# Average Atomic Mass Worksheet

Answer the following questions.

1. The element copper has naturally occurring isotopes with mass numbers of 63 and 65. The relative abundance and atomic masses are 69.2% for a mass of 62.93 amu and 30.8% for a mass of 64.93 amu. Calculate the average atomic mass of copper.

2. There are three isotopes of silicon. They have mass numbers of 28, 29, and 30. The average atomic mass of silicon is 28.086 amu. What does this say about the relative abundance of the three isotopes?

3. Calculate the average atomic mass of bromine. 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%.

4. Calculate the average atomic mass of sulfur if 95.00% of all sulfur atoms have a mass of 31.972 amu, 0.76% have a mass of 32.971 amu, and 4.22% have a mass of 33.967 amu.

5. Naturally occurring chlorine that is put in pools is 75.53 percent $^{35}Cl$ (mass = 34.969 amu) and 24.47%, $^{37}Cl$ (mass = 36.966 amu). Calculate the average atomic mass.

# Average Atomic Mass Worksheet

Answers

1. The element copper has naturally occurring isotopes with mass numbers of 63 and 65. The relative abundance and atomic masses are 69.2% for a mass of 62.93 amu and 30.8% for a mass of 64.93 amu. Calculate the average atomic mass of copper.

   The average atomic mass of copper
   = (63 x 0.692) + (65 x 0.308)
   = 43.596 + 20.02
   = 63.616 amu

2. There are three isotopes of silicon. They have mass numbers of 28, 29, and 30. The average atomic mass of silicon is 28.086 amu. What does this say about the relative abundance of the three isotopes?

   Of the three isotopes, the one with a mass of 28 is the most abundant. This is because the average atomic mass of silicon is closest to its mass number.

3. Calculate the average atomic mass of bromine. 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%.

   The average atomic mass of bromine
   = (79 x 0.5069) + (81 x 0.4931)
   = 40.045 + 39.941
   = 79.986

4. Calculate the average atomic mass of sulfur if 95.00% of all sulfur atoms have a mass of 31.972 amu, 0.76% have a mass of 32.971 amu, and 4.22% have a mass of 33.967 amu.

   The average atomic mass of sulfur
   = (32 x 0.95) + (33 x 0.0076) + (34 x 0.0422)
   = 30.4 + 0.2508 + 1.4348
   = 32.0856

5. Naturally occurring chlorine that is put in pools is 75.53 percent $^{35}$Cl (mass = 34.969 amu) and 24.47%, $^{37}$Cl (mass = 36.966 amu). Calculate the average atomic mass.

   The average atomic mass of chlorine
   = (35 x 0.7553) + (37 x 0.2447)
   = 26.44 + 9.054
   = 35.494