

CHAPTER 4 Equations  
4.3 Solve Equations Involving Fractions  
Solving Equations Involving Fractions

**Example:**

a) Solve the equation  $\frac{1}{4}(x+3) = 2$ .

b) Solve the equation  $\frac{2(y+5)}{3} = \frac{y+12}{5}$ . Check your solution.

**Solution:**

a)  $\frac{1}{4}(x+3) = 2$   
 $4 \times \frac{1}{4}(x+3) = 4 \times 2$   
 $x+3 = 8$   
 $x+3-3 = 8-3$   
 $x = 5$

The solution is  $x = 5$ .

b)

$$\frac{2(y+5)}{3} = \frac{y+12}{5} \quad \text{The LCD is 15.}$$
$$15 \times \frac{2(y+5)}{3} = 15 \times \frac{y+12}{5}$$
$$\overset{5}{\cancel{15}} \times \frac{2(y+5)}{\underset{1}{\cancel{3}}} = \overset{3}{\cancel{15}} \times \frac{y+12}{\underset{1}{\cancel{5}}}$$
$$10(y+5) = 3(y+12)$$
$$10y+50 = 3y+36$$
$$10y+50-3y-50 = 3y+36-3y-50$$
$$7y = -14$$
$$\frac{7y}{7} = \frac{-14}{7}$$
$$y = -2$$

Check: Substitute  $y = -2$ .

$$\begin{aligned} \text{L.S.} &= \frac{2(y+5)}{3} & \text{R.S.} &= \frac{y+12}{5} \\ &= \frac{2(-2+5)}{3} & &= \frac{-2+12}{5} \\ &= \frac{2(3)}{3} & &= \frac{10}{5} \\ &= \frac{6}{3} & &= 2 \\ &= 2 & & \end{aligned}$$

$$\text{L.S.} = \text{R.S.}$$

Therefore,  $y = -2$  is the correct solution.

**Practice:**

1. Solve:  $\frac{3}{7}(x+4) = 3$ .

2. Solve and check:  $\frac{3}{4}(y-7) = \frac{2}{3}(y-8)$ .

**Answers:**

1.  $x = 3$       2.  $y = -1$