

NOTES: Identifying and Writing Proportions
Unit 5 - Lesson 2

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|---|---|
| <p>equivalent ratios</p> <p>Proportion</p> <p>Determine if the ratios are proportional</p> <p>(*Simplify both to see if they are equal)</p> | <p>Ratios that name the same comparison (mean the same thing)</p> <p>Ex: 1 to 2 2 to 4 3 to 6</p> <p>(Example using students in a 1 boy to 2 girls ratio --- start with 1 to 2 and then add another 1 to 2 to get 2 to 4 ratio)</p> <p>An equation starting that two ratios are equivalent</p> $\frac{a}{b} = \frac{c}{d} \quad \frac{1}{2} = \frac{2}{4}$ <p>a) $\frac{2}{7}$ and $\frac{6}{21}$</p> <p style="margin-left: 40px;">↓ ↓</p> <p style="margin-left: 40px;">$\frac{2}{7}$ $\frac{2}{7}$</p> <p>Yes, they are proportional</p> <p>b) $\frac{8}{24}$ and $\frac{6}{20}$</p> <p style="margin-left: 40px;">↓ ↓</p> <p style="margin-left: 40px;">$\frac{1}{3}$ $\frac{3}{10}$</p> <p>No, not proportional.</p> $\frac{8}{24} > \frac{4}{12} = \frac{2}{6} = \frac{1}{3}$ |
| <p>Find an equivalent ratio</p> <p>(*Multiply or divide the N & D by the same #)</p> | <p>a) $\frac{3}{5} = \frac{15}{25}$ $\frac{3 \times 5}{5 \times 5} = \frac{15}{25}$ $\frac{12}{20}$ $\frac{24}{40}$</p> <p>$\frac{3}{5} = \frac{15}{25}$ → Proportion</p> <p>b) $\frac{28}{16} \div \frac{4}{4} = \frac{7}{4}$</p> <p>$\frac{28}{16} = \frac{7}{4}$ → Proportion</p> |

Solving Proportions

You can solve for a missing part of a proportion if you know the other 3 parts.

$$\frac{3}{5} = \frac{x}{35}$$

(Handwritten: 3 x 7 = 21, 5 x 7 = 35)

Ex: $\frac{3}{5} = \frac{x}{35}$

(Draw butterfly wings around 3 and 35 and 5 and x) - "Cross products"

$$5(x) = 3(35)$$

$$\frac{5x}{5} = \frac{105}{5}$$

$$x = 21$$

(That was the algebraic way to set up an equation and solve for the missing piece).

You can also "multiply the 2 numbers that are together in the wing and then divide by the lonely number (the one that is by itself in the wing)"

$$\frac{6}{P} = \frac{18}{42}$$

(Handwritten: 6 x 7 = 42, 18 ÷ 3 = 6)

$$18P = 42(6)$$

$$\frac{18P}{18} = \frac{252}{18}$$

$$P = 14$$

$$\frac{12}{21} = \frac{x}{14}$$

(Handwritten: 12 x 7 = 84, 84 ÷ 21 = 4)

$$21x = 168$$

$$x = 8$$

(Handwritten: 168 ÷ 21 = 8)

