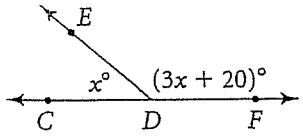
Geometry (H)
Section – Properties of Algebra
Homework

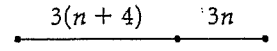
Name: KEY

Algebra Fill in the reason that justifies each step.



1. Solve for x.

$m\angle CDE + m\angle EDF = 180$ — a. ? — A) Def. of supplement. ∠S
$x + (3x + 20) = 180$ — b. ? — B) ~~Addition~~ Substitution property
$4x + 20 = 180$ — c. ? — C) Simplification
$4x = 160$ — d. ? — D) Subtraction Prop
$x = 40$ — e. ? — E) Division Prop



2. Solve for n.

Given: $XY = 42$

$XZ + ZY = XY$ — a. ? — A) SEGMENT ADDITION Postulate
$3(n + 4) + 3n = 42$ — b. ? — B) Substitution Prop
$3n + 12 + 3n = 42$ — c. ? — C) Distributive Prop
$6n + 12 = 42$ — d. ? — D) Simplification
$6n = 30$ — e. ? — E) Subtraction Prop
$n = 5$ — f. ? — F) Division Prop

3.

$\frac{1}{2}x - 5 = 10$ — Given
$2\left(\frac{1}{2}x - 5\right) = 20$ — a. ? Multiplication Prop
$x - 10 = 20$ — b. ? Distribution Prop
$x = 30$ — c. ? Addition Prop

4.

$5(x + 3) = 4$ — Given
$5x + 15 = -4$ — a. ? Distributive Prop
$5x = -19$ — b. ? Subtraction Prop
$x = -\frac{19}{5}$ — c. ? Division Prop

Name the property that justifies each statement.

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

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 ? YU = AB

19. Symmetric Property of Congruence
If $\angle H \cong \angle K$, then ? $\cong \angle H$. ∠K

20. Reflexive Property of Congruence
$\angle PQR \cong$? ∠PQR

21. Distributive Property
$3(x - 1) = 3x -$? 3

22. Substitution Property
If $LM = 7$ and $EF + LM = NP$, then ? $= NP$. → EF + 7 = NP

23. Transitive Property of Congruence
If $\angle XYZ \cong \angle AOB$ and $\angle AOB \cong \angle WYT$, then ? ∠XYZ ≅ ∠WYT