CHAPTER 3: CHEMICAL FORMULAE AND EQUATIONS

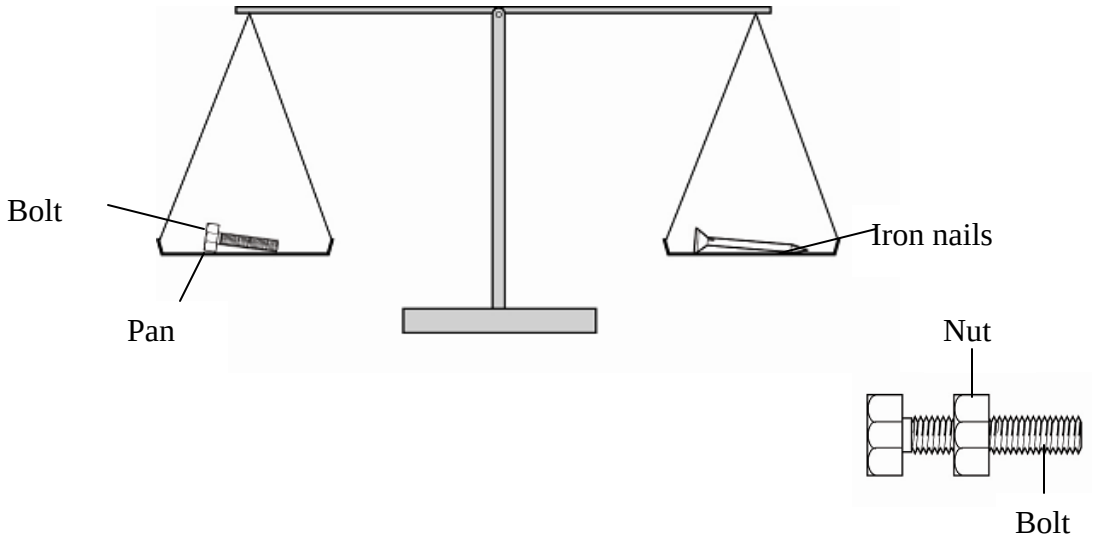
Extra Activity

Aim: To investigate the concepts of relative atomic mass and relative molecular mass using analogy

Materials: 5 cm bolts, nuts and iron nails

Apparatus: A balance with two pans

Procedure:



1. A bolt is placed on one of the pans of a balance.
2. Add enough iron nails on the other pan in order to balance the two pans.
3. The number of iron nails used in order to balance the bolt is counted and recorded.
4. Steps 1 to 3 are repeated using a nut, a bolt with nut and a bolt with two nuts to replace a bolt.

Results:

Object	Number of iron nails used in order to balance the object	Relative mass of the object
Bolt	10	10
Nut	5	5
Bolt with a nut	7	7
Bolt with two nuts	25	25

Discussion:

1. In this activity, we assume that
   (a) the iron nails, bolts and nuts represent three elements
   (b) Each iron nail has a mass of 1 unit and is used as a standard for the comparison of mass
2. From the table, the mass of one bolt is equivalent to the mass of 10 iron nails. Therefore, the mass of one bolt is 10 units.

$$\text{Relative atomic mass of bolt} = \frac{\text{mass of one bolt}}{\text{mass of one iron nail}} = \frac{\text{10 units}}{\text{1 unit}} = 10$$

Conclusion:

Relative atomic mass or relative molecular mass can be determined by comparing the mass of an atom to the mass of another atom.