

7. Solving Rational Equations

- A **rational** is any number that can be written as a fraction.
- How to deal with equations that have fractions either added or subtracted on one or both sides?

Examples: $2x + \frac{1}{2} = 7$ $-\frac{x}{3} - \frac{1}{5} = 12$

Common denominator

BLAST: Multiply Every term by the CD.

Let's try it!

$$a) \left(\frac{x}{2} + 3 = \frac{5}{3} \right) \cdot 6 \quad \text{CD: } 6$$

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

$$3x + 18 = 10$$

$$-18 \quad -18$$

$$\frac{3x}{3} = \frac{-8}{3}$$

$$\boxed{x = \frac{-8}{3}}$$

$$c) \frac{3x}{4} - \frac{x}{2} = 3 \quad \text{CD: } 4$$

$$4 \cdot \frac{3x}{4} - 4 \cdot \frac{x}{2} = 4 \cdot 3$$

$$3x - 2x = 12$$

$$\boxed{x = 12}$$

$$b) \left(\frac{9x}{2} + 3 = \frac{7}{4} \right) \cdot 4 \quad \text{CD: } 4$$

$$4 \cdot \frac{9x}{2} + 4 \cdot 3 = 4 \cdot \frac{7}{4}$$

$$18x + 12 = 7$$

$$-12 \quad -12$$

$$18x = -5$$

$$\boxed{x = \frac{-5}{18}}$$

$$d) \frac{2x}{3} = \frac{5}{8} \quad \text{CD: } 24$$

$$24 \cdot \frac{2x}{3} = 24 \cdot \frac{5}{8}$$

$$\frac{16x}{16} = \frac{15}{16}$$

$$\boxed{x = \frac{15}{16}}$$