

Name \_\_\_\_\_ Date \_\_\_\_\_ Class \_\_\_\_\_

**CHAPTER 4 STUDY GUIDE FOR CONTENT MASTERY****The Structure of the Atom****Section 4.1 Early Theories of Matter***In your textbook, read about the philosophers, John Dalton, and defining the atom.*For each statement below, write *true* or *false*.

- false** \_\_\_\_\_ 1. Ancient philosophers regularly performed controlled experiments.
- true** \_\_\_\_\_ 2. Philosophers formulated explanations about the nature of matter based on their own experiences.
- true** \_\_\_\_\_ 3. Both Democritus and Dalton suggested that matter is made up of atoms.
- true** \_\_\_\_\_ 4. Dalton's atomic theory stated that atoms separate, combine, or rearrange in chemical reactions.
- false** \_\_\_\_\_ 5. Dalton's atomic theory stated that matter is mostly empty space.
- false** \_\_\_\_\_ 6. Dalton was correct in thinking that atoms could not be divided into smaller particles.
- true** \_\_\_\_\_ 7. Dalton's atomic theory stated that atoms of different elements combine in simple whole-number ratios to form compounds.
- true** \_\_\_\_\_ 8. Dalton thought that all atoms of a specific element have the same mass.
- false** \_\_\_\_\_ 9. Democritus proposed that atoms are held together by chemical bonds, but no one believed him.
- true** \_\_\_\_\_ 10. Dalton's atomic theory was based on careful measurements and extensive research.
- false** \_\_\_\_\_ 11. There are no instruments powerful enough to magnify atoms so that they can be seen.
- true** \_\_\_\_\_ 12. The smallest particle of an element that retains the properties of that element is called an atom.

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**CHAPTER 4 STUDY GUIDE FOR CONTENT MASTERY****Section 4.2 Subatomic Particles and the Nuclear Atom***In your textbook, read about discovering the electron and the nuclear atom.*

For each item in Column A, write the letter of the matching item in Column B.

Column A

Column B

- c** \_\_\_\_\_ 1. Proposed the nuclear atomic model
- a** \_\_\_\_\_ 2. Determined the mass-to-charge ratio of an electron
- b** \_\_\_\_\_ 3. Calculated the mass of an electron
- a.** Thomson
- b.** Millikan
- c.** Rutherford

Draw and label a diagram of each atomic model.

4. plum pudding model

**Drawing should look like a ball of chocolate chip cookie dough. The chocolate chips should be labeled with negative charge or as electrons. The dough should be labeled as evenly distributed positive charges.**

5. nuclear atomic model

**Drawing should look like a peach with a pit. The pit should be labeled nucleus and should include labeled protons and neutrons. The outer circle of the peach should be labeled electrons.**

*In your textbook, read about the discovery of protons and neutrons.*

Complete the following table of proton, electron, and neutron characteristics.

Particle	Symbol	Location	Relative Charge	Relative Mass
6. Proton	p <sup>+</sup>	In the nucleus	1+	1
7. Neutron	n <sup>0</sup>	In the nucleus	0	1
8. Electron	e <sup>-</sup>	In the space surrounding the nucleus	1-	1/1840

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