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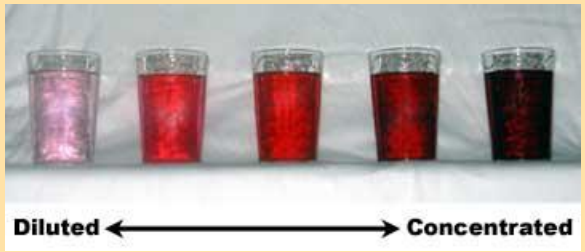
Solutions: a conceptual map



http://wpcontent.answers.com/wikipedia/commons/6/63/Dilution-concentration_simple_example.jpg

Solutions

quantitative measure

g solute/L
mol solute/L

volume

m solute
n solute

Concentration

calculation and use

operations with solutions

expresses

proportion of solute in solution $\frac{\text{solute}}{\text{solution}}$

mesured in

... g solute / 1 L solution

... mol solute / 1 L solution

... g solute / 100 g solution (%)

Molar mass for conversions

Density for conversions

matter added (m_2, n_2, V_2)

initial solution (m_1, n_1, V_1) → final solution (m_3, n_3, V_3)

mixture of two solutions

$m_3 = m_1 + m_2$
$n_3 = n_1 + n_2$
$V_3 = V_1 + V_2$

solute added

$m_3 = m_1 + m_2$
$n_3 = n_1 + n_2$
$V_3 = V_1$

dilution (water added)

$m_3 = m_1$
$n_3 = n_1$
$V_3 = V_1 + V_2$