

Reading from right to left the equality given by the distributive property, we have the expression

$$\frac{a}{b} \cdot \frac{c}{d} + \frac{a}{b} \cdot \frac{n}{m}$$

which can be written:

$$\frac{a}{b} \cdot \left(\frac{c}{d} + \frac{n}{m} \right)$$

We call this process extracting common factor since we have found a factor, that is a number that is multiplying, common to both addends of the expression.

Namely

$$\frac{a}{b} \cdot \frac{c}{d} + \frac{a}{b} \cdot \frac{n}{m} = \frac{a}{b} \cdot \left(\frac{c}{d} + \frac{n}{m} \right) = \frac{a}{b} \cdot \left(\frac{c}{d} + \frac{n}{m} \right)$$

which means that the sum of two products has been converted into the product of a number by a sum.

Let's see how to extract the common factor in the expression:

$$\frac{1}{5} \cdot \frac{2}{3} + \frac{1}{5} \cdot 4 - \frac{1}{5} \cdot \frac{1}{2}$$

The common factor in all three addends is the fraction $\frac{1}{5}$, so:

$$\begin{aligned} \frac{1}{5} \cdot \frac{2}{3} + \frac{1}{5} \cdot 4 - \frac{1}{5} \cdot \frac{1}{2} &= \frac{1}{5} \cdot \frac{1}{5} \cdot 4 + \frac{1}{5} \cdot \left(-\frac{1}{2} \right) = \\ &= \frac{1}{5} \cdot \left[\frac{2}{3} + 4 + \left(-\frac{1}{2} \right) \right] = \frac{1}{5} \cdot \left[\frac{2}{3} + 4 - \frac{1}{2} \right] \end{aligned}$$