Name : _____          Date : _____

# Calculating Average Atomic Mass Worksheet

Answer the following questions.

1) Magnesium (Mg) has three isotopes - $^{24}$Mg (abundance 78.70%), $^{25}$Mg (abundance 10.13%), and $^{26}$Mg (abundance 11.17%). Calculate the average atomic mass of Mg.

2) Calculate the average atomic mass of iridium (Ir) which has two naturally occurring isotopes - $^{191}$Ir (abundance 37.58%) and $^{193}$Ir (abundance 62.42%).

3) Calculate the average atomic mass of sulfur (S) if 95% of all sulfur atoms have a mass of 31.972 amu, 4.22% of all sulfur atoms have a mass of 33.967 amu, and 0.76% of all sulfur atoms have a mass of 32.971 amu.

4) Calculate the average atomic mass of bromine (Br). One isotope of bromine has an atomic mass of 78.92 amu and a relative abundance of 50.69%. The other major isotope of bromine has an atomic mass of 80.92 amu and a relative abundance of 49.31%.

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## Answers

1) Magnesium (Mg) has three isotopes - $^{24}$Mg (abundance 78.70%), $^{25}$Mg (abundance 10.13%), and $^{26}$Mg (abundance 11.17%). Calculate the average atomic mass of Mg.

   Average atomic mass of Mg = (24 x 0.7870) + (25 x 0.1013) + (26 x 0.1117)
   = 18.888 + 2.5325 + 2.9042 = 24.3247 amu

2) Calculate the average atomic mass of iridium (Ir) which has two naturally occurring isotopes - $^{191}$Ir (abundance 37.58%) and $^{193}$Ir (abundance 62.42%).

   Average atomic mass of Ir = (191 x 0.3758) + (193 x 0.6242) = 71.7778 + 120.4706
   = 192.2484 amu

3) Calculate the average atomic mass of sulfur (S) if 95% of all sulfur atoms have a mass of 31.972 amu, 4.22% of all sulfur atoms have a mass of 33.967 amu, and 0.76% of all sulfur atoms have a mass of 32.971 amu.

   Average atomic mass of S = (31.972 x 0.95) + (33.967 x 0.0422) + (32.971 x 0.0076)
   = 30.3734 + 1.4334074 + 0.2505796 = 32.057387 amu

4) Calculate the average atomic mass of bromine (Br). One isotope of bromine has an atomic mass of 78.92 amu and a relative abundance of 50.69%. The other major isotope of bromine has an atomic mass of 80.92 amu and a relative abundance of 49.31%.

   Average atomic mass of Br = (80.92 x 0.4931) + (78.92 x 0.5069) = 39.901652 + 40.004548
   = 79.9062 amu