2 Why the dozenal system?

First, we consider the physical and mathematical advantages of the dozenal system.

2.1 Dimensionless quantities that can be constructed of combinations of fundamental physical constants

To eliminate the influence of the unit system, let's try to list some of the dimensionless quantities that can be made up from combinations of fundamental physical constants. For putting these coincidences to use, the dozenal system is the only choice.

2.1.1 The fine structure constant and the elementary electrical quantity

The fine structure constant, α, a dimensionless quantity, was originally introduced for the purpose of explaining of the fine structure spectral emission lines.

$$\alpha = \frac{e^2}{4\pi\epsilon_0 c_0 \hbar} \tag{1}$$

By multiplying both sides of Eq. (1) by $\frac{c_0\hbar}{r^2}$, we get

$$\alpha\frac{c_0\hbar}{r^2} = \frac{1}{4\pi\epsilon_0}\frac{e^2}{r^2} \tag{2}$$

The right side of Eq. (2) expresses the Coulomb force acting between two elementary electrical quantities (i.e. the electrical charge of an electron) separated by a distance of r . The left side indicates that this force is proportional to $\frac{c_0\hbar}{r^2}$ by a factor of α. For this reason, α can be interpreted as a dimensionless quantity that represents the strength of electromagnetic interaction.

The value of the fine structure constant, α, is close to 12^{-2}.

$$\alpha = \frac{1}{137.03599} = 1.0508188 \times 12^{-2}_{(10)} \tag{3}$$

Therefore, the ratio of the elementary electrical quantity ,e, and "the dimensioned quantity of charge, which is derived from the speed of light in a vacuum, c_0, and the quantum of action, $\hbar$", is

$$\alpha^{1/2} = \frac{e}{\sqrt{4\pi\epsilon_0 c_0\hbar}} = 1.0250946 \times 12^{-1}_{(10)} \qquad (!) \tag{4}$$

2.1.2 The Rydberg constant and the Bohr radius

The deviation of the fine structure constant, α, from an integer power of 12 is nearly the same as the deviation of 4π from 12.

$$4\pi = 1.0471976 \times 12^{1}_{(10)} = \frac{1}{137.50987} \times 12^3 \tag{5}$$

The ratio of the Bohr radius, a_B, and "the dimensioned quantity of length, L, which is derived from the Rydberg constant, $R_\infty(= 1.0973732 \times 10^{7}_{(10)} \times 2\pi\text{rad/m})$",

$$L = 2\pi\text{rad}/R_\infty = 0.91126705 \times 10^{-7}_{(10)}\text{m} \tag{6}$$

is

$$\frac{a_B}{L} = \frac{\alpha}{4\pi}(\text{strict}) = 1.0034581 \times 12^{-3}_{(10)} \qquad (!!) \tag{7}$$