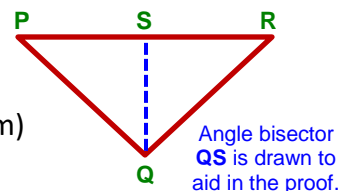


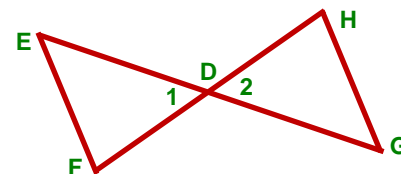
**Geometric Proofs #5 – Congruent Triangles**



**Given:**  $\triangle PQR$  and  $\overline{PQ} \cong \overline{RQ}$      **Prove:**  $\angle P \cong \angle R$  (Isosceles Triangle Theorem)

Step	Statement	Step	Reason
1)	$\triangle PQR, \overline{PQ} \cong \overline{RQ}$	1)	Given
2)	$\overline{QS}$ is the bisector of $\angle PQR$	2)	Drawn to assist with proof
3)	$\angle PQS \cong \angle RQS$	3)	Definition of Angle Bisector
4)	$\overline{QS} \cong \overline{QS}$	4)	Reflexive Property
5)	$\triangle PQS \cong \triangle RQS$	5)	SAS (from steps 1, 3, and 4)
6)	$\angle P \cong \angle R$	6)	CPCTC

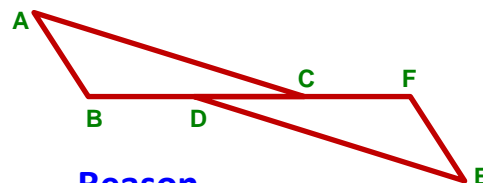
**Given:**  $\angle F \cong \angle H$  and  $\overline{EF} \cong \overline{GH}$



**Prove:**  $\overline{FD} \cong \overline{HD}$

Step	Statement	Step	Reason
1)	$\angle F \cong \angle H, \overline{EF} \cong \overline{GH}$	1)	Given
2)	$\angle 1 \cong \angle 2$	2)	Vertical angles are congruent
3)	$\triangle EFD \cong \triangle GHD$	3)	AAS (from steps 1 and 2)
4)	$\overline{FD} \cong \overline{HD}$	4)	CPCTC

**Given:**  $\overline{AB} \cong \overline{EF}$  and  $\overline{AC} \cong \overline{ED}$  and  $\overline{BD} \cong \overline{CF}$



**Prove:**  $\angle A \cong \angle E$

Step	Statement	Step	Reason
1)	$\overline{AB} \cong \overline{EF}, \overline{AC} \cong \overline{ED}$	1)	Given
2)	$\overline{BD} \cong \overline{CF}$	2)	Given
3)	$BD = CF$	3)	Two congruent segments are the same length
4)	$BC = DF$	4)	Overlapping Segments Theorem
5)	$\overline{BC} \cong \overline{DF}$	5)	Two segments of the same length are congruent
6)	$\triangle ABC \cong \triangle FED$	6)	SSS (from steps 1 and 5)
7)	$\angle A \cong \angle E$	7)	CPCTC