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

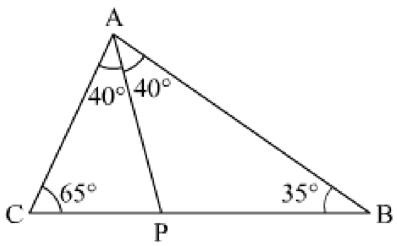
**Answer :**

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 $\Delta ACP$ 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 $\Delta ABP$ we have

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

Since,

$\angle BAP>\angle ABP$

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

Hence

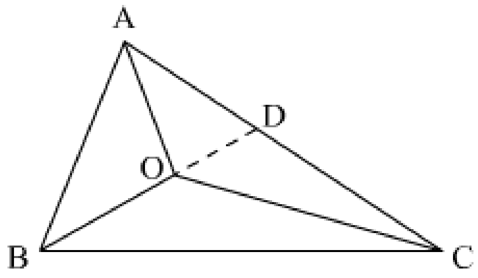
From (1) & (2) we have

$\boxed{BP>AP>CP}$

Congruent Triangles Ex 10.6 Q6

**Answer :**

It is given that, $O$ is any point in the interior of $\Delta ABC$




We have to prove that

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

In $\Delta ABD$ we have

$AB+AD>BD$

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

And in $\Delta ODC$ 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 **********