

## Worksheet: Section 2.5

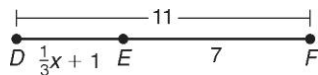
### Algebraic Proof

For Exercises 1–12, write the letter of each property next to its definition. The letters  $a$ ,  $b$ , and  $c$  represent real numbers.

- |   |  |
|---|--|
| <p>1. If <math>a = b</math>, then <math>b = a</math>. _____</p> <p>2. If <math>a = b</math>, then <math>ac = bc</math>. _____</p> <p>3. <math>\overline{AB} \cong \overline{AB}</math> _____</p> <p>4. <math>a = a</math> _____</p> <p>5. If <math>a = b</math>, then <math>a + c = b + c</math>. _____</p> <p>6. <math>a(b + c) = ab + ac</math> _____</p> <p>7. If <math>a = b</math> and <math>b = c</math>, then <math>a = c</math>. _____</p> <p>8. If <math>\angle P \cong \angle Q</math>, then <math>\angle Q \cong \angle P</math>. _____</p> <p>9. If <math>\angle A \cong \angle B</math> and <math>\angle B \cong \angle C</math>, then <math>\angle A \cong \angle C</math>. _____</p> <p>10. If <math>a = b</math> and <math>c \neq 0</math>, then <math>\frac{a}{c} = \frac{b}{c}</math>. _____</p> <p>11. If <math>a = b</math>, then <math>b</math> can be substituted for <math>a</math> in any expression. _____</p> <p>12. If <math>a = b</math>, then <math>a - c = b - c</math>. _____</p> <p>13. Cali measures her textbook and finds that it is 8 inches wide. She wants to know how many centimeters wide her textbook is. The formula to convert inches to centimeters is <math>2.54i = c</math>, where <math>i</math> is the length in inches and <math>c</math> is the length in centimeters. Fill in the blanks to find the answer. The justifications will guide you.</p> | <p>A. Addition Property of Equality</p> <p>B. Subtraction Property of Equality</p> <p>C. Multiplication Property of Equality</p> <p>D. Division Property of Equality</p> <p>E. Reflexive Property of Equality</p> <p>F. Symmetric Property of Equality</p> <p>G. Transitive Property of Equality</p> <p>H. Substitution Property of Equality</p> <p>I. Distributive Property</p> <p>J. Reflexive Property of Congruence</p> <p>K. Symmetric Property of Congruence</p> <p>L. Transitive Property of Congruence</p> |
|---|--|

$2.54i = c$	Given equation
$2.54(\text{_____}) = c$	Substitution Property of Equality
$\text{_____} = c$	Simplify.
$\text{_____} = \text{_____}$	Symmetric Property of Equality

14. Write a justification for each step.

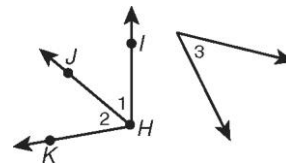


$DE + EF = DF$	_____
$\left(\frac{1}{3}x + 1\right) + 7 = 11$	_____
$\frac{1}{3}x + 8 = 11$	_____
$\frac{1}{3}x = 3$	_____
$x = 9$	_____

## Worksheet: Section 2.6

### Geometric Proof

Write the letter of the correct justification next to each step.  
(Use one justification twice.)



**Given:**  $\overline{HJ}$  is the bisector of  $\angle IHK$  and  $\angle 1 \cong \angle 3$ .

- |  |                                    |
|--|------------------------------------|
| 1. $\overline{HJ}$ is the bisector of $\angle IHK$ . _____ | A. Definition of $\angle$ bisector |
| 2. $\angle 2 \cong \angle 1$ _____                         | B. Given                           |
| 3. $\angle 1 \cong \angle 3$ _____                         | C. Transitive Prop. of $\cong$     |
| 4. $\angle 2 \cong \angle 3$ _____                         |                                    |

5. In a \_\_\_\_\_ proof, each step in the proof is on the left and the reason for the step is on the right.

Fill in the blanks to complete the two-column proof.

6. **Given:**  $\angle 1$  and  $\angle 2$  are straight angles.

**Prove:**  $\angle 1 \cong \angle 2$

**Proof:**

Statements	Reasons
1. a. _____	1. Given
2. $m\angle 1 = 180^\circ$ , $m\angle 2 = 180^\circ$	2. b. _____
3. $m\angle 1 = m\angle 2$	3. Subst. Prop. of =
4. c. _____	4. Def. of $\cong \angle$