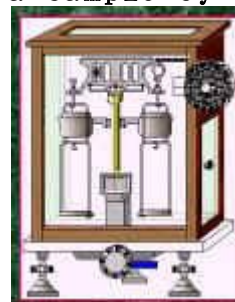


§2.4.1 Significant figures

The digits have definite meaning in the analytical chemistry.

I. Two kinds of digits exist in a process of experiment

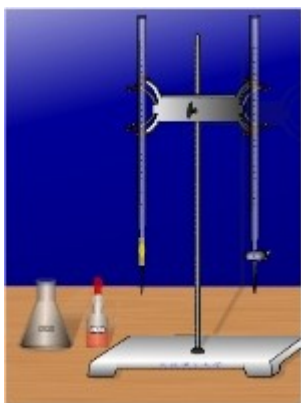
The method to determine the concentration of a sample by employing



volumetric instruments (buret, pipet, volumetric flask) and indicator. 1) number: Measurement times, multiple, coefficient, fraction 2)

The measured result or computed result: the number of digit is relative to the measurement accuracy. The recorded result is quantitative and can reflect the accuracy of the measurement correctly. Significant figures are those digits in a number that are known with certainty, plus the first uncertain digit.

II. The role of zero in the digits



1) Zeroes which appear between other digits; (10.04) 2)

Terminal zeroes are generally considered to be significant figures. If a terminal zero is not significant but is used only to fix the decimal point, it should be written using powers of ten. Such as $10,100 \rightarrow 1.01 \times 10^4$ 3) Initial zeroes are never significant but used for decimal point location. But, initial zeroes to the right of the decimal point in logs should be regarded as significant figures. (0.00518 or 0.0518), (0.079(log 1.20))

III. The number of significant figure doesn't change when the unit changes.

For example, $24.01 \text{ mL} = 24.01 \times 10^{-3} \text{ L}$

IV. The points we should pay attention to

- (1) Volumetric glassware: buret, pipet, volumetric flask, 4 significant figures<
- (2) Analytical balance (one of ten thousands) 4 significant figures (3)
- Concentration of the standard solution: 4 significant figures (4) pH 4.34, the significant figure is the digits to the right of the decimal point (5) $\lg X = 2.38$; 2 significant figures