

Name Key

Complete the logical argument by giving a reason for each step.

1. $8x - 34 = 6$
 $8x = 40$
 $x = 5$

Given
 a. Addition POE
 b. Division POE

2. $5(x - 3) = 4(x + 2)$
 $5x - 15 = 4x + 8$
 $x - 15 = 8$
 $x = 23$

Given
 a. Distributive Prop.
 b. Subtraction POE
 c. Addition POE

Solve the equation. Write a reason for each step.

3. $x + 18 = 7$

Statement	Reason
1. $x + 18 = 7$	1. Given
2. $x = -11$	2. Subtraction POE

4. $7x - 9 = 4x$

Statement	Reason
1. $7x - 9 = 4x$	1. Given
2. $-9 = -3x$	2. Subtraction POE
3. $3 = x$	3. Division POE

5. $7x - 11 = 4x + 19$

Statement	Reason
1. $7x - 11 = 4x + 19$	1. Given
2. $3x - 11 = 19$	2. Subtraction POE
3. $3x = 30$	3. Addition POE
4. $x = 10$	4. Division POE

6. $4(2x + 11) = 76$

Statement	Reason
1. $4(2x + 11) = 76$	1. Given
2. $8x + 44 = 76$	2. Distributive Prop.
3. $8x = 32$	3. Subtraction POE
4. $x = 4$	4. Division POE

Use the property to complete the statement.

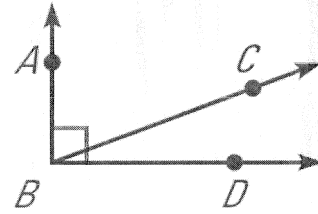
- Addition Property of Equality: if $RS = TU$, then $RS + 20 = \underline{TU + 20}$.
- Multiplication Property of Equality: If $m\angle 1 = m\angle 2$, then $3m\angle 1 = \underline{3m\angle 2}$.
- Substitution Property of Equality: If $a = 20$, then $5a = \underline{5(20)}$.
- Reflexive Property of Equality: If x is a real number, then $x = \underline{x}$.
- Symmetric Property of Equality: If $AB = CD$, then $CD = \underline{AB}$.
- Transitive Property of Equality: If $m\angle E = m\angle F$ and $m\angle F = m\angle G$, then $\underline{m\angle E = m\angle G}$.

13. GIVEN: $2AB = AC$
 PROVE: $AB = BC$



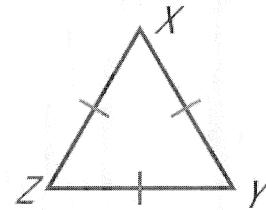
Statements	Reasons
1. $2AB = AC$	1. Given
2. $AC = AB + BC$	2. SAP
3. $2AB = AB + BC$	3. Substitution POE
4. $AB = BC$	4. Subtraction POE

14. GIVEN: $\angle ABD$ is a right angle.
 PROVE: $\angle ABC$ and $\angle CBD$ are complementary.



Statements	Reasons
1. $\angle ABD$ is a right angle	1. Given
2. $m\angle ABD = 90^\circ$	2. Defn. of Right \angle
3. $m\angle ABD = m\angle ABC + m\angle CBD$	3. AAP
4. $90^\circ = m\angle ABC + m\angle CBD$	4. Substitution POE
5. $\angle ABC$ and $\angle CBD$ are complimentary	5. Defn. of complimentary \angle 's

15. GIVEN: $\overline{XY} \cong \overline{YZ} \cong \overline{ZX}$
 PROVE: The perimeter of $\triangle XYZ$ is $3 \cdot XY$



Statements	Reasons
1. $\overline{XY} \cong \overline{YZ} \cong \overline{ZX}$	1. Given
2. $XY = YZ = ZX$	2. Definition of congruent segments
3. Perimeter of $\triangle XYZ = XY + YZ + ZX$	3. Defn. of Perimeter
4. Perimeter of $\triangle XYZ = XY + XY + XY$	4. Substitution POE
5. The perimeter of $\triangle XYZ$ is $3 \cdot XY$	5. Simplify

Use the property to complete the statement.

16. Reflexive Property of Congruence: $\angle 4 \cong \angle 4$

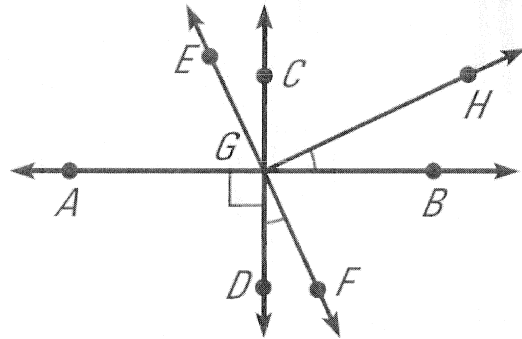
17. Symmetric Property of Congruence: If $\overline{DX} \cong \overline{CD}$, then $\overline{CD} \cong \overline{DX}$.

Name the property illustrated by the statement.

18. If $\angle 1 \cong \angle 2$ and $\angle 2 \cong \angle 4$, then $\angle 1 \cong \angle 4$. Transitive POC
19. $\overline{XY} \cong \overline{XY}$ Reflexive POC
20. If $\angle CDE \cong \angle RST$, then $\angle RST \cong \angle CDE$. Symmetric POC
21. If $\overline{AB} \cong \overline{BC}$, then $\overline{BC} \cong \overline{AB}$ Symmetric POC

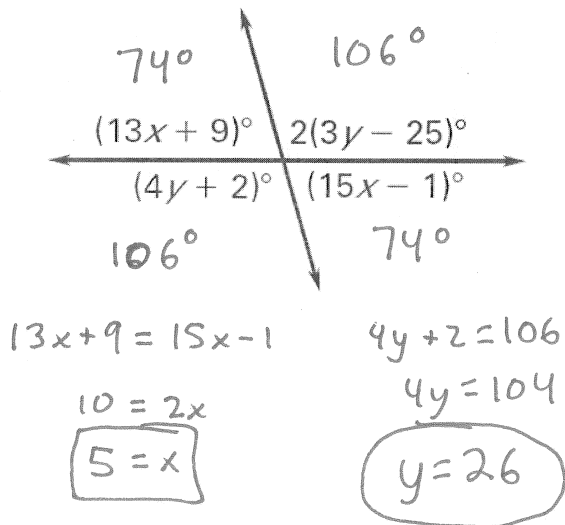
Use the figure and given information to determine the unknown angle measures.

22. If $m\angle CGF = 158^\circ$, then $m\angle EGD = \underline{158^\circ}$
23. If $m\angle EGA = 67^\circ$, then $m\angle FGD = \underline{23^\circ}$
24. If $m\angle FGC = 149^\circ$, then $m\angle EGA = \underline{59^\circ}$
25. $m\angle DGB = \underline{90^\circ}$
26. $m\angle FGH = \underline{90^\circ}$



Find the value of the variables and the measure of each angle in the diagram.

27.



28.

