

Algebraic Proof Practice Worksheet

Name _____ Date _____

Identify the property of equality that justifies the missing step(s) to solve the given equation.

Equation	Steps
$3x + (x - 8) = 12$	Given
$4x - 8 = 12$	Simplify OR Combine Like Terms
$4x = 20$	(1)
$x = 5$	(2)

Equation	Steps
$6x + 14 = 12.8$	Given
$6x = -1.2$	(3)
$x = -0.2$	(4)

Equation	Steps
$-6 = 3x - (x + 4)$	Given
$-6 = 3x - x - 4$	(5)
$-6 = 2x - 4$	(6)
$-2 = 2x$	(7)
$-1 = x$	(8)
$x = -1$	(9)

Solve and explain each step.

Equation	Steps
$4 - 3x = 16 + x$	Given
$4 - 4x = 16$	(10)
(11)	(12)
(13)	(14)

Solve each equation. Show all your steps and write a justification for each step.

15. $\frac{1}{5}(a + 10) = -3$ _____

16. $3t + 6.5 = t - 1.3$ _____

$\frac{1}{5}a + 2 = -3$ _____

$2t + 6.5 = -1.3$ _____

$\frac{1}{5}a = -5$ _____

$2t = -7.8$ _____

$a = -25$ _____

$t = -3.9$ _____

Write a justification for each step.

17. Given: $M - N = 10$; $M = 2x - 5$; $N = x + 6$

$M - N = 10$ _____

$(2x - 5) - (x + 6) = 10$ _____

$2x - 5 - x - 6 = 10$ _____

$x - 11 = 10$ _____

$x = 21$ _____

18.

Equation	Steps
$3(x - 9) = 2(2x + 3)$	