

Periodic Trends Worksheet

Directions: Use your notes to answer the following questions.

1. Rank the following elements by increasing atomic radius: carbon, aluminum, oxygen, potassium.

Oxygen < Carbon < Aluminum < Potassium

2. Rank the following elements by increasing electronegativity: sulfur, oxygen, neon, aluminum.

Neon < Aluminum < Sulfur < Oxygen

3. Why does fluorine have a higher ionization energy than iodine?

Fluorine has nine protons attracting 9 electrons which are much closer to the nucleus compared to iodine. This results in smaller size of Fluorine than iodine making it difficult to remove an electron from the atom.

4. Why do elements in the same family generally have similar properties?

Because they have same number of electrons in the outer shell (valence electrons) which take part in chemical reaction.

5. Indicate whether the following properties increase or decrease from left to right across the periodic table.

- | | |
|--|------------------|
| a. atomic radius (excluding noble gases) | Decreases |
| b. first ionization energy | Increases |
| c. electronegativity | Increases |

6. What trend in atomic radius occurs down a group on the periodic table? What causes this trend?

Atomic radius **decreases** down the group on the periodic table. As we compare the elements down the group, the effective nuclear charge increases, but at the same time the outermost electrons are found in the shell that is farther away from the nucleus. Also the number of screening electrons increases. This results in reduced attraction between the nucleus and the outermost electrons.

7. What trend in ionization energy occurs across a period on the periodic table? What causes this trend?

Ionization energy **increases** from left to right across the period. The atomic size becomes smaller from left to right. So it becomes harder to remove electron from the atom. Hence the energy required to do so (ionization Energy) increases.

Teaching Transparency Worksheet 21 Periodic Trends Answer

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Periodic Table Cindy Blobaum, 2005 What do chocolate chip cookies chemistry and logic have in common They are the basis for a unit that lets students become actively engaged in discovering the arrangement of the periodic table This learning activity takes the periodic table out of the static presentation usually associated with textbooks and chemistry courses and interjects an element of discovery The two activities in this unit provide students with information that they have to arrange in organized charts In the process of creating the arrangements students will be involved in problem solving and will gain an appreciation for the scientific process of exploration and verification This dynamic unit meets national science standards in seven teaching and content areas Bring the periodic table to life with this hands on minds on unit Book jacket Science Spectrum Holt Rinehart & Winston, Holt, Rinehart and Winston Staff, 2003-03 **Chemistry in the Community** American Chemical Society, 2006-01-31 This laboratory based text centres itself around decision making activities where students apply their chemistry knowledge to realistic situations This fifth edition includes more photographs new drawings and new design

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Table of Contents Teaching Transparency Worksheet 21 Periodic Trends Answer

1. Understanding the eBook Teaching Transparency Worksheet 21 Periodic Trends Answer
 - The Rise of Digital Reading Teaching Transparency Worksheet 21 Periodic Trends Answer
 - Advantages of eBooks Over Traditional Books
2. Identifying Teaching Transparency Worksheet 21 Periodic Trends Answer
 - Exploring Different Genres
 - Considering Fiction vs. Non-Fiction
 - Determining Your Reading Goals
3. Choosing the Right eBook Platform
 - Popular eBook Platforms
 - Features to Look for in an Teaching Transparency Worksheet 21 Periodic Trends Answer
 - User-Friendly Interface
4. Exploring eBook Recommendations from Teaching Transparency Worksheet 21 Periodic Trends Answer
 - Personalized Recommendations
 - Teaching Transparency Worksheet 21 Periodic Trends Answer User Reviews and Ratings

- Teaching Transparency Worksheet 21 Periodic Trends Answer and Bestseller Lists
- 5. Accessing Teaching Transparency Worksheet 21 Periodic Trends Answer Free and Paid eBooks
 - Teaching Transparency Worksheet 21 Periodic Trends Answer Public Domain eBooks
 - Teaching Transparency Worksheet 21 Periodic Trends Answer eBook Subscription Services
 - Teaching Transparency Worksheet 21 Periodic Trends Answer Budget-Friendly Options
- 6. Navigating Teaching Transparency Worksheet 21 Periodic Trends Answer eBook Formats
 - ePub, PDF, MOBI, and More
 - Teaching Transparency Worksheet 21 Periodic Trends Answer Compatibility with Devices
 - Teaching Transparency Worksheet 21 Periodic Trends Answer Enhanced eBook Features
- 7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of Teaching Transparency Worksheet 21 Periodic Trends Answer
 - Highlighting and Note-Taking Teaching Transparency Worksheet 21 Periodic Trends Answer
 - Interactive Elements Teaching Transparency Worksheet 21 Periodic Trends Answer
- 8. Staying Engaged with Teaching Transparency Worksheet 21 Periodic Trends Answer
 - Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers Teaching Transparency Worksheet 21 Periodic Trends Answer
- 9. Balancing eBooks and Physical Books Teaching Transparency Worksheet 21 Periodic Trends Answer
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection Teaching Transparency Worksheet 21 Periodic Trends Answer
- 10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
- 11. Cultivating a Reading Routine Teaching Transparency Worksheet 21 Periodic Trends Answer
 - Setting Reading Goals Teaching Transparency Worksheet 21 Periodic Trends Answer
 - Carving Out Dedicated Reading Time
- 12. Sourcing Reliable Information of Teaching Transparency Worksheet 21 Periodic Trends Answer
 - Fact-Checking eBook Content of Teaching Transparency Worksheet 21 Periodic Trends Answer
 - Distinguishing Credible Sources

13. Promoting Lifelong Learning
 - Utilizing eBooks for Skill Development
 - Exploring Educational eBooks
14. Embracing eBook Trends
 - Integration of Multimedia Elements
 - Interactive and Gamified eBooks

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