

Solving Equations with Justification

PROPERTIES USED IN ALGEBRAIC PROOFS	
Distributive	If $A(B+C) = D$, then $AB + AC = D$.
Addition	If $A = B$, then $A + x = B + x$. * Add to both sides of an equation.
Subtraction	If $A = B$, then $A - x = B - x$. * Subtract from both sides of an equation.
Multiplication	If $A = B$, then $Ax = Bx$. * Multiply both sides of an equation.
Division	If $A = B$, then $\frac{A}{x} = \frac{B}{x}$. * Divide both sides of an equation.


EXAMPLE 1:

Statements	Reasons
$4 \cdot \frac{x}{4} = 12 \cdot 4$	X
$x = 48$	Multiplication

EXAMPLE 2:

Statements	Reasons
$3x - 8 = 19$ $+8 \quad +8$	X
$\frac{3x}{3} = \frac{27}{3}$	Addition
$x = 9$	Division

EXAMPLE 3:

Statements	Reasons
$3(2x + 2) = 30$ 	X
$6x + 6 = 30$ $-6 \quad -6$	Distributive
$\frac{6x}{6} = \frac{24}{6}$	Subtraction
$x = 4$	Division