

**1. Match the statement with the property, definition, postulate, or theorem that justifies each.**

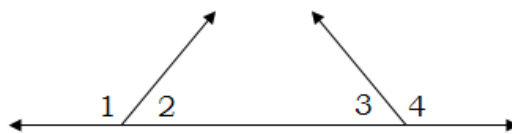
- |       |   |                             |
|-------|---|-----------------------------|
| _____ | If $m\angle 5 = m\angle 12$ and $m\angle 12 = m\angle 4$ , then $m\angle 5 = m\angle 4$ . | A. Addition Property        |
| _____ | If $4(a + 5) = w$ , then $4a + 20 = w$ .  | B. Symmetric Property       |
| _____ | If $M$ is between $R$ and $T$ , then $RM + MT = RT$ .                                     | C. Division Property        |
| _____ | If $PQ - XY = RS - XY$ , then $PQ = RS$ .   | D. Segment Addition Post.   |
| _____ | $\overline{DF} \cong \overline{DF}$   | E. Substitution Property    |
| _____ | If $4y = 16$ , then $y = 4$ .   | F. Transitive Property      |
| _____ | If $\overline{AB} \cong \overline{CD}$ , then $AB = CD$ .                                 | G. Def. of $\cong$ segments |
| _____ | If $3k + 9 = k + 8$ , then $3k = k - 1$ .   | H. Reflexive Property       |
| _____ | If $\overline{GH} \cong \overline{FD}$ , then $\overline{FD} \cong \overline{GH}$ .       | I. Distributive Property    |
| _____ | If $m\angle 3 = 46$ and $m\angle 4 = m\angle 3$ , then $m\angle 4 = 46$ .                 | J. Subtraction Property     |

**Example 2**

**Given:**  $\angle 1$  and  $\angle 2$  are supplementary.

$\angle 3$  and  $\angle 4$  are supplementary.

$\angle 1 \cong \angle 4$

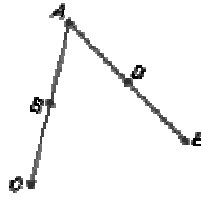


**Prove:**  $\angle 2 \cong \angle 3$

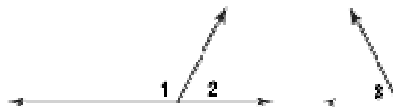
Statements	Reasons
1.) $\angle 1$ and $\angle 2$ are supplementary $\angle 3$ and $\angle 4$ are supplementary $\angle 1 \cong \angle 4$	1.) _____
2.) $m\angle 1 = m\angle 4$	2.) _____
3.) $m\angle 1 + m\angle 2 = 180$ $m\angle 3 + m\angle 4 = 180$	3.) _____
4.) $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 4$	4.) _____
5.) $m\angle 4 + m\angle 2 = m\angle 3 + m\angle 4$	5.) _____
6.) $m\angle 2 = m\angle 3$	6.) _____
7.) $\angle 2 \cong \angle 3$	7.) _____

**Example 3**Given:  $WX = YZ$ Prove:  $WY = XZ$ 

Statements	Reasons
1. $WX = YZ$	1.
2. $XY = XY$	2.
3. $WX + XY = XY + YZ$	3.
4. $WX + XY = WY$ $XY + YZ = XZ$	4.
5. $WY = XZ$	5.

**Example 4**Given:  $\overline{AB} \cong \overline{BC}$ ,  $\overline{AD} \cong \overline{DE}$ ,  $\overline{BC} \cong \overline{AD}$ Prove:  $\overline{DE} \cong \overline{AB}$ 

Statements	Reasons
1. $\overline{AB} \cong \overline{BC}$ , $\overline{BC} \cong \overline{AD}$	1.
2. $\overline{AB} \cong \overline{AD}$	2.
3. $\overline{AD} \cong \overline{DE}$	3.
4. $\overline{AB} \cong \overline{DE}$	4.
5. $\overline{DE} \cong \overline{AB}$	5.

**Example 5**Given:  $\angle 1$  and  $\angle 2$  form a linear pair. $\angle 1$  and  $\angle 3$  are supplementary.Prove:  $\angle 2 \cong \angle 3$ 

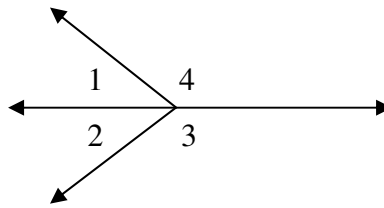
Statements	Reasons
1. $\angle 1$ and $\angle 2$ form a linear pair.	1.
2. $\angle 1$ and $\angle 2$ are supplementary.	2.
3. $\angle 1$ and $\angle 3$ are supplementary	3.
4. $\angle 2 \cong \angle 3$	4.

**Example 6**

**Given:**  $\angle 1$  and  $\angle 4$  form a linear pair

$$m\angle 3 + m\angle 1 = 180^\circ.$$

**Prove:**  $\angle 3$  and  $\angle 4$  are congruent.



**Statements**

**Reasons**

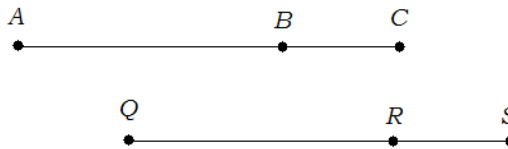
1.	1. Given
2. $m\angle 3 + m\angle 1 = 180^\circ$	2.
3. $\angle 1$ and $\angle 4$ are supplementary	3.
4.	4. Definition of supplementary angles
5. $\angle 3 \cong \angle 4$	5.

**Example 7**

**Given:**  $\overline{AB} \cong \overline{QR}$

$$\overline{BC} \cong \overline{RS}$$

**Prove:**  $\overline{AC} \cong \overline{QS}$



**Statements**

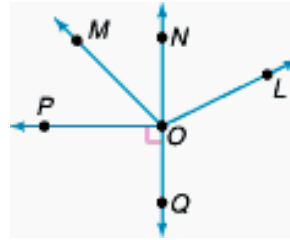
**Reasons**

1.) $\overline{AB} \cong \overline{QR}$ $\overline{BC} \cong \overline{RS}$	1.) _____
2.) _____ _____	2.) Definition of $\cong$ segments
3.) $AB + BC = AC$ $QR + RS = QS$	3.) _____
4.) $QR + RS = AC$ $QR + RS = QS$	4.) _____
5.) _____	5.) Substitution Property
6.) $\overline{AC} \cong \overline{QS}$	6.) _____

**Example 8**

**Given:**  $\overrightarrow{OP} \perp \overrightarrow{NQ}$

**Prove:**  $\angle POM$  and  $\angle MON$  are complementary



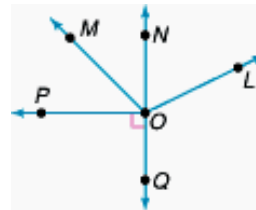
**Statements**

**Reasons**

**Example 9**

**Given:**  $\overrightarrow{OM} \perp \overrightarrow{OL}$ ,  $\overrightarrow{OP} \perp \overrightarrow{NQ}$

**Prove:**  $\angle POM \cong \angle NOL$



**Statements**

**Reasons**