Unit 27 Solving Multi-Step Equations

1. Solving multi-step equations

- A. Solving multi-step equations requires using more than one opposite operation to isolate the variable. The equation will stay in balance as long as each side changes by an equal amount.
- B. Solve 4x 5 = 35

To remove the subtraction of 5, add 5. This will isolate 4x.

To remove the multiplication by 4, divide by 4. This will isolate x. 4x - 5 = 35 4x - 5 + 5 = 35 + 5 4x = 40 4x/4 = 40/4 x = 10

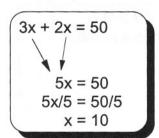
C. Solve $\frac{x}{6} + 4 = 7$

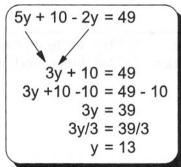
To remove the addition of 4, subtract 4. This will isolate x/6. $\frac{x}{6} + 4 = 7$ $\frac{x}{6} + 4 - 4 = 7 - 4$ $\frac{x}{6} = 3$ To remove the division by 6, multiply by 6. This will isolate x. $\frac{x}{6}(6) = 3(6)$ x = 18

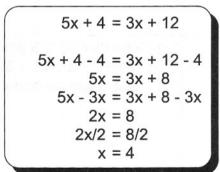
Check your answer by substituting the answer of 18 for x and performing the indicated operations. $\frac{x}{6} + 4 = 7$ $\frac{18}{6} + 4 = 7$ 3 + 4 = 7 7 = 7

2. Solving equations with like terms

- A. The constants and variables of an equation are called the terms of an equation.
- B. Combine (add or subtract) like terms on the same side of the equation.
- C. Use opposite operations to isolate the variable term and the constant term on opposite sides of the equation. The variable is usually put on the left side of the equation.
- D. Use an opposite operation to solve for the unknown variable.
- E. Sample problems







3. Solving equations with parentheses Example: 5(2x + 3) = 35

A. Multiplying both terms inside the parentheses by 5. _____ 5

5(2x + 3) = 35

B. Use subtraction to isolate the variable term.

10x + 15 = 35 10x + 15 - 15 = 35 - 15

C. Use division to isolate x.

0x + 15 - 15 = 35 - 19 10x = 20 10x/10 = 20/10x = 2