

**Periodic Table Review**

**Teacher Answer Key**  
**November 23, 2011**

**3**

1. Which element is a solid at STP and a good conductor of electricity?

- 1. iodine
- 2. mercury
- 3. nickel
- 4. sulfur

**3** Metals are good conductors of electricity. Both mercury and nickel are metals, but nickel is a solid at STP while mercury is a liquid.

- 1. Rb
- 2. Rn
- 3. Si
- 4. Sr

**3** Refer to the accompanying diagram, which represents a portion of the Periodic Table of the Elements:

The metalloids—those elements that have both metallic and nonmetallic properties—are found in the shaded boxes. Of the choices given, only choice (3), Si, is a metalloid.

- 1. atomic numbers
- 2. atomic masses
- 3. electronegativities
- 4. structural arrangements

**4** Graphite and diamond are known as allotropes—forms of an element in which the atoms have different structural arrangements in space.

- 1. Magnesium is malleable.
- 2. Magnesium conducts electricity.

**3** A chemical property is one in which the substance is changed when the property is investigated. In other words, a chemical reaction occurs. When magnesium atoms react with an acid, hydrogen gas and magnesium ions are formed.

**Wrong Choices Explained:**

(1), (2), (4) Malleability, conductivity, and boiling point are physical properties. The magnesium atoms are not changed by these properties.

- 1. A sulfur atom has 6 valence electrons.
- 2. A sulfur atom has 16 neutrons.

**1** The group numbers of the representative elements are related to the number of valence electrons in an atom of the element, as shown in the accompanying table:

- 1. Sodium has a larger atomic radius and is more metallic.
- 2. Sodium has a larger atomic radius and is less metallic.

**1** See Reference Table S and the Periodic Table of the Elements. Sodium has a larger atomic radius than

**3**

2. Which element has both metallic and nonmetallic properties?

- 3. Si
- 4. Sr

**4**

3. The carbon atoms in graphite and the carbon atoms in diamond have different

- 3. electronegativities
- 4. structural arrangements

**3**

4. Which statement describes a chemical property of the element magnesium?

- 3. Magnesium reacts with an acid.
- 4. Magnesium has a high boiling point.

**1**

5. Which statement explains why sulfur is classified as a Group 16 element?

- 3. Sulfur is a yellow solid at STP.
- 4. Sulfur reacts with most metals.

**1**

6. How do the atomic radius and metallic properties of sodium compare to the atomic radius and metallic properties of phosphorus?

- 3. Sodium has a smaller atomic radius and is more metallic.
- 4. Sodium has a smaller atomic radius and is less metallic.

**1**

7. Which group on the Periodic Table of the Elements contains