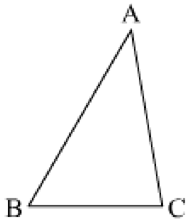
Congruent Triangles Ex 10.6 Q1

Answer :

In the triangle ABC it is given that

$\angle A = 40^0$

$\angle B = 60^0$



We have to find the longest and shortest side.

Here

$$\angle A + \angle B + \angle C = 180^0$$
$$40^0 + 60^0 + \angle C = 180^0$$
$$\angle C = 180^0 - 100^0$$
$$\angle C = 80^0$$

Now $\angle C = 80^0$ is the largest angle of the triangle.

So the side in front of the largest angle will be the longest side.

Hence AB will be the longest

Since $A = 40^0$ is the shortest angle so that side in front of it will be the shortest.

And BC is shortest side

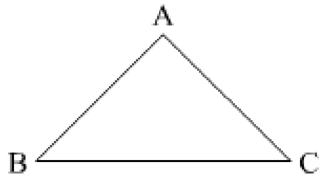
Hence $\boxed{AB}$ Is longest and $\boxed{BC}$ is shortest.

Congruent Triangles Ex 10.6 Q2

Answer :

In the triangle ABC it is given that

$\angle B = \angle C = 45^0$



We have to find the longest side.

Here

$$\angle A + \angle B + \angle C = 180^0$$
$$\angle A + \angle B + \angle B = 180^0 \text{ (Since } \angle B = \angle C\text{)}$$
$$\angle A + 2\angle B = 180^0$$
$$\angle A + 2 \times 45^0 = 180^0$$
$$\angle A = 90^0$$

Now $\angle A = 90^0$ is the largest angle of the triangle.

So the side in front of the largest angle will be the longest side.

Hence BC will be the longest side.

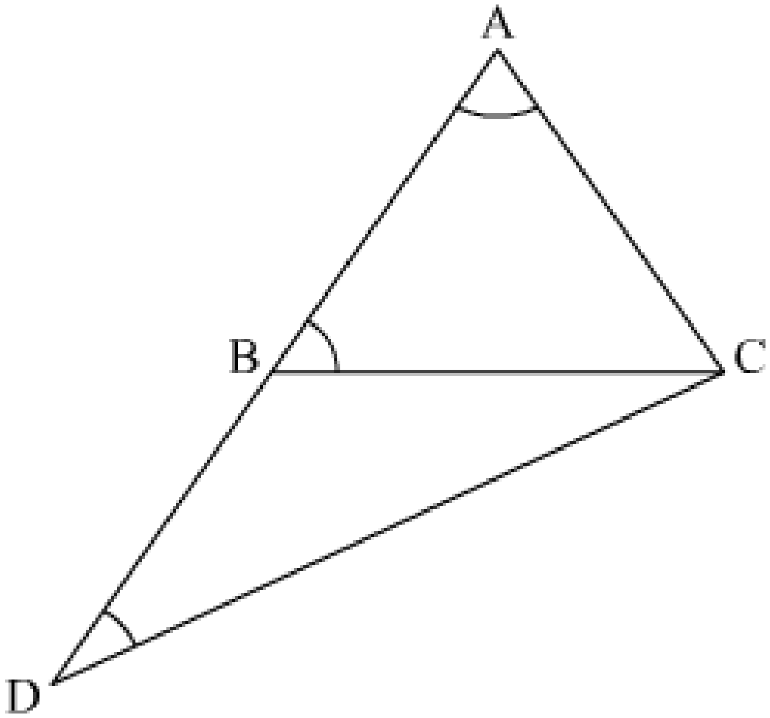
Congruent Triangles Ex 10.6 Q3

Answer :

It is given that

$\angle B = 60^0$

$\angle A = 70^0$, and $BD = BC$



We have to prove that

(1) $AD > CD$

(2) $AD > AC$

(1)

$$\angle A + \angle B + \angle C = 180^0$$
$$\angle 70^0 + 60^0 + \angle C = 180^0$$
$$\angle C = 180^0 - 130^0$$
$$\angle C = 50^0$$

Now $\angle CBD = 180 - 60 = 120^0$

And since $BD=BC$, so $\angle BDC = \angle BCD$, and

$$\angle BDC + \angle BCD + \angle DBC = 180$$
$$2\angle BDC + 120 = 180$$
$$\angle BDC = \frac{180-120}{2}$$
$$= 30^0$$

That is, $\angle BDC = \angle BCD = 30^0$

Now

$$\angle ACD = 50^0 + 30^0$$
$$\angle ACD = 80^0$$
$$\angle CAD = 70^0$$

And $\angle ADC = 30^0$, so

$$\angle ACD > \angle CAD \text{ and}$$
$$\angle ACD > \angle CDA$$

Hence (1) $\boxed{AD > CD}$ (Side in front of greater angle will be longer)

And (2) $\boxed{AD > AC}$ Proved.

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