Name _____

Intervention Lesson **K32**

Solve Multi-Step Equations

Use the Distributive Property to solve the equation $3(x - 7) = 2x + 4$ for x.

1.

$3(x - 7) = 2x + 4$ — Multiply both terms inside the parentheses by 3.

$(\_\_\_\_\_)(x) + (\_\_\_\_\_)(-7) = 2x + 4$

$\_\_\_\_\_x - \_\_\_\_\_ = 2x + 4$ — Combine like terms.

$\_\_\_\_\_x - \_\_\_\_\_ - \_\_\_\_\_ = 2x + 4 - \_\_\_\_\_$ — Subtract $2x$ from both sides.

$\_\_\_\_\_ - \_\_\_\_\_ = 4$

$\_\_\_\_\_ - \_\_\_\_\_ + \_\_\_\_\_ = 4 + \_\_\_\_\_$ — Add 21 to both sides.

$x = \_\_\_\_\_$

2. The solution is $x = \_\_\_\_\_$.

3. Check. Substitute the solution into the equation for x.

$3(x - 7) = 2x + 4$

$3(\_\_\_\_\_ - 7) = 2(\_\_\_\_\_) + 4$

$3(\_\_\_\_\_) = \_\_\_\_\_ + 4$

$\_\_\_\_\_ = \_\_\_\_\_$

Solve $2(x + 40 + 7x) = 4x + 20$ for x.

4.

$2(x + 40 + 7x) = 4x + 20$ — Combine like terms inside the parentheses.

$2(\_\_\_\_\_x + 40) = 4x + 20$

$2(\_\_\_\_\_x) + 2(\_\_\_\_\_) = 4x + 20$ — Use the Distributive Property.

$\_\_\_\_\_x + \_\_\_\_\_ = 4x + 20$

$16x + 80 - \_\_\_\_\_x = 4x + 20 - \_\_\_\_\_x$ — Subtract $4x$ from both sides.

$\_\_\_\_\_x + 80 - \_\_\_\_\_ = 20 - \_\_\_\_\_$ — Subtract 80 from both sides.

$\_\_\_\_\_x = \_\_\_\_\_$ — Divide both sides by 12.

$x = \_\_\_\_\_$

5. The solution is $x = \_\_\_\_\_$.

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Solve Multi-Step Equations (continued)

Solve each equation for x.

6. $-4x + 3x + 2 = 6$

7. $6 - x - 3x = -10$

8. $3 + 3x + 5 + 4x = 29$

9. $4x + 6 = x + 12$

10. $6x - 6 = 3(x + 2)$

11. $5x + 8 = x + 2x - 2$

12. $3(x - 6) + 9x = 30$

13. $4(2x + 3x + 8) = 72$

14. $-3(3x - 5) + 4x = 30$

15. $7x - 18 = 3x + 6$

16. $2x + 4 = x + 3(x + 2)$

17. $5x - 8 = x + 2(x - 2)$

18. $2(6x - 4) + 8 = 36$

19. $\frac{1}{2}(x - 8) = 14$

20. $3(1.5x - 4) = 6$

21. $\frac{1}{4}(x + 8) = x + 2$

22. $4.2(x - 2) = x + 2$

23. $2.3(2x + 4) = 0.6x + 10$

24. $5(3x + 2x + 10) = 150$

25. $12 + 4x - 2 = 3(x + 6) - x$

26. $16 + 8(x + 3) - 2x = 82$

27. $3(5x + 6x - 10) = 5(2x + 40)$

28. $4 + 7(x + 4) = 2(x + 4) + x$

29. $\frac{1}{2}(4x + 16 + 6x) = 17x + 2$

30. **Reasoning** What is the first step when solving the equation $8(6x - 4) + 10 = 74$?