

An Atom: The Smallest Part of Matter What's It All About?

All matter is made of very tiny particles. **These particles keep the same characteristics or properties that the matter has. These particles are called atoms.** All atoms are about the same size and they are very tiny. An atom is more than one million times smaller than the thickness of a single hair on your head! It would take billions of atoms just to make up the period at the end of this sentence.

Because atoms are so small, scientists have never really been able to see them. Using very powerful microscopes, scientists have been able to see evidence of atoms and how they behave. From these observations, they have developed a model of what they believe atoms look like. **The most recent model is known as the Electron Cloud Model.**

According to this model, all atoms have the same basic parts: protons, neutrons, and electrons. The protons are positively-charged particles. Neutrons are particles that have no electric charge, and electrons are negatively-charged particles. Protons and neutrons are found in the center of the atom in a core called the nucleus. Electrons are found in a cloud that continually moves around the nucleus.

Even though they are the smallest part of all matter, atoms must fit our definition of matter. Scientists have found that atoms do have mass. **Most of the mass of an atom is formed by the protons and neutrons, so most of the mass is found in the atom's nucleus.** Atoms also take up space. **Most of the space of the atom is taken up by the electron cloud that circles the nucleus.**

Label the diagram with one of the following words:

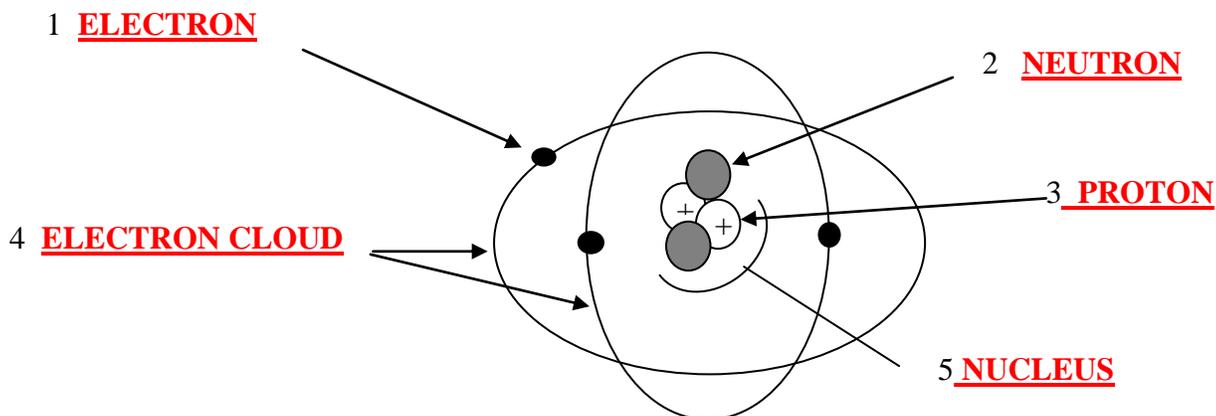
Electron

Electron Cloud

Neutron

Nucleus

Proton



Name _____ Teacher _____ Period _____ Date _____

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Write the letter in the blank for the correct answer.

- B** 6. What is the smallest part of all matter that keeps the characteristics of that matter?
a. proton b. atom c. neutron d. electron

7. On the paper, highlight the text in which you found answer #6 and write #6 next to it.

- C** 8. Why haven't scientists been able to study atoms directly?
a. They are too lazy. c. Atoms are too small even for our microscopes.
b. Atoms are invisible. d. We have been able to study them directly.

9. On the paper, highlight the text in which you found answer #8 and write #8 next to it.

- A** 10. What is the current model of an atom called?
a. Electron Cloud Model c. Neutron Cloud Model
b. Atom Cloud Model d. Cloud Model

11. On the paper, highlight the text in which you found answer #10 and write #10 next to it.

- D** 12. What are the three basic parts of an atom?
a. proton, neutron, atom c. proton, electron, nucleus
b. proton, electron, atom d. proton, neutron, electron

13. On the paper, highlight the text in which you found answer #12 and write #12 next to it.

- A** 14. What electrical charges does each of these three parts have?
a. proton = positive (+), neutron = neutral (0), electron = negative (-)
b. proton = negative (-), neutron = positive (+), electron = neutral (0)
c. proton = positive (+), neutron = negative (-), electron = neutral (0)
d. proton = neutral (0), neutron = neutral (0), electron = positive (+)

15. On the paper, highlight the text in which you found answer #14 and write #14 next to it.

- B** 16. Where are each of these parts located in the atom?
a. proton – outer ring, electron – nucleus, neutron – nucleus
b. proton – nucleus, electron – energy level (cloud), neutron – nucleus
c. proton – nucleus, electron – nucleus, neutron – energy level (cloud)
d. proton – energy level, electron – energy level (cloud), neutron – nucleus

17. On the paper, highlight the text in which you found answer #16 and write #16 next to it.

- D** 18. Where is most of the mass of an atom found?
a. protons b. cloud with electrons c. neutrons d. nucleus

19. On the paper, highlight the text in which you found answer #18 and write #18 next to it.

- B** 20. What part of the atom takes up most of its space?
a. protons b. cloud with electron c. neutrons d. nucleus

21. On the paper, highlight the text in which you found answer #20 and write #20 next to it.