

5 Algebra with Fraction - 2: LC D

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Math 9 Ch 6
Level 5: Algebra with Fractions (Part 2: LCD)

Name: _____
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Learning Outcome 6C: I can solve algebra equations with fractions.

Getting Rid of the Fractions

1. Identify the Lowest Common Denominator

$$\frac{1}{3}x - \frac{1}{6} = \frac{1}{2} \quad \text{LCD} = \underline{6}$$

3, 6, 9, 12, ...
6, 12, 18, ...
2, 4, 6, 8,

2. Multiply every term on both sides by the LCD

$$6\left(\frac{1}{3}x\right) + 6\left(-\frac{1}{6}\right) = 6\left(\frac{1}{2}\right)$$

3. Cancel (divide) to simplify.

$$\frac{\cancel{6}^2}{\cancel{1}}\left(\frac{1}{\cancel{3}}x\right) + \frac{\cancel{6}}{\cancel{1}}\left[-\frac{1}{\cancel{6}}\right] = \frac{\cancel{6}^3}{\cancel{1}}\left[\frac{1}{\cancel{2}}\right]$$

$$\frac{2x}{1} - \frac{1}{1} = \frac{3}{1}$$

$$\frac{2x}{2} = \frac{4}{2}$$

⇒ You should now have an equation without fractions that you can solve.

$$\boxed{x = 2}$$

Example 1: Solve $\frac{y}{2} = \frac{y}{3} - 1$ LCD= 6

$$\begin{aligned} 6 \left(\frac{y}{2} \right) &= 6 \left(\frac{y}{3} \right) + 6(-1) \\ 3y &= 2y - 6 \\ \underline{-2y} & \quad \underline{-2y} \\ \boxed{y} &= -6 \end{aligned}$$

Example 2: Solve $\frac{2x}{3} - \frac{1}{6} = \frac{3x}{4}$ LCD= 12

$$\begin{aligned} 12 \left(\frac{2x}{3} \right) - 12 \left(\frac{1}{6} \right) &= 12 \left(\frac{3x}{4} \right) \\ 4(2x) - 2 &= 3(3x) \\ 8x - 2 &= 9x \\ \underline{-8x} & \quad \underline{-8x} \\ -2 &= x \\ \boxed{x} &= -2 \end{aligned}$$

Example 3: Solve a) $\frac{2x+5}{3} = \frac{1}{6} + \frac{x}{6}$ LCD= 6 b) $\frac{x+1}{3} + \frac{x-2}{7} = 1$ LCD=

$$\begin{aligned} 2(2x+5) &= 3+1+x \\ 4x+10 &= 3+x \\ \underline{-x} & \quad \underline{-x} \\ 3x+10 &= 3 \\ \underline{-10} & \quad \underline{-10} \\ \frac{3x}{3} &= \frac{-7}{3} \\ \boxed{x} &= \frac{-7}{3} \end{aligned}$$

try at least 6

Assignment: "What do you learn at Pirate School?" Worksheet, Extra practice: Algebra with Fractions Worksheet.