**🎯 Activity 2: 🧪 Symbol Builder – “Atomic Code Maker”**

🎙️ **Activity Introduction** 🎤  
“Scientists use a special code to describe atoms. Each atomic symbol includes the element name, atomic number, and mass number — and they must be placed correctly. In this activity, you will build atomic symbols by dragging each number and element into the right spot. Let us crack the atomic code!”

👨‍💻 **Developer Guide**

* Build a draggable grid with three zones:
  + Top-left (superscript) → Mass Number
  + Centre → Element Symbol
  + Bottom-left (subscript) → Atomic Number
* Use snapping effect and real-time answer validation.
* Show “Check Symbol” button per attempt.
* Include reset button and visual reference panel.

📜 **Learner Instructions (On Screen)**

1. Drag the correct mass number to the top-left position (superscript).
2. Drag the correct atomic number to the bottom-left position (subscript).
3. Drag the correct element symbol to the centre.
4. Check your answer to get feedback.

💡 **Hint**

* Mass Number = Protons + Neutrons → goes top-left.
* Atomic Number = Number of Protons → goes bottom-left.
* Element Symbol → goes in the centre.
* Example format:

CopyEdit

  ²³

 Na

  ₁₁

📊 **Activity Content**

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Mass Number** | **Atomic Number** | **Element** |
| ²³Na₁₁ | 23 | 11 | Na |
| ³⁵Cl₁₇ | 35 | 17 | Cl |
| ¹⁴C₆ | 14 | 6 | C |
| ¹²Mg₁₂ | 12 | 12 | Mg |
| ⁴⁰Ca₂₀ | 40 | 20 | Ca |

💬 **Facilitative Feedback**

**²³Na₁₁ (Sodium)**

* 🔼 Mass Number ²³: ✅ Correct! Mass number is written as a superscript.
* 🔽 Atomic Number ₁₁: ✅ Correct! Atomic number is always in subscript.
* 🔤 Na: ✅ Perfect! Na is the symbol for Sodium.
* ❌ If misplaced: Mass number must be on top, atomic number at the bottom.

**³⁵Cl₁₇ (Chlorine)**

* 🔼 ³⁵: ✅ Mass number is 35 for Chlorine.
* 🔽 ₁₇: ✅ Atomic number of Chlorine is 17.
* 🔤 Cl: ✅ Cl is the correct symbol for Chlorine.
* ❌ Incorrect placement: Cl must stay in the centre.

**¹⁴C₆ (Carbon)**

* 🔼 ¹⁴: ✅ Mass number = 14.
* 🔽 ₆: ✅ Atomic number for Carbon is 6.
* 🔤 C: ✅ C is the symbol for Carbon.
* ❌ Wrong number/placement: Mass is always top-left.

**¹²Mg₁₂ (Magnesium)**

* ✅ Well done! Magnesium has 12 protons and a mass number of 12.
* ❌ Incorrect number: Check the periodic table.

**⁴⁰Ca₂₀ (Calcium)**

* ✅ Great! Atomic number is 20, mass number 40.
* ❌ Atomic number error: Must match the number of protons.

🎙️ **Activity Conclusion** 🎤  
“You have successfully created correct atomic symbols. The mass number tells us how heavy the atom is, and the atomic number tells us how many protons it has. This skill helps scientists identify isotopes and compare elements. Excellent coding!”