**The Periodic Table**





**Relative Formula Mass**

A relative formula mass (or Mr for short) tells us the total mass of all the particles found in each formula of a substance. To be able to calculate the Mr we need to know the mass of the individual particles, which is called the relative atomic mass (or Ar for short). The Ar of each atom can be found using the periodic table. Each element has got two numbers and the Ar is the top number.



**Example**

19 F

**This shows that the Ar of fluorine (F) is 19**

**How to calculate the Mr of a substance**

Work out how many particles there are of each element and then multiply by the Ar of that element.

**Examples**

1. Sodium chloride has the formula NaCl. This tells us there is one sodium (Na) particle and one chlorine (Cl) particle.

23Na and 35.5Cl are the Ar values

 Na x 1 = 23 x 1 = 23

Cl x 1 = 35.5 x 1 = 35.5

**Mr of NaCl = 23 + 35.5 = 58.5**

1. Calcium chloride has a formula CaCl2. This tells us there is one calcium (Ca) particle and two chlorine (Cl) particles.



40Ca and 35.5Cl are the Ar values

Ca x 1 = 40 x 1 = 40

Cl x 2 = 35.5 x 2 = 71

**Mr of CaCl2 = 40 + 71 = 111**

1. Calcium nitrate has a formula Ca(NO3)2. This tells us there is one calcium (Ca) particle, two nitrogen (N) particles and six oxygen (O) particles.



40Ca, 14N and 16O are the Ar values

Ca x 1 = 40 x 1 = 40

N x 2 = 14 x 2 = 28

O x 6 = 16 x 6 = 96

**Mr of Ca(NO3)2 = 40 + 28 + 96 = 164**

**Task**

Calculate the Mr of the following compounds.

a) NaF f) Ca(OH)2 k) Zn(NO3)2



b) MgBr2 g) Fe2(SO4)3 l) Al2(SO4)3

c) K2O h) Al2(CO3)3 m) (NH4)2CO3

d) Fe2O3 i) (NH4)2SO4 n) C6H3(NO2)3

e) H2SO4 j) Cu(NO3)2 o) C6H4(NH2)N2C6H3(OH)2

**Challenge Task**

In the following formulae there is a mystery particle, X. By finding the relative atomic mass of X, identify the name and symbol of X.



1. XO (Mr XO = 25)
2. XO2 (Mr XO2 = 64)
3. X2O3 (Mr X2O3 = 160)

O = oxygen for each example