

## A Lesson in Finding the LCD

**LCD:** least common denominator

**Example:** Find the LCD for the following pairs of expressions.

$$1) \frac{5}{2}, \frac{7}{3}$$

LCD: 6

$$2) \frac{8}{3}, \frac{5}{6}$$

LCD: 6

$$3) \frac{5}{2}, \frac{9}{1}$$

LCD: 2

$$4) \frac{3}{x}, \frac{5}{x^2} \quad \cancel{x \cdot x} \cdot \frac{3}{x} = 3x$$

LCD:  $x^2$   $\cancel{\frac{5}{x^2} \cdot x^2} = 5$

$$5) \frac{2}{3x}, \frac{4}{6x}$$

LCD:  $6x$

$$6) \frac{1}{x-2}, \frac{1}{x-3}$$

LCD:  $(x-2)(x-3)$

We can use the LCD to get rid of fractions in equations by multiplying BOTH sides by the LCD.

**Examples:** Determine the LCD & multiply both sides by the LCD to get rid of the fractions. You don't actually have to solve.

$$1) \frac{2}{5} + \frac{3}{10} = \frac{x}{5} \quad \text{LCD: } 10$$

$$\left(\frac{2}{5} + \frac{3}{10}\right) = \left(\frac{x}{5}\right) \cdot 10$$

$$\frac{2}{5} \cdot \frac{2}{2} + \frac{3}{10} \cdot \frac{1}{1} = \frac{x}{5} \cdot \frac{2}{2}$$

$$4 + 3 = 2x$$

$$\frac{x \cdot x}{x}$$

$$2) \frac{4}{x} + \frac{1}{x^2} = 5 \quad \text{LCD: } x^2$$

$$\frac{4}{x} \cdot \frac{x}{x} + \frac{1}{x^2} \cdot \frac{1}{1} = 5(x^2)$$

$$4x + 1 = 5x^2$$

$$3) \frac{2}{x} + \frac{3}{1} = \frac{9}{x} \quad \text{LCD: } x$$

$$\frac{2}{x} \cdot \frac{x}{x} + 3 \cdot \frac{x}{x} = \frac{9}{x} \cdot \frac{x}{x}$$

$$2 + 3x = 9$$

$$4) \frac{x}{x-2} + \frac{4}{x-1} = 1 \quad \text{LCD: } (x-2)(x-1)$$

$$\frac{x}{x-2} \cdot \frac{(x-1)(x-1)}{(x-1)(x-1)} + \frac{4}{x-1} \cdot \frac{(x-2)(x-1)}{(x-1)(x-1)} = 1(x-2)(x-1)$$

$$x(x-1) + 4(x-2) = (x-2)(x-1)$$

$$5) \frac{2}{x+2} + 4 = \frac{5}{x+2} \quad \text{LCD: } x+2$$

$$\frac{2}{x+2} \cdot \frac{(x+2)}{(x+2)} + 4(x+2) = \frac{5}{x+2} \cdot \frac{(x+2)}{(x+2)} \quad 2 + 4(x+2) = 5$$

Having trouble coming up with the LCD? Ask yourself: What can I multiply by to get rid of the denominators?