

# 4 Algebra with Cross-Multiply

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Math 9 Ch 6  
Level 3: Algebra with Cross-Multiply

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

## Cross Multiplication

$$\frac{a}{b} = \frac{c}{d}$$
$$ad = bc$$

When an equation is of the form  $\frac{a}{b} = \frac{c}{d}$ , we can make it into an easier equation by cross-multiplying.

Example 1: Solve  $\frac{2}{x} = \frac{6}{30}$

$$6x = 2(30)$$
$$\frac{6x}{6} = \frac{60}{6}$$
$$x = 10$$

Example 2: Solve  $\frac{5}{4x} = \frac{10}{1}$

$$4x(10) = 5(1)$$
$$\frac{40x}{40} = \frac{5}{40 \div 5}$$
$$x = \frac{1}{8}$$

Example 3: Solve  $\frac{(x-2)}{10} = \frac{1}{5}$

$$5(x-2) = 10(1)$$
$$5x - 10 = 10$$
$$\frac{5x}{5} = \frac{20}{5}$$
$$x = 4$$

Example 4: Solve  $\frac{(m+7)}{(m-9)} = \frac{28}{12}$

$$28(m-9) = 12(m+7)$$
$$28m - 252 = 12m + 84$$
$$\frac{16m - 252}{+252} = \frac{84}{+252}$$
$$\frac{16m}{16} = \frac{336}{16}$$
$$m = 21$$

**Assignment:** Level 3 "Cryptic Quiz" Worksheet (cross-multiply)