Congruent Triangles Ex 10.6 Q4

Answer :

As we know that a triangle can only be formed if

The sum of two sides is greater than the third side.

Here we have 2 cm, 3 cm and 7 cm as sides.

If we add $2+3=5$

$5<7$ (Since 5 is less than 7)

Hence the sum of two sides is less than the third sides

So, the triangle will not exist.

Congruent Triangles Ex 10.6 Q5

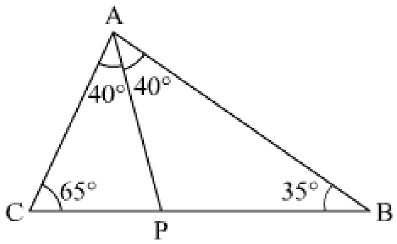
Answer :

It is given that

$\angle B = 35^0$

$\angle C = 65^0$

AP is the bisector of $\angle CAB$



We have to arrange AP, BP and CP in descending order.

In ΔACP we have

$\angle ACP = 65^0$

$\angle CAP = 40^0$ (As AP is the bisector of $\angle CAB$)

So $AP > CP$ (Sides in front or greater angle will be greater) ....(1)

In ΔABP we have

$\angle BAP = 40^0$ (As AP is the bisector of $\angle CAB$)

Since,

$\angle BAP > \angle ABP$

So $BP > AP$ ....(2)

Hence

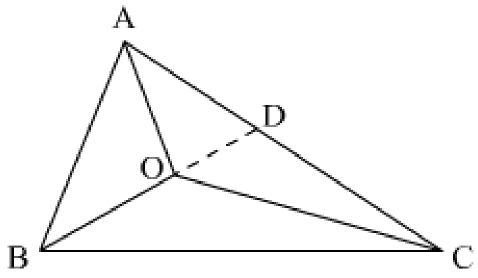
From (1) & (2) we have

$\boxed{BP > AP > CP}$

Congruent Triangles Ex 10.6 Q6

Answer :

It is given that, O is any point in the interior of ΔABC



We have to prove that

(1) $AB + AC > OB + OC$ Produced BO to meet AC at D.

In ΔABD we have

$AB + AD > BD$

$\Rightarrow AB + AD > OB + OD$ ....(1)

And in ΔODC we have

$OD + CD > OC$ ....(2)

Adding (1) & (2) we get

$AB + AD + OD + DC > OB + OD + OC$

Hence $\boxed{AB + AC > OB + OC}$ Proved.

(2) We have to prove that $AB + BC + CA > OA + OB + OC$

From the first result we have

$BC + BA > OA + OC$ ....(3)

And

$CA + CB > OA + OB$ ....(4)

Adding above (4) equation

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

Hence $\boxed{AB + BC + CA > OA + OB + OC}$ Proved.

(3) We have to prove that $OA + OB + OC > \frac{1}{2}(AB + BC + CA)$

In triangles OAB, OBC and OCA we have

$OA + OB > AB$

$OB + OC > BC$

$OC + OA > AC$

Adding these three results

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

Hence $\boxed{OA + OB + OC > \frac{1}{2}(AB + BC + CA)}$ Proved.

*********** END **********