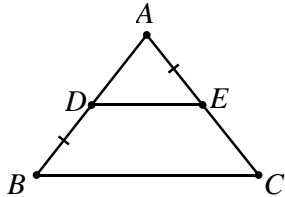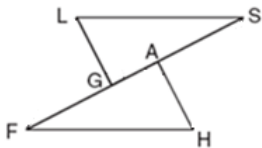**Complete a Two-column proof.**

1. Given: $\overline{DE}$ bisects $\overline{AC}$ at E
$\overline{DE}$ bisects $\overline{AB}$ at D
$\overline{BD} \cong \overline{AE}$

   Prove: $\overline{AD} \cong \overline{CE}$

2. Given: $\overline{FS} \perp \overline{LG}$
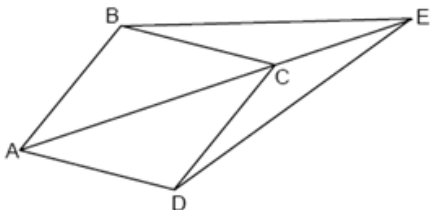$\overline{FS} \perp \overline{HA}$

   Prove: $\angle LGA \cong \angle HAG$

3. Given: $\angle BAC$ supp. $\angle BCE$
$\overline{ACE}$

   Prove: $\angle BCA \cong \angle BAC$

Statements	Reasons
1. $\overline{ACE}$	1.
2. $\angle BCA$ supp. $\angle BCE$	2.
3. $\angle BAC$ supp. $\angle BCE$	3.
4. $\angle BCA \cong \angle BAC$	4.

Write the definition of each as a bi-conditional *(…if and only if…)*

4. Segment Bisector:_____

5. Complementary Angles:_____

Negate the statement:

6. $\overrightarrow{RE}$ does not bisect $\angle PRS$.   7. $\overleftrightarrow{RT}$ bisects $\overline{GH}$

After each statement write *Converse, Inverse, Contra-positive*, or *None* based on the given conditional. Circle the statement that is logically equivalent to the given conditional.

"If two angles are right, then they are congruent."

8. If two angles are congruent, then they are both right. _____

9. If two angles are not congruent, then they are not both right. _____
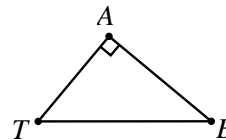
10. If two angles are right, then they are not congruent. _____

11. If two angles are not both right, then they are not congruent. _____

Write the true conclusion that follows from the given statement and state the theorem, postulate or definition that justifies the conclusion.
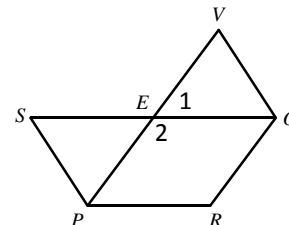
12. Given: $\angle TAB$ is a right angle.

   Conclusion:_____

   Reason:_____

13. Given: $\overline{PV}$ intersects $\overline{SO}$ at E
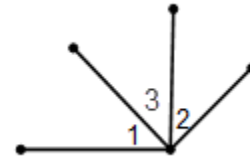
   Conclusion:_____

   Reason:_____

14. Given: $\angle 1 \cong \angle 3$ and $\angle 2 \cong \angle 3$
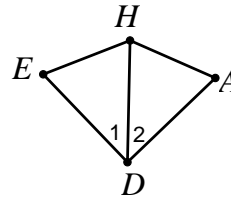
     Conclusion:_____

     Reason:_____

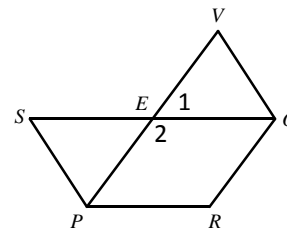15. Given: $\overline{HD}$ bisects $\angle EHA$

     Conclusion:_____

     Reason:_____

16. Given: $\overline{PV}$ bisects $\overline{SO}$ at E

     Conclusion:_____

     Reason:_____

17. Given: $\overline{SB}$ and $\overline{RA}$ intersect
        $\angle 2$ is supplementary to $\angle 1$
        $\angle 3$ is supplementary to $\angle 4$
  Prove: $\angle 1 \cong \angle 4$.