

Practice

Form G

Reasoning in Algebra and Geometry

Fill in the reason that justifies each step.

- | | |
|---------------------------|-------------|
| 1. $0.25x + 2x + 12 = 39$ | Given |
| $2.25x + 12 = 39$ | a. <u>?</u> |
| $2.25x = 27$ | b. <u>?</u> |
| $225x = 2700$ | c. <u>?</u> |
| $x = 12$ | d. <u>?</u> |

2. **Given:** $m\angle ABC = 80$

$$m\angle ABD + m\angle DBC = m\angle ABC$$

Angle Addition Postulate

$$(3x + 3) + (6x + 5) = 80$$

Substitution Property

$$9x + 8 = 80$$

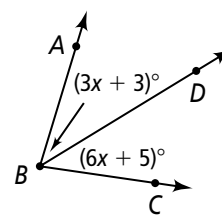
a. ?

$$9x = 72$$

b. ?

$$x = 8$$

c. ?



3. **Given:** $KL = 3(PM)$

$$5x = 3(2x - 4)$$

Substitution Property

$$5x = 6x - 12$$

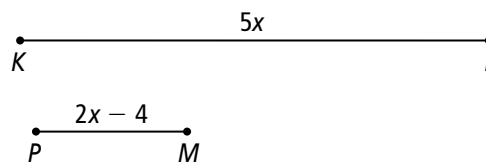
a. ?

$$-x = -12$$

b. ?

$$x = 12$$

c. ?



4. **Given:** $XY = YZ$

$$8m + 5 = 6m + 17$$

Substitution Property

$$2m + 5 = 17$$

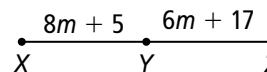
a. ?

$$2m = 12$$

b. ?

$$m = 6$$

c. ?



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

5. $\overline{XY} \cong \overline{TZ}$
 $\overline{TZ} \cong \overline{XY}$

6. $3(x + 2) = 15$

$3x + 6 = 15$

7. $4n + 6 - 2n = 9$

$2n + 6 = 9$

8. $\angle A \cong \angle B$ and $\angle B \cong \angle C$

$\angle A \cong \angle C$

Practice (continued)

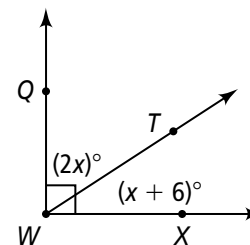
Form G

Reasoning in Algebra and Geometry

9. Write a two-column proof.

Given: $\angle QWT$ and $\angle TWX$ are complementary.

Prove: $x = 28$

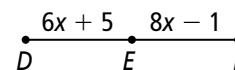


Statements	Reasons
1) $\angle QWT$ and $\angle TWX$ are complementary	1) ?
2) $m\angle QWT + m\angle TWX = 90$	2) ?
3) $2x + x + 6 = 90$	3) ?
4) $3x + 6 = 90$	4) ?
5) $3x = 84$	5) ?
6) $x = 28$	6) ?

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

Given: E is the midpoint of \overline{DF} .

Prove: $DE = 23$



Statements	Reasons
1) E is the midpoint of \overline{DF} .	1) ?
2) ?	2) Definition of midpoint
3) $6x + 5 = 8x - 1$	3) ?
4) $5 = 2x - 1$	4) ?
5) ?	5) Addition Property of Equality
6) ?	6) Division Property of Equality
7) $DE = 6x + 5$	7) Given
8) $DE = 6(3) + 5$	8) ?
9) $DE = 23$	9) ?

11. Write a two-column proof.

Given: $m\angle PMN = m\angle RBC$

Prove: $m\angle ABR + m\angle PMN = m\angle ABC$

