“AN IMAGINARY HOUSE TOUR”

You have been magically transported inside an 18-room castle built by the famous chemist, who created the first modern periodic table, Dmitri Mendeleev. Each room is entirely made from one of the elements of the first three rows of the periodic table. No element is repeated. Each element will appear in the state (solid, liquid, or gas) it is found at room temperature.

You do not know where in the castle you have been transported. A holographic image of Mendeleev will accompany you on your journey, giving you clues to help you determine which room you are in. Each time you correctly identify the element a room is made of, you will be transported to another room. Once you travel through all of the rooms, you will find your way out of the Castle Mendeleev.

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Tour Guide

1. You have suddenly materialized into a room made entirely of a shiny metallic solid. A wooden door is set into one wall. A shimmering holograph appears before you. It is an old man wearing a full-length nineteenth-century topcoat. It is Dmitri Mendeleev. In a crisp, intelligent voice, the scientist says, “This room has been constructed of a strong, lightweight, corrosion-resistant metal composed of atoms containing 3 valence electrons and 13 protons. It is the most abundant metal in the Earth’s crust.” What element is this room made of? Carve its name into the wooden door to escape to the next room.

2. The next room you find yourself in is made of a clear, life-giving gas. Suddenly Mendeleev appears again saying, “This element is a non-metal, diatomic gas that comprises about 20% of normal air. It combines with other elements to form oxides.” What element will you carve on the door of this room?

3. Next, you are transported to a room made from a green-yellow gas which immediately begins to burn your nostrils and your throat. You reach into your packs for gas masks to protect yourself from these noxious fumes. For the third time, a holograph of Mendeleev speaks to you through the shifting gas. “This diatomic gas is a halogen and has two energy levels.” What element surrounds you?
4. In the next room you find yourself surrounded by bright yellow crystals. As you remove the gas masks, the old chemist, tinted yellow by light reflecting off the crystals, appears yet again. “This element is a nonmetal solid with 6 valence electrons. Carve the name of the correct element in the room’s door.

5. You are now in a room made of clear gas, located in one of the towers of the castle. If you try to talk, your voice sounds high-pitched and squeaky, like Mickey Mouse. The holograph tells you, “This element does not follow the valence electron/group rule.” What element is this room made of?

6. The sixth room you are transported to, on the second floor of the building, is made of a silver-gray metallic solid. You are able to use the knife in your backpack to cut a piece off the soft substance. A piece touches your hand and burns your skin. You quickly drop it into your canteen, where it momentarily floats and then causes a small explosion. Mendeleev says, “This is the third lightest element that is a metal. You can now name it.”

7. Next you are transported to a room with bright white, waxy walls. When you turn off the lights, the entire room glows in the dark! The holograph tells you, this element occurs in teeth and bones as calcium phosphate.” What element is this room comprised of?

8. You are now in a room made of a shiny, silver metal. The image of Mendeleev reappears to say, “This element appears here in its pure form. If combined with traces of other elements, it becomes a semiconductor that is used in circuits of electronic devices such as calculators. It and oxygen are the two elements that make sand but not diamonds.” This element has 3 energy levels and four valence electrons. What element is this room comprised of?

9. The ninth room is composed of a gas that has no color, taste, or odor. A transparent image of the chemist tells you, “An atom of this element has 2 electrons in its first shell and 5 electrons in its second shell. This element makes up about 80% of normal air and can be used to make laughing gas.”
10. The next room you are transported to is made of a soft white material. The nineteenth-century chemist states, “This element combines with the element in room 3 to form a common compound found in most kitchens.” Pulling out the sample you took from the third room, you observe it combining & forming a clear white cube with a distinctive taste.

10. Next, you are transported to a room in the corner of the castle. The room is made of a thick, inert gas. Mendeleev flickers into view to tell you, “This element is used to fill light bulbs. The atoms of this element have 8 electrons in their third shell.” Carve the correct symbol into the door.

11. After escaping from room 11, you materialize into a room made of a solid. Mendeleev appears and tells you, “This element is the basic unit for all living things. Without it, jewelers would go broke, gas stations would go out of business, and every breath you exhale would be incomplete. The element has 2 isotopes.”

12. The next room you enter is filled with an inert gas. Mendeleev appears, telling you, “This gas emits a brilliant orange-red light when contained in a discharge tube. Las Vegas wouldn’t be the same without this element.”

13. This room is made of a light grey material. Once again, Mendeleev speaks. “This element is so strong, hard, and elastic that it is used to reinforce other metals. But it is the lightest of the rigid metals with a mass of 9.01218.”

14. The next room is made of a hard, black, shiny material, and then, suddenly, it changes to a brown powder. The holograph tells you the atoms of this element have 2 electron shells and readily absorbs neutrons. Therefore, it is used in control rods for atomic reactors. This is the lightest of the non-metals.

15. The sixteenth room you enter is made of a greenish-yellow gas. The image tells you, “When you combine this element with sodium, it can help reduce tooth decay. It also reacts with hydrocarbons to form Teflon and Freon.”
16. Next you are transported to a room on the first floor of the castle. This room is made of a white solid. Dmitri Mendeleev reappears, shifting before you like a milky ghost, speaking to you once more. “This element is widely used in the aerospace industry. It burns brilliantly in the air and is commonly found in the home as Milk of Magnesia.”

17. You finally find yourself in the second tower of the castle. The room is made of a transparent gas. This element is the simplest and lightest of all the elements. It is the most abundant element in the universe. What is it?

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Upon carving the correct symbol into the final door, you are transported to a large dining hall. The image of Mendeleev stands at the end of a long table set for dinner. Speaking to you for the last time, he says, “Congratulations adventurer. Come, have a seat, and drink to your victory with a toast of complex carbon, hydrogen, and oxygen compounds dissolved into a liquid compound of hydrogen and oxygen.”
# An Imaginary House Tour

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