

Summary Properties of Congruence

Reflexive Property $\overline{AB} \cong \overline{AB}$
 $\angle A \cong \angle A$

Symmetric Property If $\overline{AB} \cong \overline{CD}$, then $\overline{CD} \cong \overline{AB}$.
 If $\angle A \cong \angle B$, then $\angle B \cong \angle A$.

Transitive Property If $\overline{AB} \cong \overline{CD}$ and $\overline{CD} \cong \overline{EF}$, then $\overline{AB} \cong \overline{EF}$.
 If $\angle A \cong \angle B$ and $\angle B \cong \angle C$, then $\angle A \cong \angle C$.

Name the property that justifies each statement:

1. If $\overline{LM} \cong \overline{TR}$ and $\overline{TR} \cong \overline{AC}$, then $\overline{LM} \cong \overline{AC}$
 Transitive property

2. If $4x + 1 = 25$, then $4x = 24$
 Subtraction prop =

3. $\overline{EF} \cong \overline{EF}$ Reflexive Prop $\cong$

4. If $m\angle A = 40^\circ$ and $m\angle A + m\angle B = 90^\circ$,
 then $40^\circ + m\angle B = 90^\circ$ Substitution

5. If $\angle H \cong \angle J$, then $\angle J \cong \angle H$ Sym. prop $\cong$

Use the given information and the property specified to complete each statement.

1. Addition Property of Equality

If $3a - 7 = 31$, then $3a = 38$
 $+7 \quad +7$

2. Reflexive Property of Congruence

$\triangle EFG \cong \triangle EFG$

3. Substitution Property.

If $VW = 18$ and $VW + WX = 30$, then
 $18 + WX = 30$

4. Transitive Property of Congruence

If $\angle C \cong \angle Q$ and $\angle Q \cong \angle G$ and $\angle G \cong \angle B$ and $\angle B \cong \angle Q$ and $\angle Q \cong \angle T$, then
 $\angle C \cong \angle T$

5. Symmetric Property of Congruence

If $\overline{RS} \cong \overline{MN}$, then $\overline{MN} \cong \overline{RS}$

6. Distributive Property

If $2(x+3) = 12$, then $2x+6=12$

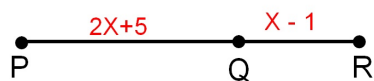
Postulate 1-6**Segment Addition Postulate**

If three points A , B , and C are collinear and B is between A and C , then $AB + BC = AC$.



Solve for x .

Given: $PR = 31$

Steps

$$PR = 31$$

$$PR = PQ + QR$$

$$31 = 3x + 5 + x - 1$$

$$31 = 3x + 4$$

$$31 - 4 = 3x + 4 - 4$$

$$27 = 3x$$

$$27/3 = 3x/3$$

$$9 = x$$

$$x = 9$$

Reasons

Given

Seg Add Post

Substitution

Combine Like Terms

Subtraction Prop of Eq

Simplify

Div Prop of Eq

Simplify

Symmetric Prop of Eq