2.5 **Solve the equation. Write a reason for each step.** 25–30. See margin.

25. $4x + 15 = 39$
26. $6x + 47 = 10x - 9$
27. $2(-7x + 3) = -50$
28. $54 + 9x = 3(7x + 6)$
29. $13(2x - 3) - 20x = 3$
30. $31 + 25x = 7x - 14 + 3x$

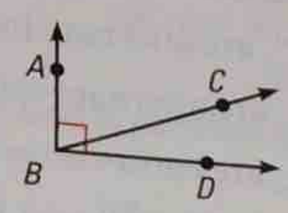
2.6 **Copy and complete the statement. Name the property illustrated.**

31. If $m\angle JKL = m\angle GHI$ and $m\angle GHI = m\angle ABC$, then ___?___ = ___?___. $m\angle JKL$, $m\angle ABC$; Transitive Property of Equality
32. If $m\angle MNO = m\angle PQR$, then $m\angle PQR$ = ___?___ $m\angle MNO$; Symmetric Property of Equality
33. $m\angle XYZ$ = ___?___ $m\angle XYZ$; Reflexive Property of Equality

2.6 34. Copy and complete the proof. See margin.

GIVEN ▶ Point C is in the interior of $\angle ABD$. $\angle ABD$ is a right angle.

PROVE ▶ $\angle ABC$ and $\angle CBD$ are complementary.

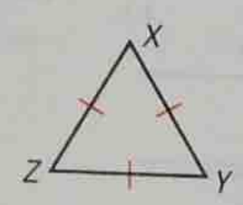


STATEMENTS	REASONS
1. $\angle ABD$ is a right angle.	1. Given
2. $m\angle ABD = 90°$	2. ___?___
3. ___?___	3. Given
4. $m\angle ABD = m\angle ABC + m\angle CBD$	4. ___?___
5. ___?___ $= m\angle ABC + m\angle CBD$	5. Substitution Property of Equality
6. ___?___	6. Definition of complementary angles

2.6 35. Use the given information and the diagram to prove the statement. See margin.

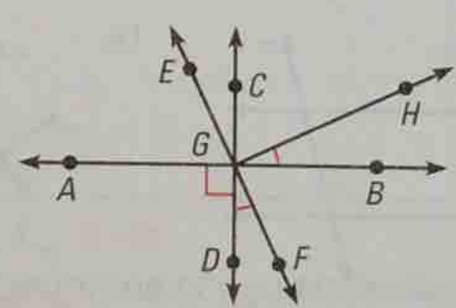
GIVEN ▶ $\overline{XY} \cong \overline{YZ} \cong \overline{ZX}$

PROVE ▶ The perimeter of $\triangle XYZ$ is $3 \cdot XY$.



2.7 **Copy and complete the statement.** $\angle AGD$ **is a right angle and** $\overleftrightarrow{AB}$, $\overleftrightarrow{CD}$, **and** $\overleftrightarrow{EF}$ **intersect at point G.**

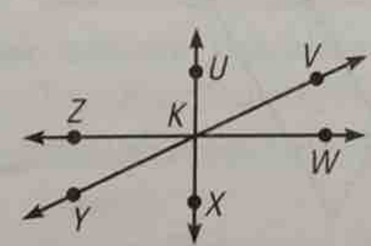
36. If $m\angle CGF = 158°$, then $m\angle EGD$ = ___?___. 158°
37. If $m\angle EGA = 67°$, then $m\angle FGD$ = ___?___. 23°
38. If $m\angle FGC = 149°$, then $m\angle EGA$ = ___?___. 59°
39. $m\angle DGB$ = ___?___ 90°
40. $m\angle FGH$ = ___?___ 90°



2.7 41. Write a two-column proof. See margin.

GIVEN ▶ $\angle UKV$ and $\angle VKW$ are complements.

PROVE ▶ $\angle YKZ$ and $\angle XKY$ are complements.



EXTRA PRACTICE

29. $13(2x - 3) - 20x = 3$ (Write original equation.)
$26x - 39 - 20x = 3$ (Distributive Property)
$6x - 39 = 3$ (Simplify.)
$6x = 42$ (Addition Property of Equality)
$x = 7$ (Division Property of Equality)

30. $31 + 25x = 7x - 14 + 3x$ (Write original equation.)
$31 + 25x = 10x - 14$ (Simplify.)
$31 + 15x = -14$ (Subtraction Property of Equality)
$15x = -45$ (Subtraction Property of Equality)
$x = -3$ (Division Property of Equality)

34. Reason 2: Definition of right angle; Statement 3: Point C is in the interior of $\angle ABD$. Reason 4: Angle Addition Postulate; Statement 5: 90°; Statement 6: $\angle ABC$ and $\angle CBD$ are complementary.

35. Statements (Reasons)
1. $\overline{XY} \cong \overline{YZ} \cong \overline{ZX}$ (Given)
2. $XY = YZ = ZX$ (Definition of congruent segments)
3. Perimeter of $\triangle XYZ = XY + YZ + ZX$ (Perimeter formula)
4. Perimeter of $\triangle XYZ = XY + XY + XY$ (Substitution)
5. Perimeter of $\triangle XYZ = 3 \cdot XY$ (Simplify.)

41. Statements (Reasons)
1. $\angle UKV$ and $\angle VKW$ are complements. (Given)
2. $m\angle UKV + m\angle VKW = 90°$ (Definition of complementary angles)
3. $\angle UKV \cong \angle XKY$, $\angle VKW \cong \angle YKZ$ (Vertical angles are congruent.)
4. $m\angle UKV = m\angle XKY$, $m\angle VKW = m\angle YKZ$ (Definition of congruent angles)
5. $m\angle YKZ + m\angle XKY = 90°$ (Substitution)
6. $\angle YKZ$ and $\angle XKY$ are complements. (Definition of complementary angles)

25. $4x + 15 = 39$ (Write original equation.)
$4x = 24$ (Subtraction Property of Equality)
$x = 6$ (Division Property of Equality)

26. $6x + 47 = 10x - 9$ (Write original equation.)
$47 = 4x - 9$ (Subtraction Property of Equality)
$56 = 4x$ (Addition Property of Equality)
$14 = x$ (Division Property of Equality)

27. $2(-7x + 3) = -50$ (Write original equation.)
$-14x + 6 = -50$ (Distributive Property)
$-14x = -56$ (Subtraction Property of Equality)
$x = 4$ (Division Property of Equality)

28. $54 + 9x = 3(7x + 6)$ (Write original equation.)
$54 + 9x = 21x + 18$ (Distributive Property)
$54 = 12x + 18$ (Subtraction Property of Equality)
$36 = 12x$ (Subtraction Property of Equality)
$3 = x$ (Division Property of Equality)