

- Lithium has two naturally occurring isotopes, ${}^6\text{Li}$ and ${}^7\text{Li}$, with isotopic masses of 6.0151 amu and 7.0160 amu respectively. The atomic mass of lithium is 6.9409 amu. What is percentage abundance of ${}^6\text{Li}$?
A. 92.5 C. 14.3
B. 85.7 D. 7.5
- Calculate the concentration by mass percentage (%w/w) of 14.9g of sodium chloride in 94.1g of water.
A. 6.3% C. 15.8%
B. 13.7% D. 86.3%
- The composition of oxalic acid is 2.27 % H, 26.65 % carbon and 71.08 % oxygen. The molar mass of oxalic acid is 90 g/mol. What is its molecular formula?
A. CHO C. $\text{C}_2\text{H}_2\text{O}_4$
B. $\text{C}_2\text{H}_4\text{O}_2$ D. CH_3O
- Calculate the mole fraction of benzene (C_6H_6) in a solution of 46.8 g benzene and 36.8 g of toluene (C_7H_8)
A. 0.4 C. 0.7
B. 0.6 D. 0.5
- Balance the following redox reaction in acidic solution.
 $\text{ClO}_4^-(\text{aq}) + \text{SO}_3^{2-} \rightarrow \text{SO}_4^{2-}(\text{aq}) + \text{Cl}^-(\text{aq})$
The sum of coefficients is
A. 5 C. 12
B. 6 D. 10
- A sulphuric acid solution contains 66.0% H_2SO_4 by weight and has a density of 1.58 g/mL. How many moles of the acid are present in 1.00 L of the solution?
A. 10.64 C. 9.05
B. 1.02 D. 0.67
- A 25.0 mL potassium oxalate, $\text{K}_2\text{C}_2\text{O}_4$ solution is titrated with 50.0 mL of potassium permanganate, KMnO_4 with concentration 0.42 M solution in acidic medium according to the following equation:
$$2\text{MnO}_4^- + 5\text{C}_2\text{O}_4^{2-} + 16\text{H}^+ \rightarrow 2\text{Mn}^{2+} + 10\text{CO}_2 + 8\text{H}_2\text{O}$$

Calculate the concentration of $\text{K}_2\text{C}_2\text{O}_4$ solution used in the titration
A. 1.3 M C. 2.1 M
B. 1.6 M D. 2.5 M
- Calculate the mole fraction of CuCl_2 in a solution by dissolving 0.30 mol CuCl_2 in 100 g of water.
A. 0.50 C. 1.5
B. 0.080 D. 0.051
- How much energy would be released as an electron of a hydrogen atom moves from $n = 4$ to $n = 3$?
A. $1.53 \times 10^{-17} \text{ J}$
B. $1.74 \times 10^{-19} \text{ J}$
C. $2.18 \times 10^{-18} \text{ J}$
D. $1.06 \times 10^{-19} \text{ J}$
- According to the Bohr model for hydrogen atom, the energy required to excite an electron from $n = 2$ to $n = 3$ is _____ the energy required to excite an electron from $n = 1$ to $n = 2$.
A. equal to
B. less than
C. greater than
D. greater than or equal to
- Select the valence electronic configuration that violates the Hund's Rule for an atom in its ground state.

2s
2p

A. 

B. 



