**🎯 Activity 2: 🧠 Diagram Detective – “MCQ Challenge”**

**📘 Objective:**  
Use visual representations of atoms to determine electron arrangement or atomic identity.

**🎙️ Activity Introduction**   
"Put on your science detective hat! Each atom diagram shows how electrons are arranged in shells. Look closely, count carefully, and match it with the right answer."

**👨‍💻 Developer Guide Instructions**

* Display clean atomic diagrams (2 or 3 shells).
* Electrons marked as dots (•) or crosses (×) on shells.
* One MCQ prompt below each diagram with four options.
* Auto-check on selection and trigger **specific facilitative feedback**.
* Use animation to highlight selected electron shells when correct/incorrect.

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

1. Study each dot and cross diagram of an atom carefully.
2. Count the electrons in each shell.
3. Choose the correct electron arrangement or element name that matches the diagram.
4. Review the feedback to understand why your choice was correct or incorrect.

**💡 Hint Panel (On-Screen)**

**Key Reminders:**

* Shell 1 → maximum 2 electrons
* Shell 2 → maximum 8 electrons
* Shell 3 → maximum 8 electrons
* Electrons fill shells from the inside out.
* Atomic number = total number of electrons.

**🧪 Activity Content with Specific Facilitative Feedback**

**🔍 Question 1**

**Diagram:**

* 2 electrons in 1st shell
* 8 electrons in 2nd shell

**Question:**  
What is the electron arrangement?

|  |  |  |
| --- | --- | --- |
| **Option** | **Correct/Incorrect** | **Facilitative Feedback** |
| 2.7 | ❌ Incorrect | 2.7 means 7 in the second shell, but this one has 8. Count carefully. |
| 2.8 | ✅ Correct | First shell has 2 electrons, second shell is full with 8. |
| 2.9 | ❌ Incorrect | Too many in the second shell. The maximum is 8 electrons. |
| 8.2 | ❌ Incorrect | Shells fill from the inside out. This order is reversed. |

**🔍 Question 2**

**Diagram:**

* 2 electrons in 1st shell
* 8 electrons in 2nd shell
* 1 electron in 3rd shell

**Question:**  
Which element is this?

|  |  |  |
| --- | --- | --- |
| **Option** | **Correct/Incorrect** | **Facilitative Feedback** |
| Neon | ❌ Incorrect | Neon has 2.8 and no electrons in the third shell. |
| Sodium | ✅ Correct | Sodium has electron arrangement 2.8.1, atomic number 11. |
| Fluorine | ❌ Incorrect | Fluorine has only 9 electrons: 2.7. |
| Magnesium | ❌ Incorrect | Magnesium has 2 electrons in the third shell, not 1. |

**🔍 Question 3**

**Diagram:**

* 2 electrons in shell 1
* 4 electrons in shell 2

**Question:**  
What is the total number of electrons?

|  |  |  |
| --- | --- | --- |
| **Option** | **Correct/Incorrect** | **Facilitative Feedback** |
| 8 | ❌ Incorrect | 2 + 4 = 6. Check the second shell again. |
| 6 | ✅ Correct | This is carbon with electron arrangement 2.4. |
| 7 | ❌ Incorrect | Too high. Count each electron carefully. |
| 10 | ❌ Incorrect | That would be neon. This atom has fewer electrons. |

**🎙️ Activity Conclusion 🎤**

**Narration:**  
"You did a great job analysing atomic diagrams! Visual decoding of atoms is a powerful skill in chemistry. Keep practising, and soon you will be able to identify any element by its electron structure."