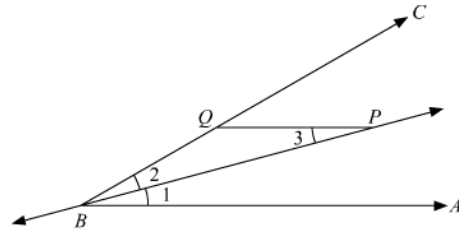## Congruent Triangles Ex 10.3 Q6

Answer :

In the following figure it is given that sides AB and PQ are parallel and BP is bisector of $\angle ABC$
We have to prove that $\triangle BPQ$ is an isosceles triangle.

$\angle 1 = \angle 2$ (Since BP is the bisector of $\angle ABC$) ....(1)
$\angle 1 = \angle 3$ (Since PQ and BA are parallel) ....(2)
Now from equation (1) and (2) we have

$\angle 2 = \angle 3$
So $PQ = BQ$
Now since PQ and BQ is a side of $\triangle BPQ$.
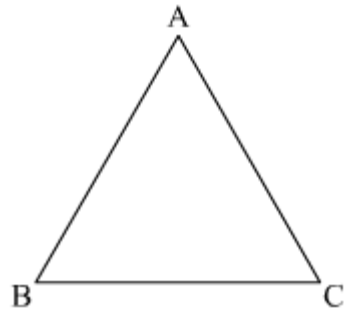And since two sides PQ and BQ are equal, so
$PQ = BQ$
Hence $\triangle BPQ$ is an isosceles triangle.

Congruent Triangles Ex 10.3 Q7

Answer :

We have to prove each angle of an equilateral triangle is 60^0.

Here

$AB = AC$ (Side of equilateral triangle)

$\angle C = \angle B$ ....(1)

And

$BC = AC$ (Side of equilateral triangle)

$\angle A = \angle B$ ....(2)

From equation (1) and (2) we have

$\angle A = \angle C$

Hence $\angle A = \angle B = \angle C$

Now $\angle A + \angle B + \angle C = 180^0$

That is $3\angle A = 180^0$ (since $\angle A = \angle B = \angle C$)

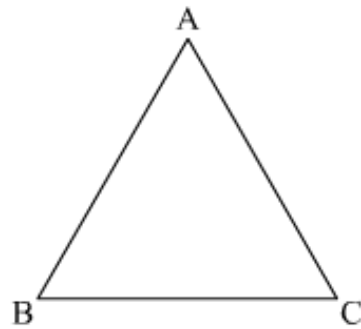$\angle A = 60^0$

Hence $\angle A = \angle B = \angle C = 60^0$ Proved.

Congruent Triangles Ex 10.3 Q8

Answer :

It is given that

$\angle A = \angle B = \angle C$

We have to prove that triangle $\triangle ABC$ is equilateral.

Since $\angle A = \angle B$ (Given)

So, $BC = AC$ ....(1)

And $\angle B = \angle C$ (given)

So $CA = AB$ ....(2)

From equation (1) and (2) we have

$BC = AB$

Now from above equation if $\angle A = \angle B = \angle C$ we have

$AB = BC = AC$

Given condition satisfy the criteria of equilateral triangle.

Hence the given triangle is equilateral.

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