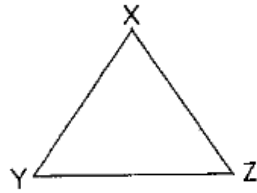


Plane Geometry – Transitive and Substitution Properties Worksheet

1. Given: $\angle X \cong \angle Y$,
 $\angle X \cong \angle Z$
 Conclusion: $\angle Y \cong \angle Z$



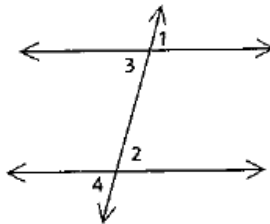
2 Steps

2. Given: $\angle 1 \cong \angle 2$,
 $\angle 2 \cong \angle 3$
 Conclusion: $\angle 1 \cong \angle 3$



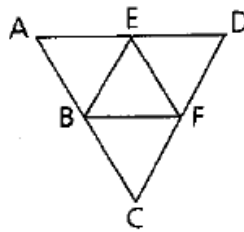
2 Steps

3. Given: $\angle 1 \cong \angle 3$,
 $\angle 2 \cong \angle 3$,
 $\angle 2 \cong \angle 4$
 Prove: $\angle 1 \cong \angle 4$



2 Steps

4. Given: $BC + BE = AD$,
 $BE = EF$
 Prove: $BC + EF = AD$



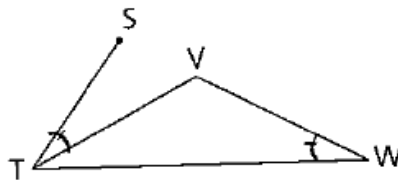
2 Steps

5. Given: $\overline{GJ} \cong \overline{HK}$
 Conclusion: $\overline{GH} \cong \overline{JK}$



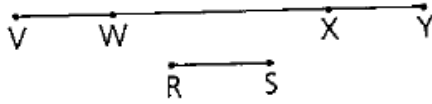
3 Steps

6. $\angle W \cong \angle STV$;
 \overrightarrow{TV} bisects $\angle STW$.
 $\angle W = (2x - 5)^\circ$,
 $\angle VTW = (x + 15)^\circ$
 Find: $m\angle STW$



7. Fill in the missing parts of the proof below:

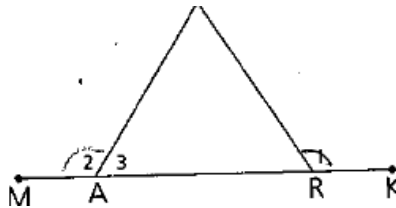
Given: $\overline{VW} \cong \overline{RS}$,
 $\overline{XY} \cong \overline{RS}$
 Prove: $\overline{VX} \cong \overline{WY}$



Statements	Reasons
1. $\overline{VW} \cong \overline{RS}$	1.
2. $\overline{XY} \cong \overline{RS}$	2.
3.	3. Transitive property
4.	4.
5. $\overline{VX} \cong \overline{WY}$	5.

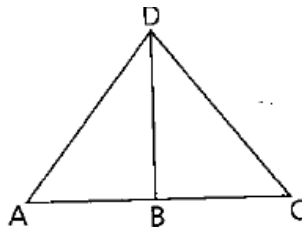
8. Fill in the missing parts of the proof below:

Given: $\angle 1 \cong \angle 2$
 Conclusion: $\angle 1$ is supp. to $\angle 3$.



Statements	Reasons
1. $\angle 1 \cong \angle 2$	1.
2. $\angle MAR$ is a straight angle	2. Assumed from diagram
3. $\angle 2$ supp $\angle 3$	3.
4. $\angle 1$ supp $\angle 3$	4.

9. Given: $\angle A$ is comp. to $\angle ADB$.
 $\angle C$ is comp. to $\angle CDB$.
 \overrightarrow{DB} bisects $\angle ADC$.
 Conclusion: $\angle A \cong \angle C$



3 Steps

10. In the diagram at the right, $x = 40^\circ$, $y = 30^\circ$.
 Find the following angle measures:

- a $\angle HFK$
- b $\angle EFK$
- c $\angle HFG$

