

Name : \_\_\_\_\_ Date : \_\_\_\_\_

# Average Atomic Mass Worksheet

Answer the following questions.

1. Look at the data presented below about sulfur

Sulfur-32 → 95.0% abundance

Sulfur-33 → 0.76% abundance

Sulfur-34 → 4.22% abundance

Sulfur-36 → 0.014% abundance

Using the information provided, determine the average atomic mass of sulfur.

2. An element has three isotopes, two of which are as follows

Isotope 1 → 42 amu (75% abundance)

Isotope 2 → 44 amu (10% abundance)

If the 3rd isotope has a mass of 45 amu, determine the average atomic mass of this element.

3. Chlorine has two isotopes, the information about which is presented below

(Isotope 1) Mass → 35 amu with an abundance of 75.53%

(Isotope 2) Mass → 37 amu with an abundance of 24.47%

Based on this data, what is the average atomic mass of chlorine?

# Average Atomic Mass Worksheet

## Answers

1. Look at the data presented below about sulfur

Sulfur-32 → 95.0% abundance

Sulfur-33 → 0.76% abundance

Sulfur-34 → 4.22% abundance

Sulfur-36 → 0.014% abundance

Using the information provided, determine the average atomic mass of sulfur.

The average atomic mass of sulfur is =  $(32 \times 0.95) + (33 \times 0.0076) + (34 \times 0.0422) + (36 \times 0.00014) = 30.4 + 0.2508 + 1.435 + 0.00504 = 32.09$  amu

2. An element has three isotopes, two of which are as follows

Isotope 1 → 42 amu (75% abundance)

Isotope 2 → 44 amu (10% abundance)

If the 3rd isotope has a mass of 45 amu, determine the average atomic mass of this element.

The 3rd isotope has an abundance of 15%  $\{100 - (75 + 10)\}$ . So the average atomic mass of this element is =  $(42 \times 0.75) + (44 \times 0.1) + (45 \times 0.15) = 31.5 + 4.4 + 6.75 = 42.65$  amu.

3. Chlorine has two isotopes, the information about which is presented below

(Isotope 1) Mass → 35 amu with an abundance of 75.53%

(Isotope 2) Mass → 37 amu with an abundance of 24.47%

Based on this data, what is the average atomic mass of chlorine?

The average atomic mass of chlorine =  $(35 \times 0.7573) + (37 \times 0.2447) = 26.5 + 9.05 = 35.5$ .