

4 Algebra with Fractions - 1: Cross Multiply

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Math 9 Ch 6

Level 4: Algebra with Fractions (Part 1: Cross-Multiply)

Name: _____

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

$$\frac{1}{2} = \frac{4}{8}$$

$$\frac{2}{3} = \frac{4}{6}$$

Cross Multiplication

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

$$ad = bc$$

$$\frac{13}{2}x = \frac{3}{6} \cdot \frac{3}{2}$$

$$x = 9$$

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 $\frac{2}{x} = \frac{6}{30}$ $\frac{2}{x} = \frac{1}{5}$

$$6x = 2(30)$$

$$\frac{6x}{6} = \frac{60}{6}$$

$$x = 10$$

Example 2:

Solve $\frac{5}{4x} = \frac{10}{8}$

$$4x(10) = 5$$

$$\frac{40x}{40} = \frac{5}{40}$$

$$x = \frac{1}{8}$$

Example 3:

Solve $\frac{x-2}{10} = \frac{1}{5}$

$$5(x-2) = 10$$

$$5x - 10 = 10$$

$$\begin{array}{r} 5x - 10 = 10 \\ +10 \quad +10 \\ \hline 5x = 20 \\ \frac{5x}{5} = \frac{20}{5} \\ x = 4 \end{array}$$

Example 4:

Solve $\frac{m+7}{m-9} = \frac{28}{12}$

$$12(m+7) = 28(m-9)$$

$$12m + 84 = 28m - 252$$

$$\begin{array}{r} 12m + 84 = 28m - 252 \\ -12m \quad -12m \\ \hline 84 = 16m - 252 \\ +252 \quad +252 \\ \hline 336 = 16m \\ \frac{336}{16} = \frac{16m}{16} \\ m = 21 \end{array}$$

Assignment: "What do you call it when you cut up your credit cards?" Worksheet

7. $b = -3$