

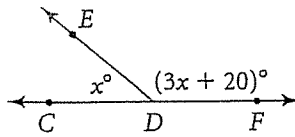
Geometry (H)  
Section 2.2 – Properties of Algebra  
Homework

Name: KEY

Algebra Fill in the reason that justifies each step.

1. Solve for x.

$$\begin{aligned} m\angle CDE + m\angle EDF &= 180 & \text{a. ?} \\ x + (3x + 20) &= 180 & \text{b. ?} \\ 4x + 20 &= 180 & \text{c. ?} \\ 4x &= 160 & \text{d. ?} \\ x &= 40 & \text{e. ?} \end{aligned}$$

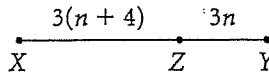


- A) Angle addition postulate
- B) ~~Addition~~ property
- C) ~~Addition~~ Prop. Substitution
- D) Subtraction Prop
- E) Division Prop

2. Solve for n.

Given:  $XY = 42$

$$\begin{aligned} XZ + ZY &= XY & \text{a. ?} \\ 3(n + 4) + 3n &= 42 & \text{b. ?} \\ 3n + 12 + 3n &= 42 & \text{c. ?} \\ 6n + 12 &= 42 & \text{d. ?} \\ 6n &= 30 & \text{e. ?} \\ n &= 5 & \text{f. ?} \end{aligned}$$



- A) SEGMENT ADDITION Postulate
- b) Substitution Prop
- c) Distributive Prop
- d) Substitution
- e) Subtraction Prop
- f) Division Prop

3. $\frac{1}{2}x - 5 = 10$	Given	4. $5(x + 3) = 4$	Given
$2(\frac{1}{2}x - 5) = 20$	a. ? Multiplication	$5x + 15 = -4$	a. ? Distributive
$x - 10 = 20$	b. ? Distribution	$5x = -19$	b. ? Subtraction
$x = 30$	c. ? Addition	$x = -\frac{19}{5}$	c. ? Division

Name the property that justifies each statement.

- 5.  $\angle Z \cong \angle Z$  Reflexive
- 6.  $2(3x + 5) = 6x + 10$  Distributive
- 7. If  $12x = 84$ , then  $x = 7$ . Division
- 8. If  $\overline{ST} \cong \overline{QR}$ , then  $\overline{QR} \cong \overline{ST}$ . Symmetric
- 9. If  $m\angle A = 15$ , then  $3m\angle A = 45$ . Multiplication
- 10.  $XY = XY$  Reflexive
- 11. If  $3x + 14 = 80$ , then  $3x = 66$ . Subtract
- 12. If  $KL = MN$ , then  $MN = KL$ . Symmetric
- 13. If  $2x + y = 5$  and  $x = y$ , then  $2x + x = 5$ . Substitution
- 14. If  $AB - BC = 12$ , then  $AB = 12 + BC$ . Addition
- 15. If  $\angle 1 \cong \angle 2$  and  $\angle 2 \cong \angle 3$ , then  $\angle 1 \cong \angle 3$ . Transitive

Use the given property to complete each statement.

- 16. Addition Property of Equality  
If  $2x - 5 = 10$ , then  $2x = ?$  15
- 17. Subtraction Property of Equality  
If  $5x + 6 = 21$ , then  $? = 15$ . 5X
- 18. Symmetric Property of Equality  
If  $AB = YU$ , then  $? = AB$ . YU = AB
- 19. Symmetric Property of Congruence  
If  $\angle H \cong \angle K$ , then  $? \cong \angle H$ .  $\angle K$
- 20. Reflexive Property of Congruence  
 $\angle PQR \cong ?$   $\angle PQR$
- 21. Distributive Property  
 $3(x - 1) = 3x - ?$  3
- 22. Substitution Property  
If  $LM = 7$  and  $EF + LM = NP$ , then  $? = NP$ .  $\rightarrow EF + 7 = NP$
- 23. Transitive Property of Congruence  
If  $\angle XYZ \cong \angle AOB$  and  $\angle AOB \cong \angle WYT$ , then  $? \cong \angle WYT$ .  $\angle XYZ \cong \angle WYT$

