

9th Grade Atomic Structure Worksheet

If an element has an atomic mass twice its atomic number and its L-shell contains six electrons, determine:

- Its valency.
- The element's identity.

An atom has 20 neutrons and a mass number of 39. What is its atomic number?

Identify which pair of elements has the same number of electrons in the outermost shell:

- Na, Mg
- Zn, Fe
- Pn, Sb
- K, Rb
- H, Li
- Be, Mg
- F, Cl
- Ne, Ar

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Worksheet Answer key

If an element has an atomic mass twice its atomic number and its L-shell contains six electrons, determine:

- Its valency.
- The element's identity.
- **Element's identity: The element with six electrons in the L-shell is sulfur (S), which typically has 16 electrons. If its atomic mass is twice its atomic number, the atomic number must be 16, which confirms sulfur (as $16 \times 2 = 32$, close to sulfur's average atomic mass of approximately 32 amu).**
- **Valency: Sulfur commonly exhibits a valency of 2, especially in compounds like SO_2 or H_2S .**

An atom has 20 neutrons and a mass number of 39. What is its atomic number?

- **Mass number = Protons + Neutrons**
- **$39 = \text{Protons} + 20$**
- **Protons = 19**
- **The atomic number is 19, which corresponds to potassium (K)**

Identify which pair of elements has the same number of electrons in the outermost shell:

• Na, Mg

• H, Li

• Zn, Fe

• Be, Mg

• Pn, Sb

• F, Cl

• K, Rb

• Ne, Ar