



Congruent Triangles Ex 10.3 Q1

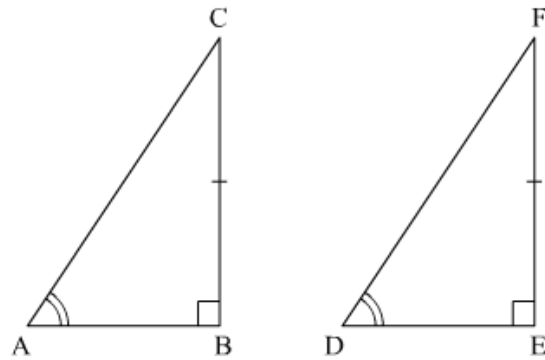
Answer :

It is given that

$$\angle A = \angle D$$

$$BC = EF$$

$$\angle B = \angle E = 90^\circ$$



We are asked to show that $\triangle ABC \cong \triangle DEF$

Let us assume

$\triangle ABC$, and $\triangle DEF$ are right angled triangle.

Thus in $\triangle ABC$ and $\triangle DEF$, we have

$$\angle A = \angle D$$

$$\angle B = \angle E = 90^\circ$$

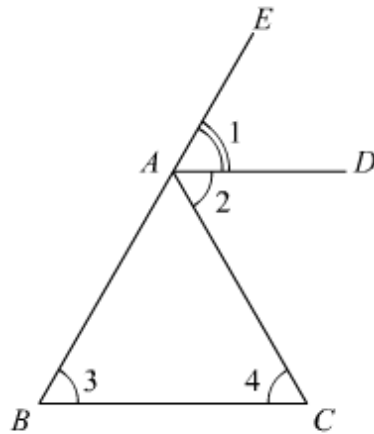
And $BC = EF$ (given)

Hence by AAs congruence criterion we have $\triangle ABC \cong \triangle DEF$ Proved.

Congruent Triangles Ex 10.3 Q2

Answer :

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



Let $\triangle ABC$ be such that the bisector AD of $\angle CAE$ is parallel to The base BC , we have

$$\angle 1 = \angle 3 \text{ (Corresponding angles)}$$

$$\angle 2 = \angle 4 \text{ (Alternate angle)}$$

$$\Rightarrow \angle 3 = \angle 4 \text{ (Since } \angle 1 = \angle 2 \text{)}$$

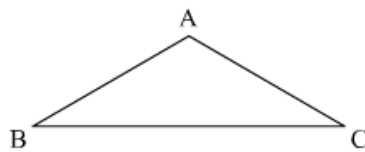
$$\Rightarrow AB = AC$$

Hence $\triangle ABC$ is isosceles.

Congruent Triangles Ex 10.3 Q3

Answer :

In the triangle ABC it is given that the vertex angle is twice of base angle.



We have to calculate the angles of triangle.

Now, let ABC be an isosceles triangle such that $AB = AC$

Then

$$\angle C = \angle B = x$$

$$\angle A = 2(\angle B + \angle C) \text{ (Given)}$$

$$\angle A = 2(\angle B + \angle B) \text{ (} \angle B = \angle C \text{)}$$

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

$$\angle A = 4\angle B$$

$$\angle A = 4x$$

Now $\angle A + \angle B + \angle C = 180^\circ$ (property of triangle)

$$4x + x + x = 180^\circ$$

$$6x = 180^\circ$$

$$x = 30^\circ$$

$$\begin{aligned}\angle A &= 4x \\ &= 4 \times 30^{\circ} \\ &= 120^{\circ} \\ \angle B &= \angle C \\ &= x \\ &= 30^{\circ}\end{aligned}$$

Hence

$\begin{aligned}\angle B &= 30^{\circ} \\ \angle C &= 30^{\circ}\end{aligned}$
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***** END *****