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Solve Proportional Relationships ~ L1-6

A **proportion** is an equation that states that two ratios are equivalent. To determine whether a pair of ratios forms a proportion, use cross products. You can also use cross products to solve proportions.

Example 1

Determine whether the pair of ratios $\frac{20}{24}$ and $\frac{12}{18}$ form a proportion.

Find the cross products.

$\frac{20}{24} \neq \frac{12}{18}$

$24 \cdot 12 \neq 20 \cdot 18$

$288 \neq 360$

Since the cross products are different, the ratios do not form a proportion.

Example 2

Solve $\frac{12}{30} = \frac{k}{70}$.

$\frac{12}{30} = \frac{K}{70}$

$30 \cdot K = 12 \cdot 70$

$\frac{30K}{30} = \frac{840}{30}$

$K = 28$

- ✓ Write the equation.
- ✓ Find the cross products.
- ✓ Multiply.
- ✓ Divide each side by the Coefficient.
- ✓ Simplify.

The solution is 28.

Example 3

At space camp, you can sit in a chair that simulates the force of gravity on the moon. A person who weighs 105 pounds on Earth would weigh 17.5 pounds on the moon. How much would a 60 pound dog weigh on the moon?

earth

$\frac{\text{earth}}{\text{moon}} \rightarrow \frac{105}{17.5} = \frac{60}{x}$

$105 \cdot x = 17.5 \cdot 60$

$\frac{105x}{105} = \frac{1,050}{105}$

$x = 10$

★ The dog would weigh 10 lbs on the moon.