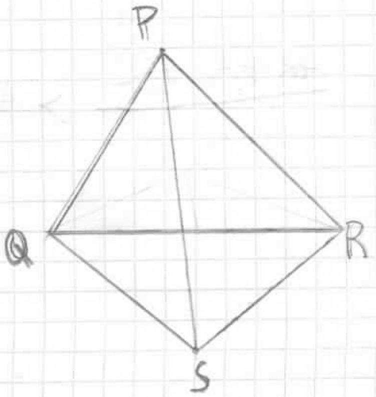
$PQ + BC > PC + BQ$

DIMOSTRAZIONE

$PQ > AQ - AP$

$BC > AC - AB$ $\xrightarrow{\text{quindi}}$ $\underbrace{PQ + BC > AQ - AP + AC - AB \cong \overset{(+AC-AP)}{PC} + \overset{(AQ-AB)}{BQ}}_{PQ + BC > PC + BQ}$

135



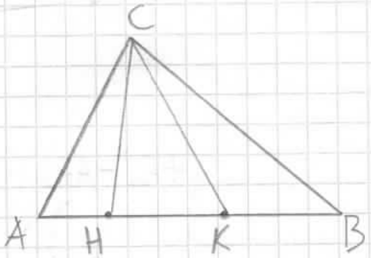
Th

$$PS + QS + RS > \frac{PQ + PR + QR}{2}$$

156.

Th

$$\frac{CH + HK + KC}{2} < AC + CB$$



DIMOSTRAZIONE

$CH < AC + AH$

$CK < CB + KB$

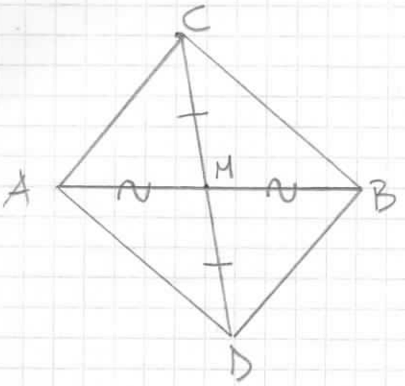
$HK < AC + CB - AH - KB$

$$CH + CK + HK < AC + \cancel{AH} + CB + \cancel{KB} + AC + CB - \cancel{AH} - \cancel{KB}$$

$$CH + CK + HK < 2AC + 2CB$$

$$\frac{CH + CK + HK}{2} < AC + CB$$

157.



Hp

$CM \cong MD$

$AM \cong MB$

Th

$CD < AC + CB$

DIMOSTRAZIONE: Considero i triangoli $\overset{\triangle}{AMD}$ e $\overset{\triangle}{CMB}$, essi hanno:

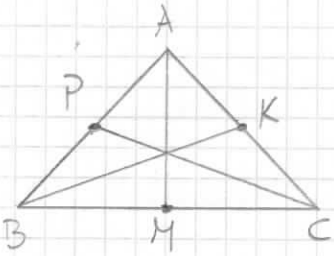
1) $CM \cong MD$ per Hp
2) $AM \cong MB$ per Hp
3) $A\hat{M}D \cong C\hat{M}B$ perchè opposti al vertice.

$\xrightarrow{LAL} \overset{\triangle}{AMD} \cong \overset{\triangle}{CMB}$

In particolare $AD \cong CB$

$$CD < AC + AD \longrightarrow CD < AC + CB$$

158.



Hp

$BM \cong MC$

$AK \cong KC$

$AP \cong PB$

Th

$AB + BC + AC > PC + BK + AM$

DIMOSTRAZIONE:

$$2AM + 2PC + 2BK < \frac{AB + AC + AC + BC + AB + BC}{2}$$

$$AM + PC + BK < AB + AC + BC$$