

**Properties of Equality & Congruence**

Name the property illustrated below.

1. If  $UV = KL$  and  $KL = 6$ , then  $UV = 6$ .

---

---

2. If  $m\angle 1 + m\angle 2 = m\angle 4 + m\angle 2$ , then  $m\angle 1 = m\angle 4$

---

---

3.  $\angle ABC \cong \angle ABC$

---

---

4. If  $\frac{1}{2}m\angle D = 45$ , then  $m\angle D = 90$ .

---

---

5. If  $\angle DEF \cong \angle HJK$ , then  $\angle HJK \cong \angle DEF$

---

---

6. If  $y = 12 - x$  and  $2x + 3y = 10$ , then  $2x + 3(12 - x) = 10$ .

---

---

7. If  $x = 5$ , then  $x + 3 = 8$

---

---

8. If  $AB = MN$  and  $MN = XY$ , then  $AB = XY$ .

---

---

9. If  $2(AX) = 2(BY)$ , then  $AX = BY$

---

---

10. If  $m\angle 1 = 40$  and  $m\angle 2 = m\angle 1 + 50$ , then  $m\angle 2 = 90$

---

---

Use the given property to complete each statement.

11. Reflexive Property of Congruence

$\angle TRS \cong$  \_\_\_\_\_

12. Substitution Property

If  $AB = 2$ , and  $AC = AB + BC$ , then  $AC =$  \_\_\_\_\_

13. Subtraction Property of Equality

If  $25x + 12 = 32$ , then  $25x =$  \_\_\_\_\_

14. Transitive Property of Equality

If  $RM = OP$  and  $OP = XT$ , then \_\_\_\_\_

15. Symmetric Property of Congruence

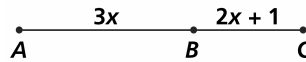
If  $\angle TES \cong \angle BKC$ , then \_\_\_\_\_

16. Division Property of Equality

If  $4m\angle ABC = 120^\circ$ , then  $m\angle ABC =$  \_\_\_\_\_

Fill in the reason that justifies each step.

**Given:**  $AC = 36$



$AB + BC = AC$  17. \_\_\_\_\_

$3x + 2x + 1 = 36$  18. \_\_\_\_\_

$5x + 1 = 36$  19. \_\_\_\_\_

$5x = 35$  20. \_\_\_\_\_

$x = 7$  21. \_\_\_\_\_

Solve the equation and state the reason for each step.

$5(2x - 1) = 9x + 4$