Name _____ Class _____ Date _____

Assessment

Atoms: The Building Blocks of Matter

Section Quiz: The Atom: From Philosophical Idea to Scientific Theory

In the space provided, write the letter of the correct term or phrase that best completes each statement or best answers each question.

_____ **1.** John Dalton thought that atoms
- **a.** contain molecules.
- **b.** cannot be broken down further.
- **c.** are all composed of carbon.
- **d.** have no mass.

_____ **2.** Using improved chemistry equipment in the late 1700s, chemists observed that mass is neither created nor destroyed in a chemical reaction. This scientific law is called the law of
- **a.** definite proportions.
- **b.** gravity.
- **c.** conservation of mass.
- **d.** conservation of momentum.

_____ **3.** In an experiment, Alex and Rachel discover that their sample of table salt, also known as sodium chloride, NaCl, consists of 39.34% by mass sodium, Na, and 60.66% by mass chlorine, Cl. Later, Alex wonders what the percentage of Na might be in the table salt in his saltshaker at home. Rachel tells him, correctly, that it is
- **a.** 39.34%.
- **b.** 60.66%.
- **c.** 90%.
- **d.** impossible to tell, without analyzing the salt.

_____ **4.** The fact that every sample of a particular chemical compound contains the same elements in exactly the same proportions by mass is known as the law of
- **a.** conservation of energy.
- **b.** conservation of mass.
- **c.** atomic theory.
- **d.** definite proportions.

_____ **5.** A molecule of carbon monoxide, CO, has one atom of oxygen while a molecule of carbon dioxide, CO_2, has two. In a sample of CO containing 1 g of carbon, 1.33 g of oxygen will combine with the carbon to form the molecule. What is the mass of oxygen in a sample of CO_2 containing 1 g of carbon?

a. 1.33 g **b.** 3.0 g **c.** 2.66 g **d.** 0.0 g

Section Quiz, *continued*

_____ **6.** If two or more compounds are composed of the same two elements, then the ratio of the masses of the second element that is combined with a certain mass of the first element is always a ratio of small whole numbers. This statement is called the law of
- **a.** definite proportions.
- **b.** conservation of mass.
- **c.** atomic theory.
- **d.** multiple proportions.

_____ **7.** In 1808, John Dalton established his atomic theory. Which of the following is *not* part of Dalton's atomic theory?
- **a.** All matter is composed of atoms.
- **b.** An atom consists of a nucleus and a cloud of electrons.
- **c.** Atoms cannot be subdivided, created, or destroyed.
- **d.** In chemical reactions, atoms are combined, separated, or rearranged.

_____ **8.** Which of the following statements of Dalton's atomic theory describes conservation of mass?
- **a.** All matter is composed of atoms.
- **b.** Atoms of a given element are identical in size, mass, and other properties.
- **c.** Atoms cannot be subdivided, created, or destroyed.
- **d.** Atoms of different chemical elements combine in simple whole-number ratios to form chemical compounds.

_____ **9.** Which of the following statements of Dalton's atomic theory describes the law of multiple proportions?
- **a.** All matter is composed of atoms.
- **b.** Atoms of a given element are identical in size, mass, and other properties.
- **c.** Atoms cannot be subdivided, created, or destroyed.
- **d.** Atoms of different chemical elements combine in simple whole-number ratios to form chemical compounds.

_____ **10.** Which is one way that Dalton's atomic theory has been shown to be incorrect?
- **a.** Atoms can change identity in chemical reactions.
- **b.** Atoms can be split into subatomic particles.
- **c.** Atoms can be destroyed by chemical reactions.
- **d.** Some atoms of a particular element are identical to atoms of other elements.