

5.3 Representative Elements
Honors Integrated Science
Problem Set

Name: _____ Date: _____ Per. _____

Directions: Answer all open-ended questions in complete sentences. For math questions, show all of your work and include appropriate units and significant figures in your final answer to receive **FULL** credit.

1. Why is hydrogen located in a group with reactive metals?

2. What biological function requires magnesium?

3. Why is aluminum recycled?

4. What is the main use of sulfur?

5. Why is chlorine added to drinking water?

6. In which class of elements is there a greater range of properties, the metals or the nonmetals. Give examples to support your answer.

7. What happens to the reactivity of nonmetals within a group from the top to the bottom? Why?

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8. Why don't the elements within an A group in the periodic table have identical properties?

9. Why was it difficult to discover the noble gases?

10. How many valence electrons would an element with atomic number 113 have?

11. Why are samples of the alkali metal cesium usually stored in argon gas?

12. Why are halogens found in nature only in compounds?

13. Which element on the periodic table has chemical properties that are most similar to those of carbon?

14. If you were trying to make a compound of the noble gas xenon, would you use nitrogen or fluorine? Explain your choice.

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Use the table to answer the following three questions:

Properties of Elements X, Y, and Z			
Element	Melting Point	Boiling Point	Valence Electrons
X	97.80°C	883°C	1
Y	-259.34°C	-252.87°C	1
Z	-101.5°C	-34.04°C	7

15. In general, where would you find elements X, Y, and Z on the periodic table?
16. Describe the state of each element at room temperature based on its melting point and boiling points.
17. Use your answers to identify element Y. Explain your reasoning.
18. What might happen to a heated beaker made from glass that does not contain boron if the beaker were placed in a pan of ice water?

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19. Based on the content of most fertilizers, name two elements other than carbon that are found in compounds in plants.

20. Explain how the amount of a trace element an organism is exposed to affects the element's ability to help or harm an organism. Use the example of selenium (see pg. 149)

21. Sometimes old books fall apart when they are stored in the air. Use what you know about the reactivity of elements to propose a way that old books could be kept from falling apart.

22. When corn plants lack an essential element, which element must be added to the soil to produce leaves with a healthy green color?