Algebra 10-12
Chapter 2 – Solving Equations

Name: *Key*

<u>**Section 2-2:**</u> Solving Two-Step Equations
      Objectives: 1) **To solve two-step equations in one variable.**

To solve a *two-step* equation, identify the operations and undo them using inverse operations. You can undo the operations in the *opposite* order of the order of operations.
      First: Undo the addition and subtraction
      Second: Undo the multiplication and division

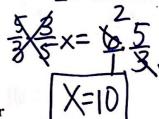**Problem 1 – Solving a Two-Step Equation**

a) $2x + 3 = 15$
$$\underline{-3 \quad -3}$$
$$\frac{2x}{2} = \frac{12}{2}$$
$$x = 6$$

b) $\frac{t}{2} - 3 = 5$
$$\underline{+3 \quad +3}$$
$$2 \cdot \frac{t}{2} = 8 \cdot 2$$
$$\boxed{t = 16}$$

Now you try...

a) $5x + 12 = -13$
$$\underline{-12 \quad -12}$$
$$\frac{5x}{5} = \frac{-25}{5}$$
$$\boxed{x = -5}$$

b) $\frac{3}{5}x + 22 = 28$
$$\underline{-22 \quad -22}$$
$$\frac{5}{3} \cdot \frac{3}{5}x = \frac{\cancel{6}^{\,2} \cdot 5}{\cancel{3}_{\,1}}$$
$$\boxed{x = 10}$$

Problem 2 – Solving With Two Terms in the Numerator

In these examples, the multiplication is done FIRST. Then, the addition and subtraction.

a) $3 \cdot \frac{x-7}{3} = -12 \cdot 3$
$$x - 7 = -36$$
$$\underline{+7 \qquad +7}$$
$$\boxed{x = -29}$$

b) $4 \cdot \frac{x-2}{4} = 6 \cdot 4$
$$x - 2 = 24$$
$$\boxed{x = 26}$$

Now you try...

c) $2 \cdot \frac{y-4}{2} = 10 \cdot 2$
$$y - 4 = 20$$
$$\boxed{y = 24}$$