

## SOLVING SIMPLE RATIONAL EQUATIONS

To solve an equation that includes rational expressions:

1. Multiply each term of the equation by the least common multiple of all the denominators (this is the LCD).
2. Simplify each side and solve for the variable as usual.
3. Check to be sure that the solution is meaningful (does not result in 0 in the denominator).

### Model Problems

Example 1:  $\frac{4}{5}x = 12$

$$\begin{aligned}(5)\frac{4}{5}x &= 12(5) \\ 4x &= 60 \\ \frac{4x}{4} &= \frac{60}{4} \\ x &= 15\end{aligned}$$

Example 2:  $\frac{x}{6} - 3 = 2$

$$\begin{aligned}\frac{x}{6} - 3 + 3 &= 2 + 3 \\ \frac{x}{6} &= 5 \\ (6)\frac{x}{6} &= 5(6) \\ x &= 30\end{aligned}$$

Example 3:  $\frac{t-3}{5} = \frac{t}{7} - 15$

$$\begin{aligned}35\left(\frac{t-3}{5}\right) &= (35)\left(\frac{t}{7} - 15\right) \\ 7(t-3) &= 5t - 525 \\ 7t - 21 &= 5t - 525 \\ 2t - 21 &= -525 \\ 2t &= -504 \\ t &= -252\end{aligned}$$

### Problems:

1.  $\frac{x-6}{5} = 2$

2.  $\frac{7}{4} - 2x = \frac{3}{4}$

3.  $\frac{x}{1.6} + 7.8 = 11$

4.  $\frac{4(x-2)}{3} = 12$

### Answers :

1.  $x = 16$

2.  $x = \frac{1}{2}$

3.  $x = 5.12$

4.  $x = 11$