

Periodic Table Review

Teacher Answer Key
November 23, 2011

3

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

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|------------|-----------|
| 1. iodine | 3. nickel |
| 2. mercury | 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.

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|-------|-------|
| 1. Rb | 3. Si |
| 2. Rn | 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.

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|-------------------|----------------------------|
| 1. atomic numbers | 3. electronegativities |
| 2. atomic masses | 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.

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|------------------------------------|--|
| 1. Magnesium is malleable. | 3. Magnesium reacts with an acid. |
| 2. Magnesium conducts electricity. | 4. Magnesium has a high boiling point. |

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.

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|---|-------------------------------------|
| 1. A sulfur atom has 6 valence electrons. | 3. Sulfur is a yellow solid at STP. |
| 2. A sulfur atom has 16 neutrons. | 4. Sulfur reacts with most metals. |

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. | 3. Sodium has a smaller atomic radius and is more metallic. |
| 2. Sodium has a larger atomic radius and is less metallic. | 4. Sodium has a smaller 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

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2. Which element has both metallic and nonmetallic properties?

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|-------|
| 3. Si |
| 4. Sr |

4

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

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|----------------------------|
| 3. electronegativities |
| 4. structural arrangements |

3

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

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| 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?

1

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

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|---|
| 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