

Name

Key

Directions

Make sure that you write your solutions using the format discussed and illustrated during class. You should show your scratch work, but do it off to the side and box it off. Do not put any part of your actual solution in a box or circle. Make sure that you double check to see if I want you to state the solution or the solution set.

1. Find the solution set to the equation $2(y + 4) = 4y + 5 - 2y + 3$.

$$2(y+4) = 4y + 5 - 2y + 3$$

$$2y + 8 = 2y + 8$$

$$2y + 8 - 2y = 2y + 8 - 2y$$

$$8 = 8 \quad \text{identity!}$$

The solution set is \mathbb{R} .

2. Find the solution to $100 = 4(w - 6) - (w - 1)$.

$$100 = 4(w - 6) - (w - 1)$$

$$100 = 4w - 24 - w + 1$$

$$100 = 3w - 23$$

$$100 + 23 = 3w - 23 + 23$$

$$123 = 3w$$

$$\frac{123}{3} = \frac{3w}{3}$$

$$41 = w$$

Check

$$100 = 4(41 - 6) - (41 - 1)?$$

$$100 = 4(35) - 40?$$

$$100 = 140 - 40 \quad \checkmark$$

The solution
is 41.

3. Find the solution set to the equation $\frac{y}{12} + \frac{1}{6} = \frac{y}{2} - \frac{1}{4}$.

$$\frac{y}{12} + \frac{1}{6} = \frac{y}{2} - \frac{1}{4}$$

$$12\left(\frac{y}{12} + \frac{1}{6}\right) = 12\left(\frac{y}{2} - \frac{1}{4}\right)$$

$$\frac{12y}{12} + \frac{12}{6} = \frac{12y}{2} - \frac{12}{4}$$

$$y + 2 = 6y - 3$$

$$y + 2 - y = 6y - 3 - y$$

$$2 = 5y - 3$$

$$2 + 3 = 5y - 3 + 3$$

$$5 = 5y$$

$$\frac{5}{5} = \frac{5y}{5}$$

$$1 = y$$

Check

$$\frac{1}{12} + \frac{1}{6} = \frac{1}{2} - \frac{1}{4} ?$$

$$\frac{1}{12} + \frac{2}{12} = \frac{2}{4} - \frac{1}{4} ?$$

$$\frac{3}{12} = \frac{1}{4} \checkmark$$

The solution set is $\{1\}$.