Geometry 4.4

Use SSS to test for triangle congruence

Use SAS to test for triangle congruence

$\triangle ABC \cong \triangle RQS$

corresponding parts (of a triangle)

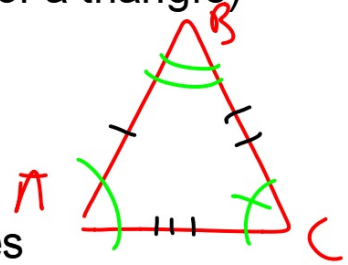
included angle

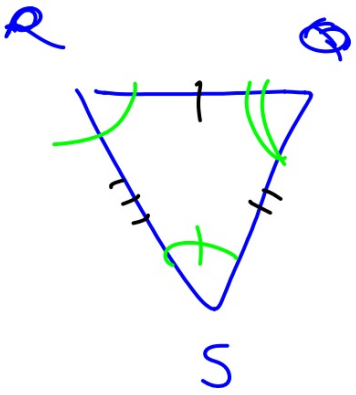
construction

CPCTC -

activ: exploragons

spaghetti triangles



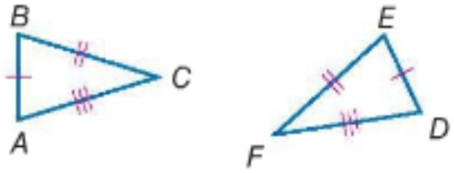


construction: SSS, SAS triangles

Postulate 4.1 Side-Side-Side (SSS) Congruence

If three sides of one triangle are congruent to three sides of a second triangle, then the triangles are congruent.

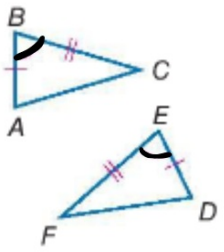
Example If Side $\overline{AB} \cong \overline{DE}$,
Side $\overline{BC} \cong \overline{EF}$, and
Side $\overline{AC} \cong \overline{DF}$,
then $\triangle ABC \cong \triangle DEF$.



Postulate 4.2 Side-Angle-Side (SAS) Congruence

Words If two sides and the included angle of one triangle are congruent to two sides and the included angle of a second triangle, then the triangles are congruent.

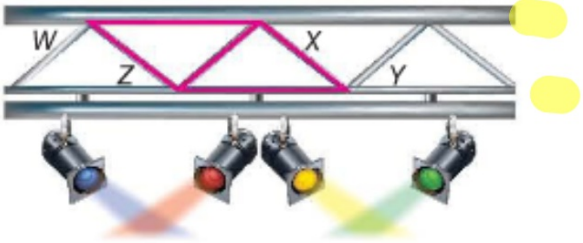
Example If Side $\overline{AB} \cong \overline{DE}$,
Angle $\angle B \cong \angle E$, and
Side $\overline{BC} \cong \overline{EF}$,
then $\triangle ABC \cong \triangle DEF$.



SAS SSS

Real-World Example 3 Use SAS to Prove Triangles are Congruent

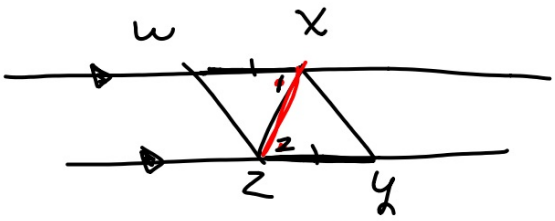
LIGHTING The scaffolding for stage lighting shown appears to be made up of congruent triangles. If $\overline{WX} \cong \overline{YZ}$ and $\overline{WX} \parallel \overline{ZY}$, write a two-column proof to prove that $\triangle WXZ \cong \triangle YZX$.

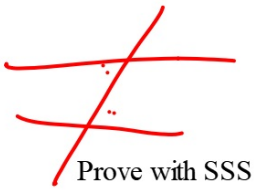


G: $\overline{WX} \cong \overline{YZ}$ $\overline{WX} \parallel \overline{ZY}$

P: $\triangle WXZ \cong \triangle YZX$

1. $\overline{WX} \cong \overline{YZ}$, $\overline{WX} \parallel \overline{ZY}$	1. given
2. $\angle 1 \cong \angle 2$	2. AIA
3. $\overline{XZ} \cong \overline{XZ}$	3. reflex.
$\triangle WXZ \cong \triangle YZX$	SAS





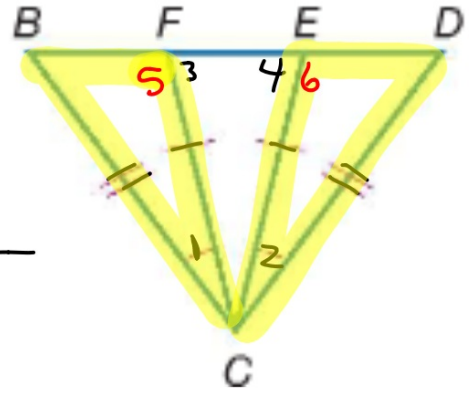
Prove with SSS or SAS...there are others

Example 4 Use SAS or SSS in Proofs

Write a paragraph proof.

Given: $\overline{BC} \cong \overline{DC}$, $\angle BCF \cong \angle DCE$, $\overline{FC} \cong \overline{EC}$

Prove: $\angle CFD \cong \angle CEB$



1. $\overline{BC} \cong \overline{DC}$ $\angle 1 \cong \angle 2$ $\overline{FC} = \overline{EC}$	1. given
2. $\triangle BFC \cong \triangle DEC$	2. SAS
3. $\angle 5 \cong \angle 6$	3. CPCTC
4. $\angle 3 + \angle 5 = 180$ $\angle 4 + \angle 6 = 180$	4. def linpair
5. $\angle 3 + \angle 5 = \angle 4 + \angle 6$ $\angle 5$ $\angle 6$	5. subs
6. $\angle 3 \cong \angle 4$	6. subtr. / subs.