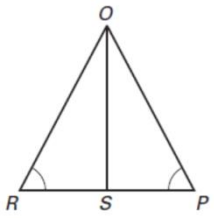
5.1 Proofs Name_____hr___

1. **Given:** S is on the bisector of $\angle POR$.

$\angle OPS \cong \angle ORS$

Prove: $\overline{OS}$ is a perpendicular bisector of $\overline{PR}$.



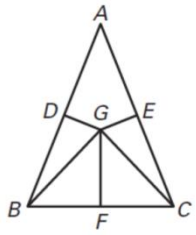
Statements	Reasons
1.	1. Given
2. $\angle POS \cong \angle ROS$	2.
3. $\angle OPS \cong \angle ORS$	3.
4.	4. Reflexive Property of $\cong$
5. $\triangle OPS \cong \triangle ORS$	5.
6. $\overline{PS} \cong \overline{SR}$, $\angle OSP \cong \angle OSR$	6.
7.	7. Adj. $\cong$ $\angle$'s formed by the intersection of 2 lines are rt. $\angle$'s.
8. $\overline{OS} \perp$ bisector of $\overline{PR}$.	8.

2. **Given:** Isosceles $\triangle ABC$ with $\overline{AB} \cong \overline{AC}$

$\overline{GD}$ is perpendicular bisector of $\overline{AB}$.

$\overline{GE}$ is perpendicular bisector of $\overline{AC}$.

Prove: $\triangle GDB \cong \triangle GEC$



Statements	Reasons
1.	1. Given
2. $\angle BDG$, $\angle CEG$ are rt $\angle$'s	2.
3. $\triangle BDG$ and $\triangle CEG$ are right triangles	3.
4.	4. Def. of segment bisector
5. $BD = DA$, $CE = EA$	5.
6.	6. Segment Add. Post.
7. $BD + DA = CE + EA$	7.
8. $2BD = 2CE$	8.
9.	9. Division prop. of equality
10. $\overline{BD} \cong \overline{CE}$	10.
11.	11. Circumcenter is equi-distant to vertices
12. $\triangle GDB \cong \triangle GEC$	12.