

6.7 Cross Multiplication

Chapter 6: Ratios, Rates, and Proportional Reasoning

Name: _____

Date: _____

Class/Period: _____

Problem 6.97 Directions:

Focus on the derivation, error analysis, and method choice.

Starting with $\frac{4}{7} = \frac{x}{18}$, multiply both sides by 126, simplify, and show how the resulting equation contains the two cross products. Then solve.

Problem 6.100 Directions:

Focus on the derivation, error analysis, and method choice.

Solve $\frac{9}{14} = \frac{x}{21}$, then verify the answer by showing that the two cross products are equal.

Problem 6.98 Directions:

Focus on the derivation, error analysis, and method choice.

Solve $\frac{5}{12} = \frac{x}{18}$ once by scaling and once by cross multiplication. Compare the arithmetic in the two methods.

Problem 6.101 Directions:

Focus on the derivation, error analysis, and method choice.

Before calculating, predict whether the solution of $\frac{7}{15} = \frac{x}{8}$ is a whole number, terminating decimal, or nonterminating decimal. Solve and justify the prediction.

Problem 6.99 Directions:

Focus on the derivation, error analysis, and method choice.

A student solves $\frac{3}{8} = \frac{x}{10}$ by writing $3x = 80$. Identify the incorrect pair of factors, write the correct cross-product equation, and solve.

Problem 6.102 Directions:

Focus on the derivation, error analysis, and method choice.

For $\frac{4}{7} = \frac{x}{28}$ and $\frac{11}{20} = \frac{y}{7}$, choose the more efficient method for each, solve, and explain the difference in your choices.

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Problem 6.103 Directions:

Use cross multiplication and report every answer in its simplest exact form.

Solve

$$\frac{6}{x} = \frac{4}{9}.$$

Problem 6.106 Directions:

Use cross multiplication and report every answer in its simplest exact form.

Solve

$$\frac{x}{4.8} = \frac{5}{12}.$$

Problem 6.104 Directions:

Use cross multiplication and report every answer in its simplest exact form.

Solve $\frac{7}{x+1} = \frac{5}{12}$, and verify that the original denominator is not zero.

Problem 6.107 Directions:

Use cross multiplication and report every answer in its simplest exact form.

Solve

$$\frac{x-2}{9} = \frac{5}{12}.$$

Problem 6.105 Directions:

Use cross multiplication and report every answer in its simplest exact form.

Solve

$$\frac{2.4}{3} = \frac{x}{7.5}.$$

Problem 6.108 Directions:

Use cross multiplication and report every answer in its simplest exact form.

Solve

$$\frac{x+0.8}{5} = \frac{7}{10}.$$

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Problem 6.109 Directions:

Use cross multiplication and report every answer in its simplest exact form.

Solve

$$\frac{3x - 1}{8} = \frac{7}{12}.$$

Give the answer as a simplified fraction and as a decimal if it terminates.

Problem 6.111 Directions:

Use cross multiplication and report every answer in its simplest exact form.

A student solves

$$\frac{7}{12} = \frac{x}{10}$$

and reports $x = 5.8$.

Find the exact answer and explain why the rounded response is not acceptable.

Problem 6.110 Directions:

Use cross multiplication and report every answer in its simplest exact form.

Solve

$$\frac{4.5}{x} = \frac{6}{11}.$$

Check your answer by substitution.

Problem 6.112 Directions:

Use cross multiplication and report every answer in its simplest exact form.

Create one proportion for which scaling is clearly the most efficient method and another proportion for which cross multiplication produces simpler arithmetic. Solve both proportions and explain your choices.

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Problem 6.113 Directions:

Use cross multiplication and report every answer in its simplest exact form.

For

$$\frac{x}{20} = \frac{n}{24},$$

find x in terms of n .

State what condition on the positive integer n makes x a whole number.

Problem 6.114 Directions:

Use cross multiplication and report every answer in its simplest exact form.

Solve

$$\frac{x-1}{x+2} = \frac{2}{5}.$$

Then verify that the original denominator is not zero.