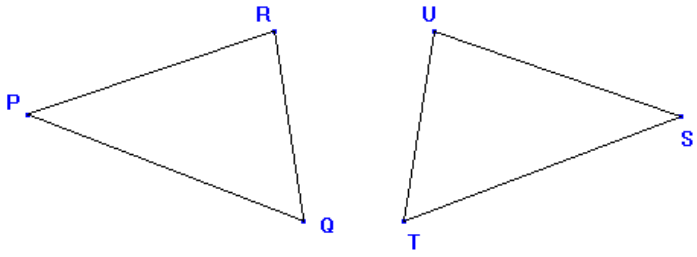
# Congruent Triangles

**Congruent triangles** are triangles with three pairs of corresponding sides congruent and three pairs of corresponding angles congruent. I.e. all three sides have the same length, and all three angles have the same measure. The symbol used for denoting congruency is @

If two triangles are congruent, their corresponding sides and angles must be congruent.

**The example below illustrate the statement:**




$$\triangle PQR \cong \triangle STU \Leftrightarrow \begin{cases} m\angle PRQ \cong m\angle SUT \\ m\angle RPQ \cong m\angle UST \\ m\angle RQP \cong m\angle UTS \end{cases} \& \begin{cases} \overline{PQ} \cong \overline{ST} \\ \overline{QR} \cong \overline{TU} \\ \overline{RP} \cong \overline{US} \end{cases}$$

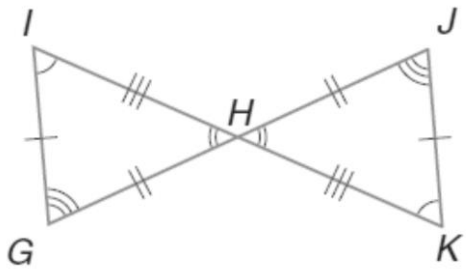
Notice that for each letter in the first triangle correspond another letter in the second triangle. You can not name the corresponding angles or segments in a random way. In the previous example we have:

U corresponds to R

S corresponds to P

T correspond

**Example 1:** The corresponding parts of two congruent triangles are marked on the figure. Write a congruence statement for the two triangles.

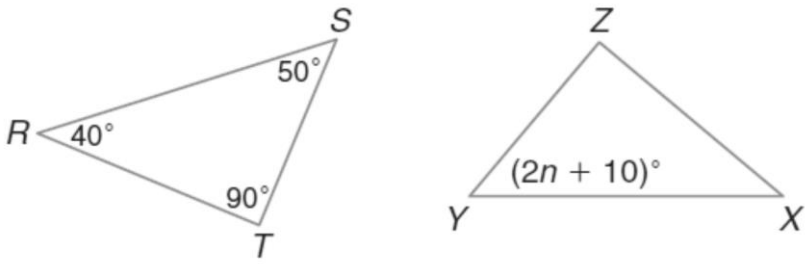



$\overline{HG} \cong \overline{HJ}$ $\Rightarrow$H corresponds to H and J corresponds to G

$\overline{IG} \cong \overline{KJ}$ $\Rightarrow$I corresponds to K and J corresponds to G

$\Rightarrow VHGI \text{ @} VHJK$

**Example 2:** $\square$ *RST* is congruent to $\square$ *XYZ*. Find the value of *n*.




$\square RST \cong \square XYZ$

$\Rightarrow \angle RST \cong \angle XYZ$

$\Rightarrow m\angle RST = m\angle XYZ$

$\Rightarrow 2n+10=50$

$\Rightarrow 2n=50-10=40$

$\Rightarrow n=20$