Proportion.

When two ratios are the same, they create a proportion. A **proportion** shows that two ratios are equal.

In a proportion, there are two terms: the first and last terms are called **extremes,** while the second and third terms are called **means.**

Here's an example:

In the proportion, the cross products of equal ratios are equal.

If $\frac{a}{b} = \frac{c}{d}$, then ad = bc.

means

a : b = c : d

extreme

So, the product of the means is equal to the product of the **extremes**.

Example 1: Tell whether the ratios form a proportion.

Solution: $\frac{4}{6}$, $\frac{2}{3}$

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

$4 \cdot 3 = 6 \cdot 2$

$12 = 12$

Form cross products
Multiply
The two ratios are **proportion** since they are equal.

Example 2: Find the value of y.

$$4 : 8 = 5 : y$$

$$4 \,.\, y = 8 \,.\, 5$$

$$\frac{4y}{4} = \frac{40}{4}$$

y = 10

The value of **y is 10**

Checked:

$$4 : 8 = 5 : y$$

$$4 : 8 = 5 : 10$$

$$\frac{4}{8} \times \frac{5}{10}$$

$$40 = 40$$

The product of means equals the product of the extremes.