

Write a reason for each step.

1. Solve:  $3x - 12 = 7x + 8$

Statement	Reason
1. $3x - 12 = 7x + 8$	1. <u>Given</u>
2. $-4x - 12 = 8$	2. <u>Subtraction Prop.</u>
3. $-4x = 20$	3. <u>Addition Property</u>
4. $x = -5$	4. <u>Division Property</u>

2. Solve:  $5(x - 1) = 4x + 13$

Statement	Reason
1. $5(x - 1) = 4x + 13$	1. <u>Given</u>
2. $5x - 5 = 4x + 13$	2. <u>Distribution Prop</u>
3. $x - 5 = 13$	3. <u>Subtraction Prop.</u>
4. $x = 18$	4. <u>Addition Property</u>

Use the property to complete the statement

3. Substitution Property of Equality: If  $AB = 20$ . Then  $AB + CD = \underline{20 + CD}$

4. Symmetric Property of Equality: If  $m\angle 1 = m\angle 2$ , then  $\underline{m\angle 2 = m\angle 1}$

5. Addition Property of Equality: If  $AB = CD$ , then  $\underline{AB} + EF = \underline{CD} + EF$

6. Distributive Property: If  $5(x + 8) = 2$ , then  $\underline{5 \cdot x + 40} = 2$

7. Transitive Property of Equality: If  $m\angle 1 = m\angle 2$  and  $m\angle 2 = m\angle 3$  then  $\underline{m\angle 1 = m\angle 3}$

Solve the equation. Write a reason for each step (include substitution).

8.  $5x - 10 = -40$

Statement	Reason
1. $5x - 10 = -40$	1. <u>Given</u>
2. $\quad +10 \quad +10$	2. <u>Addition Property of =</u>
3. $5x = -30$	3. <u>Substitution Property of =</u>
4. $\frac{5x}{5} = \frac{-30}{5}$	4. <u>Division Property of =</u>
5. $x = -6$	5. <u>Substitution Property of =</u>

9.  $\frac{n+5}{-14} = -1$

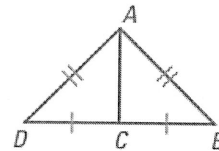
Statement	Reason
1. $\frac{n+5}{-14} = -1$	1. <u>Given</u>
2. $\cdot -14 \quad \cdot -14$	2. <u>Multiplication Property of =</u>
3. $n + 5 = 14$	3. <u>Substitution Property of =</u>
4. $\quad -5 \quad -5$	4. <u>Subtraction Property of =</u>
5. $n = 9$	5. <u>Substitution Property of =</u>

$$10. 5(3x - 20) = -10$$

Statement	Reason
1. $5(3x - 20) = -10$	1. Given
2. $5(3x) - 5(20) = -10$	2. Distributive Property
3. $15x - 100 = -10$	3. Substitution Property of =
4. $\quad +100 \quad +100$	4. Addition Property of =
5. $15x = 90$	5. Substitution Property of =
6. $\frac{15x}{15} = \frac{90}{15}$	6. Division Property of =
7. $x = 6$	7. Substitution Property of =

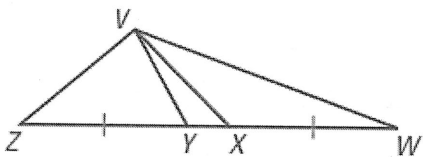
11. **Given:**  $AD=AB$  and  $DC=BC$

**Prove:** the perimeter of  $\triangle ABC$  is equal to the perimeter of  $\triangle ADC$ .



Statement	Reason
1. $AD = AB$ and $DC = BC$	1. Given
2. $P_{\triangle ABC} = AB + BC + CA$	2. Def <sup>n</sup> of perimeter
3. $P_{\triangle ADC} = AD + DC + CA$	3. Def <sup>n</sup> of perimeter
4. $CA = CA$	4. Reflexive Property of =
5. $P_{\triangle ABC} = AD + DC + CA$	5. Substitution Property of =
6. $P_{\triangle ABC} = P_{\triangle ADC}$	6. Transitive Property

12. In the figure,  $\overline{ZY} \cong \overline{XW}$ ,  $ZX = 5x + 17$ ,  $YW = 10 - 2x$  and  $YX = 3$ . Find  $ZY$  and  $XW$ .



$ZY = 9 \text{ units and } XW = 9 \text{ units}$

13. A flashlight beam is reflected off a mirror lying flat on the ground. Use the information given to find  $m\angle 2$ .

$$m\angle 1 + m\angle 2 + m\angle 3 = 180^\circ$$

$$m\angle 1 + m\angle 2 = 148^\circ$$

$$m\angle 1 = m\angle 3$$

$m\angle 2 = 116^\circ$

