



Discussion Guide for

MATTER: FORM AND SUBSTANCE IN THE UNIVERSE

OBJECTIVES

After viewing this program, students will be able to:

- Distinguish matter from energy.
- Demonstrate inertia.
- Compare homogeneous and heterogeneous matter.
- Differentiate between elements and compounds. Classify properties of matter as being either chemical or physical.
- Explain how to change the state of matter.
- Discuss the similarities and differences of matter in each of the following states: solids, liquids, gases and plasma.

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

Matter: Form and Substance in the Universe is part one of the Chemistry Essentials series which examines modern day chemistry. The program introduces students to the basic characteristics of matter; the concepts of mass, density, weight, and inertia; the differences between elements, compounds, substances, and solutions; and the unique physical properties and chemical characteristics of different types of matter. Students will learn about boiling and freezing points, conductors and insulators, solubility, hardness, reactivity, flammability, combustibility as well as acids and bases. As students learn about the four states of matter, they will better understand the form and substance that makes up the universe.

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. Distinguish matter from energy such as light. Why is air considered matter and light is not?
2. Demonstrate inertia.
3. Compare homogeneous and heterogeneous matter. Give an example of each.
4. Differentiate between elements and compounds. Give an example of each.
5. Specify how to classify properties of matter as being either chemical or physical.
6. Define ionization and identify it as either a chemical or physical property.
7. Explain how to change the state of matter.
8. What do true solids have that amorphous solids do not have? Give an example of an amorphous solid.
9. Define each of the following physical properties and give an example of a material that demonstrates the property: conductivity, malleability, and solubility.
10. What characteristics classify one substance as an insulator and another substance as a semiconductor?
11. Define each of the following chemical properties and give an example of a material that demonstrates this property: flammability, combustibility, and reactivity.

12. Set up a comparison table describing each of the states of matter and giving an example of a material commonly found in each state.

VOCABULARY

combustibility	conductivity
density	gas
heterogeneous	homogeneous
inertia	insulator
liquid	mass
matter	mixture
plasma	properties
reactivity	semiconductor
solid	solubility
solution	volume

PROGRAMS DETAILS

LENGTH:

21 minutes

SUBJECT AREAS:

Chemistry

AUDIENCE LEVELS:

Junior-Senior High

ORDER NUMBER:

1-90875G

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