

Example: Comparing Proportions**Problem:**

Are the following proportions equivalent? X divided by y equals 10 divided by 6 and the quantity 10 plus 6 divided by 6 equals the quantity x plus y divided by y .

Solution:

Recall that we learned to cross multiply to compare proportions. If they generate equivalent equations, then they are equivalent.

Looking at the first proportion, cross multiply 6 times x and y times 10 .

This results in the equation $6x$ equals $10y$.

Looking at the second proportion, cross multiply y times the quantity 10 plus 6 and 6 times the quantity x plus y .

When we do this, we must be very careful to distribute the y to both the 10 and the 6 and distribute the 6 to both the x and the y .

This gives us $10y$ plus $6y$ equals $6x$ plus $6y$.

Simplify by subtracting $6y$ from both sides.

This result is $10y$ equals $6x$.

When we cross multiplied and simplified each proportion, we got equivalent equations, so these two proportions are equivalent.