

## The mass fraction of a substance in a mixture



Blood is a liquid connective tissue.

The body of an adult contains about 5-6 liters of blood and is 5-8% of body weight.

The main part of the blood consists of:

- liquid intercellular substance — plasma (55-60%);
- formed elements (blood cells) (40 - 45%): **erythrocytes, leukocytes and platelets.**

Blood plasma consists of 90% water, 10% consists of dissolved organic substances (proteins, fats, carbohydrates) and inorganic compounds (mineral salts). Some of these substances are nutrients carried by blood to various organs. **Salts in human blood are about 0.9%. Blood density  $\rho = 1.05 \text{ kg/dm}^3$ , blood viscosity  $\eta = 5 \cdot 10^{-3} \text{ Pa}\cdot\text{s}$ .**

*Using this information, solve the problem in 2 ways*

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*(mathematically and by chemical formulas), but first convert kilograms to grams, dm<sup>3</sup> to liters, and the mass fraction from percent to a fraction of a unit:*

*Determine the mass of salt in 5 liters of blood.*

**Solving steps:**

<b>1. Find the mass 5 blood`s liters</b>	
<b>The first method is mathematical</b>	<b>The second method is chemical</b>
1 liter of blood has a mass - ..... g	Find the mass 5 blood`s liters according to the formula $m = V\rho$ m(blood)= ..... × ..... = ..... g
..... liters of blood has a mass - x g	
X = ..... × ..... = ..... g	
<b>1. Find the mass of salt</b>	
<b>The first method is mathematical</b>	<b>The second method is chemical</b>
..... g of solution is - 100%	Find the mass of salt using the formula $m(\text{substances})=w(\text{substances})\cdot m(\text{solution})$ m(salt)= ..... · ..... = ..... g
X g of salt is - .....%	
..... : ..... = X : .....	
.....X = ..... · .....	
X = ..... : .....	
X = ..... g	
<b>Answer: ..... g</b>	