Rule of Three

Educational Worksheet for Teachers and Parents

www.ruleofthreecalculator.com

Introduction

The Rule of Three is a mathematical method used to solve proportional relationships. This worksheet provides exercises and examples to help students understand and practice both direct and inverse proportions.

Part 1: Direct Proportion

Understanding Direct Proportion

When two quantities are directly proportional, they increase or decrease together in the same ratio.

Formula: If $\frac{a}{b} = \frac{c}{x}$, then $x = \frac{b \times c}{a}$

Example

If 2 apples cost $6, how much do 5 apples cost?

Solution:

- Let's identify our values:

  - $a = 2$ (apples)
  - $b = \$6$ (cost)
  - $c = 5$ (new number of apples)
  - $x =$ unknown cost

- Using the formula: $x = \frac{6 \times 5}{2} = \$15$

Practice Problems - Direct Proportion

Solve the following problems:

1. If 3 books cost $45, how much do 7 books cost?

2. A car travels 240 kilometers in 3 hours. How far will it travel in 5 hours at the same speed?

3. If 4 workers can complete a task in 8 hours, how long will it take 2 workers?

4. A recipe uses 2 cups of flour for 12 cookies. How many cups of flour are needed for 30 cookies?

Part 2: Inverse Proportion

Understanding Inverse Proportion

When two quantities are inversely proportional, as one increases, the other decreases in the same ratio.

Formula: If $a \times b = c \times x$, then $x = \frac{a \times b}{c}$

Example

If 6 workers complete a job in 4 days, how many days will it take 8 workers?

Solution:

- Let's identify our values:

  - $a = 6$ (workers)
  - $b = 4$ (days)
  - $c = 8$ (new number of workers)
  - $x =$ unknown days

- Using the formula: $x = \frac{6 \times 4}{8} = 3$ days

Practice Problems - Inverse Proportion

Solve the following problems:

1. If 12 workers can complete a project in 10 days, how many days will it take 15 workers?

2. A water tank fills in 8 hours with 3 taps. How long will it take with 6 taps?

3. If a car traveling at 60 km/h takes 4 hours to reach a destination, how long will it take at 80 km/h?

4. 8 machines can produce 400 items in a day. How many machines are needed to produce the same number of items in half a day?

Tips for Teachers and Parents

- Start with simple, real-world examples that students can relate to

- Use visual aids when possible (drawings, diagrams, or actual objects)

- Encourage students to:

  - Write down all known values
  - Identify whether it's direct or inverse proportion
  - Show their work step by step
  - Check if their answer makes logical sense

- Practice with both direct and inverse proportions to understand the difference

- Use the online calculator at www.ruleofthreecalculator.com to verify answers

Answer Key

Direct Proportion Answers:

1. $105

2. 400 kilometers

3. 16 hours

4. 5 cups

Inverse Proportion Answers:

1. 8 days

2. 4 hours

3. 3 hours

4. 16 machines