

**Practice CP****2-1****Reasoning in Algebra and Geometry****Algebra Fill in the reason that justifies each step.**

1.  $\frac{2}{3}x + 6 = 14$

Given

2.  $2(x - 12) = 40$

Given

$3\left(\frac{2}{3}x + 6\right) = 42$

a. ?

$2x - 24 = 40$

a. ?

$2x + 18 = 42$

b. ?

$2x = 64$

b. ?

$2x = 24$

c. ?

$x = 32$

c. ?

$x = 12$

d. ?

$AB = 50$

Given

$AC + CB = AB$

a. ?

$2x - 2 + 4(x + 1) = 50$

b. ?

$2x - 2 + 4x + 4 = 50$

c. ?

$6x + 2 = 50$

d. ?

$6x = 48$

e. ?

$x = 8$

f. ?**Name the property of equality or congruence that justifies going from the first statement to the second statement.**

4.  $QR + LM = 20$

To start, determine which operation changes

$QR = 20 - LM$

the first statement to the second statement.

5.  $\overline{ST} \cong \overline{ST}$   
 $\overline{ST} \cong \overline{ST}$

6.  $3x = y$   
 $x = \frac{y}{3}$

7.  $6x - 3$   
 $3(2x - 1)$

**Practice** (continued)

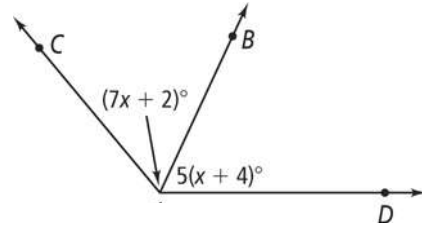
2-1

**Reasoning in Algebra and Geometry**

- 8. Developing Proof** Fill in the missing statements or reasons for the following two-column proof.

**Given:**  $\overline{AB}$  is the bisector of  $\angle CAD$ .

**Prove:**  $x = 9$



Statements	Reasons
1) $\overline{AB}$ is the bisector of $\angle CAD$ .	1) Given
2) $\angle CAB \cong \angle BAD$	2) ?
3) $m\angle CAB \cong m\angle BAD$	3) $\cong$ angles have equal measures.
4) $7x + 2 = 5(x + 4)$	4) ?
5) $7x + 2 = 5x + 20$	5) ?
6) ?	6) ?
7) ?	7) ?

Use the given property to complete each statement.

- 9.** Addition Property of Equality If  $a = b$ , then  $a + 6 = b$  ?.
- 10.** Symmetric Property of Congruence If  $\overline{LM} \cong \overline{GH}$ , then  $\overline{GH} \cong$  ?.
- 11.** Distributive Property  $10x - 5 = 5 \cdot$  ( ? )
- 12.** Multiplication Property of Equality If  $\frac{2}{5}x = 10$ , then  $2x =$  ?
- 13.** Substitution Property of Equality If  $JK = 20$  and  $AB + JK = XY$ , then ?  $Y$ .
- 14.** Transitive Property of Congruence If  $\angle R \cong \angle Z$  and  $\angle Z \cong \angle F$ , then ?  $\angle F$ .