Back Print

Name _____ Class _____ Date _____

Skills Worksheet

Directed Reading A

Section: Development of the Atomic Theory

THE BEGINNING OF ATOMIC THEORY

_____ **1.** The word *atom* comes from the Greek word *atomos*, which means
- **a.** "dividable."
- **b.** "invisible."
- **c.** "hard particles."
- **d.** "not able to be divided."

_____ **2.** Which of the following statements is a part of Democritus's theory about atoms?
- **a.** Atoms are small, soft particles.
- **b.** Atoms are always standing still.
- **c.** Atoms are made of a single material.
- **d.** Atoms are small particles that can be cut in half again and again.

3. We know that Democritus was right to say that all matter was made up of atoms. So why did people ignore Democritus's ideas for such a long time?

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4. The smallest unit of an element that maintains the properties of that element is a(n) _____.

DALTON'S ATOMIC THEORY BASED ON EXPERIMENTS

_____ **5.** Which of the following was NOT one of Dalton's theories?
- **a.** All substances are made of atoms.
- **b.** Atoms of the same element are exactly alike.
- **c.** Atoms of different elements are alike.
- **d.** Atoms join with other atoms to make new substances.

6. Dalton experimented with different substances. What did his results suggest?

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Back Print

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THOMSON'S DISCOVERY OF ELECTRONS

7. In Thomson's experiments with a cathode-ray tube, he discovered that a(n) _____ charged plate attracted the beam. He concluded that the beam was made up of particles that have _____ electric charges.

8. The negatively charged subatomic particles that Thomson discovered are now called _____.

9. In Thomson's "plum-pudding" model, electrons are mixed throughout an _____.

RUTHERFORD'S ATOMIC "SHOOTING GALLERY"

_____**10.** Before his experiment, what did Rutherford expect the particles to do?

- **a.** He expected the particles to pass right through the gold foil.
- **b.** He expected the particles to deflect to the sides of the gold foil.
- **c.** He expected the particles to bounce straight back.
- **d.** He expected the particles to become negatively charged.

11. What were the surprising results of Rutherford's gold-foil experiment?

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WHERE ARE THE ELECTRONS?

_____**12.** In 1911, Rutherford revised the atomic theory. Which of the following is NOT part of that theory?

- **a.** Most of the atom's mass is in its nucleus.
- **b.** The nucleus is a tiny, dense, positively charged region.
- **c.** Positively charged particles that pass close by the nucleus are pushed away by the positive charges in the nucleus.
- **d.** The nucleus is made up of protons and electrons.

13. The center of an atom is a dense region consisting of protons and neutrons called the _____.

14. What are electron clouds?

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