

# Pre Calculus 30S

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Chapter 7.1c

### Activate Prior Learning: 7.1c Solving Linear Equations

- To solve a linear equation containing rational numbers, multiply both sides of the equation by a common multiple of the denominators to eliminate the fractions. Then solve the equation by isolating the variable. The solution should then be verified.

To solve the equation  $\frac{2x}{3} + \frac{1}{4} = \frac{5}{6}$ :

$$\frac{2x}{3} + \frac{1}{4} = \frac{5}{6}$$

12 is a multiple of 3, 4, and 6,  
so multiply each term by 12.

$${}^4\cancel{12}\left(\frac{2x}{\cancel{3}}\right) + {}^3\cancel{12}\left(\frac{1}{\cancel{4}}\right) = {}^2\cancel{12}\left(\frac{5}{\cancel{6}}\right) \text{ Simplify.}$$

$$8x + 3 = 10 \quad \text{Isolate } x.$$

$$8x = 7 \quad \text{Divide both sides by 8.}$$

$$x = \frac{7}{8}$$

To verify the solution, substitute  $x = \frac{7}{8}$  in the equation  $\frac{2x}{3} + \frac{1}{4} = \frac{5}{6}$ .

$$\text{L.S.} = \frac{2x}{3} + \frac{1}{4} \quad \text{R.S.} = \frac{5}{6}$$

$$= \frac{\cancel{2}\left(\frac{7}{\cancel{8^4}}\right)}{3} + \frac{1}{4}$$

$$= \frac{7}{3} + \frac{1}{4}$$

$$= \frac{7}{12} + \frac{3}{12}$$

$$= \frac{10}{12}, \text{ or } \frac{5}{6}$$

Since the left side is equal to the right side, the solution is correct.

## Check Your Understanding

1. Solve each equation, then verify the solution.

a)  $\frac{4x}{5} - \frac{3}{4} = \frac{1}{10}$

b)  $\frac{2x}{3} + \frac{1}{2} = \frac{3}{5}$

c)  $\frac{x}{2} - \frac{5x}{6} = \frac{1}{9}$

d)  $\frac{x}{2} + \frac{3}{4} = \frac{7x}{8} - \frac{1}{4}$

e)  $2 - \frac{3x}{5} = \frac{1}{2} + \frac{7x}{10}$

f)  $\frac{3x}{4} + \frac{5}{6} = 5x - \frac{125}{3}$