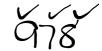
Significant Figures

Rules for Counting Sig. Fig.



- 2. Zeroes
- a) zeroes between non-zero digits are significant Ex. 507
- b) leading zeroes are not significant Ex. 0.00004
- c) Trailing zeroes to the right of a number are significan**if** the number has a decimal point. If the number ends in zero and has no decimal point, we assume that the trailing zeroes are not significant.

Ex. 480.0 (4 sig figs)

Ex. 4800 (2 sig figs)

How many significant figures in the following?

a) 38.4703 mL - 6 sig. figs b) 0.0052 g - 2 sig. figs c) 0.05700 s - 4 sig. figs d) 6.19 x 108 years - 3 sig. figs

Significant Figures and Calculations

1. Multiplication and Division

The result of the operation is reported as having as many significant figures as the measurement with the fewest significant figures

Ex.
$$(6.221 \text{ cm}) \times (5.2 \text{ cm}) = 32 \text{ cm}^2$$

2. Addition and Subtraction

The result of the operation is reported to the same number of decimal places as that of the term with the least number of decimal places

Measuring Matter

All forms of matter are normally measured by count, mass or volume.

Mole (mol) - SI unit for measuring the amount of a substance A mole of any substance contains 6.02×10^3 representative particles.

6.02 x 10²³ is referred to as Avagadro's number

Representative particles refers to the species present in a substance, usually atoms, molecules or formula units.

Fe O₂ NaCl

Ex. one mole of atoms = 6.02×10^3 atoms one mole of molecules = 6.02×10^3 molecules

Converting Number of Particles to Moles

Ex. How many moles are found in 1.60 x 10 18 atoms of silicon?

Converting Moles to Number of Particles

Ex. How many molecules are found in 3.40 mol of water?

Ex. How many atoms are found in 4.17 mol of propane (C_3H_8) ?

How many moles are in 2.14 x 10²⁴ molecules of NO₂?

How many atoms are in 8.08 moles of C₃H₈?

8.08 mol Catte x
$$\frac{6.02 \times 10^{23} \text{ molecules Catte}}{\text{Inpot Catte}} \times \frac{11 \text{ atoms}}{\text{Inpot Catte}} \times \frac{11 \text{ atoms}}{\text{Catte}} \times \frac{11$$

Homework

p. 291 #3,4

p. 292 #5,6