Discussion Guide for

PERIODIC TABLE: REACTIONS AND RELATIONSHIPS

OBJECTIVES

After viewing this program, students will be able to:

- Justify why the elements on the periodic table are grouped in columns and rows.
- Explain why one or two letter symbols are used for each element.
- Specify what type of information can be discovered from an element's atomic number and atomic mass.
- Calculate how many energy levels are present in an element based on the row of the periodic table in which it is located.
- Explain what determines the reactivity of an element.
- Name and briefly describe the four major categories of elements.

This program is part of the AIMS Interactive Science Essentials Series. This twenty-four part series covers four subject areas- Earth Science, Biology, Physics, and Chemistry. There are six programs in each subject area. The individual programs are divided into randomly accessible Sections.

A glossary provides written definitions of terms used in the program, and in most cases will run a section of the video where the word is used in context. A script of the narration is accessible, as well as a bulletin board containing a general introduction to the subject. A quiz allows the student to test their knowledge and the results are recorded for you. In the teacher's section you can view each student's test responses and edit or create your own quiz and test questions.

OVERVIEW

The Periodic Table: Reactions and Relationships is part four of the Chemistry Essentials series which examines modern day chemistry. The program contains a wealth of information on the periodic table and helps students learn how to access it. It explains the periodic law and the significance of the rows and columns of the periodic table and also outlines the physical and chemical qualities of the members of each group of elements - from the alkaline metals to the noble gases. Also highlighted is the importance of various groups of elements in industrial applications and in the environment.

TEACHER'S PREPARATION

Before the student uses the program set up the computer so that they can easily reach the mouse and the keyboard. Load the CD-ROM into the computer so that it is ready for the student to begin using. While students are able to work at their own pace, some students may benefit from using the program more than once.

SUGGESTED DISCUSSION QUESTIONS

1. Justify why the elements on the periodic table are grouped in columns and rows.

2. Why do the first three periods on the table have fewer elements than do rows 4-7?

3. Explain why one or two letter symbols are used for each element.

4. Specify what type of information can be discovered from an element's atomic number and atomic mass.

5. What do you know about carbon if its atomic number is 6 and its atomic mass is approximately 12?

6. Explain what determines the reactivity of an element.

7. Why are alkaline metals the most reactive metals?

8. Name and briefly describe the four major categories of elements.

9. Contrast the general characteristics of each of the element groups below: Group 1, the alkaline metals Group 2, the alkaline earth metals Group 6, of the transition metals Group 11, the coinage metals Group 12 Group 17, the halogens

10. What characteristics of iron make it such a widely used element?

11. Why is boron referred to as a metalloid?

12. What element in Group 14 is found in all living things?

13. Name some of the common uses for elements in the nitrogen family.

14. Name some of the common uses for elements in the oxygen family.

15. Discuss why the noble gases are considered useful and safe for a variety of applications.

16. Account for the placement of the lanthanide and actinide series at the bottom of the periodic table.

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VOCABULARY

Alkaline earth
Atom
Coinage
Electron
Energy levels
Halogens
Mercury
Metals
Noble gases
Oxygen
Proton
tungsten
Alloy
Chemistry
Metals
Elements
gas
Isotope
Metalloid
Neutron
Octet
Periods
Rows

ADDITIONAL BENEFITS

Students will be able to:

- Contrast the general characteristics of each of the element groups 1, 2,6, 8, 11-17 and the noble gases.
- Account for the placement of the lanthanide and actinide series at the bottom of the periodic table.

PROGRAMS DETAILS

LENGTH:
30 minutes

SUBJECT AREAS:
Chemistry

AUDIENCE LEVELS:
Junior/Senior High

ORDER NUMBER:
1-9090SG

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