**🎯 Activity 1: 🔢 Sequence Builder – “Shell Fill Game”**

**🎤 Activity Introduction**

“Electrons do not just float around randomly—they follow a special rule! Just like seats in a bus or riders in an elevator, electrons fill energy levels in order. In this game, drag electrons to the correct shell. Start from the first shell and move outward. Ready to fill the atom?”

**👨‍💻 Developer Guide**

* Display 3 concentric shells with drop zones.
* Provide draggable electrons as ⚪ icons.
* On drop:
  + Lock electron into the shell.
  + Count electrons per shell.
* When all electrons are placed, validate full configuration.
* Trigger feedback popup based on accuracy.

**📋 Learner Instructions (On-Screen)**

Drag each ⚪ electron to its correct shell.

* The first shell holds a maximum of 2 electrons.
* The second shell holds up to 8 electrons.
* The third shell holds up to 8 electrons.

Drop electrons one at a time into each ring. Watch out for the limits!

**💡 Hint**

Shell Filling Rules:

* 1st shell → Max 2 electrons.
* 2nd shell → Max 8 electrons.
* 3rd shell → Max 8 electrons.

Examples:

* Lithium (3 electrons): 2 in 1st shell, 1 in 2nd → 2.1
* Fluorine (9 electrons): 2 in 1st, 7 in 2nd → 2.7
* Argon (18 electrons): 2 in 1st, 8 in 2nd, 8 in 3rd → 2.8.8

**📊 Activity Content**

|  |  |  |
| --- | --- | --- |
| **Element** | **Atomic Number** | **Correct Configuration** |
| Hydrogen | 1 | 1 |
| Helium | 2 | 2 |
| Lithium | 3 | 2.1 |
| Beryllium | 4 | 2.2 |
| Fluorine | 9 | 2.7 |
| Neon | 10 | 2.8 |
| Magnesium | 12 | 2.8.2 |
| Sulfur | 16 | 2.8.6 |
| Argon | 18 | 2.8.8 |

**💬 Facilitative Feedback**

**If Dropping Into Shell 1:**

* ✅ 1st or 2nd electron: First shell is filling correctly. It holds a maximum of 2 electrons.
* ❌ 3rd or more: First shell is full. Move to the next energy level.

**If Dropping Into Shell 2:**

* ✅ Up to 8th electron: Second shell is filling properly. It can hold up to 8 electrons.
* ❌ 9th or more: Second shell is full. Use the third shell next.

**If Dropping Into Shell 3:**

* ✅ Up to 8 electrons: Third shell is now filling. Keep going until you use all electrons.
* ❌ Any drop before shell 1 or 2 are full: You cannot skip a shell. Fill inner shells first.

**🎤 Activity Conclusion**

“You have placed all the electrons in the correct shells. Electrons always fill the closest shells first, just like people filling seats in the front of a bus. You are now able to build electron configurations for real elements!”