



Congruent Triangles Ex 10.2 Q1

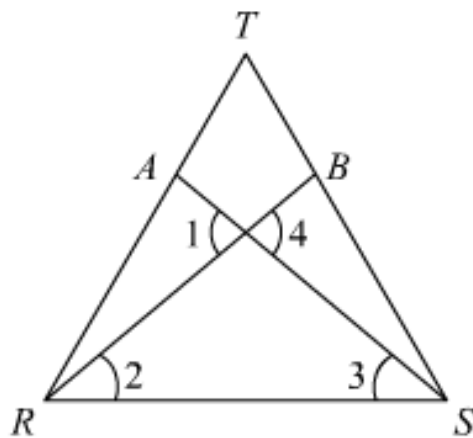
Answer :

It is given that

$$RT = TS$$

$$\angle 1 = 2\angle 2$$

$$\angle 4 = 2\angle 3$$



We have to prove that $\triangle RBT \cong \triangle SAT$

Now

In $\triangle RTS$ we have

$$RT = TS$$

$$\Rightarrow \angle TSR = \angle TRS \text{ (Isosceles triangle) } \dots\dots(1)$$

Now we have

$$\angle 1 = \angle 4 \text{ (Vertically opposite angles)}$$

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

$$\angle 2 = \angle 3 \dots\dots(2)$$

Subtracting equation (2) from equation (1) we have

$$\angle TRS - \angle 3 = \angle TSR - \angle 2$$

$$\Rightarrow \angle TRB = \angle TSA$$

Now in $\triangle RBT$ and $\triangle SAT$ we have

$$\angle RTB = \angle STA$$

$$\text{and } RT = ST \text{ (Given)}$$

So all the criterion for the two triangles $\triangle RBT$ and $\triangle SAT$ are satisfied to be congruent

Hence by ASA congruence criterion we have $\triangle RBT \cong \triangle SAT$ proved.

***** END *****