

## Applying Scientific Methods

Data Table I is a chemist's record of data about six isotopes.

**Data Table I**

Isotope	Number of Protons	Number of Electrons	Number of Neutrons	Mass (amu)
Isotope 1	24	24	26	49.946
Isotope 2	24	24	28	51.941
Isotope 3	26	26	30	55.999
Isotope 4	24	24	29	52.941
Isotope 5	24	24	30	53.939
Isotope 6	26	26	31	56.969

1. Which of the isotopes listed are the same element? Explain your reasoning.

---

---

---

---

2. Explain why the mass of each isotope is not a whole number.

---

---

---

---

---

Upon further research, the chemist determined the percent abundance of each isotope. These are listed in Data Table II below.

**Data Table II**

Isotope	Percent Abundance
Isotope 1	4.35
Isotope 2	83.80
Isotope 3	81.32
Isotope 4	9.50
Isotope 5	2.35
Isotope 6	18.68

**Applying Scientific Methods, *continued***

3. Assume that Isotope 1 is an isotope of element *X* and that all the isotopes of *X* are listed in Data Table II. Determine the atomic mass of *X*. Show all your work.

4. Which isotope of *X* is most abundant? Least abundant?

---



---

5. Which isotope of *X* has the greatest effect on the atomic mass of *X*? Explain why.

---



---



---



---

6. If the chemist later discovered the following isotope, what could you conclude?

Isotope	Number of Protons	Number of Electrons	Number of Neutrons	Mass (amu)
Isotope 7	24	24	31	54.939

---



---



---



---



---



---



---



---