

The Solar System: Our Neighbors in Space

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Congratulations!

You have chosen a learning program that will actively motivate your students AND provide you with easily accessible and easily manageable instructional guidelines designed to make your teaching role efficient and rewarding.

The AIMS Teaching Module provides you with a video program keyed to your classroom curriculum, instructions and guidelines for use, plus a comprehensive teaching program containing a wide range of activities and ideas for interaction between all content areas. Our authors, educators, and consultants have written and reviewed the AIMS Teaching Modules to align with the Educate America Act: Goals 2000.

This ATM, with its clear definition of manageability, both in the classroom and beyond, allows you to tailor specific activities to meet all of your classroom needs.

RATIONALE

In today's classrooms, educational pedagogy is often founded on Benjamin S. Bloom's "Six Levels of Cognitive Complexity." The practical application of Bloom's Taxonomy is to evaluate students' thinking skills on these levels, from the simple to the complex: Knowledge (rote memory skills), Comprehension (the ability to relate or retell), Application (the ability to apply knowledge outside its origin), Analysis (relating and differentiating parts of a whole), Synthesis (relating parts to a whole), and Evaluation (making a judgment or formulating an opinion).

The AIMS Teaching Module is designed to facilitate these intellectual capabilities, AND to integrate classroom experiences and assimilation of learning with the students' life experiences, realities, and expectations. AIMS' learner verification studies prove that our AIMS Teaching Modules help students to absorb, retain, and to demonstrate ability to use new knowledge in their world. Our educational materials are written and designed for today's classroom, which incorporates a wide range of intellectual, cultural, physical, and emotional diversities.

ORGANIZATION AND MANAGEMENT

To facilitate ease in classroom manageability, the AIMS Teaching Module is organized in four sections. You are reading Section 1, Introduction to the Aims Teaching Module (ATM).

SECTION 2,

INTRODUCING THIS ATM

will give you the specific information you need to integrate the program into your classroom curriculum.

SECTION 3,

PREPARATION FOR VIEWING

provides suggestions and strategies for motivation, language preparedness, readiness, and focus prior to viewing the program with your students.

SECTION 4,

AFTER VIEWING THE PROGRAM

provides suggestions for additional activities plus an assortment of consumable assessment and extended activities, designed to broaden comprehension of the topic and to make connections to other curriculum content areas.

FEATURES

INTRODUCING EACH ATM

SECTION 2

Your AIMS Teaching Module is designed to accompany a video program written and produced by some of the world's most credible and creative writers and producers of educational programming. To facilitate diversity and flexibility in your classroom, your AIMS Teaching Module features these components:

Themes

The Major Theme tells how this AIMS Teaching Module is keyed into the curriculum. Related Themes offer suggestions for interaction with other curriculum content areas, enabling teachers to use the teaching module to incorporate the topic into a variety of learning areas.

Overview

The Overview provides a synopsis of content covered in the video program. Its purpose is to give you a summary of the subject matter and to enhance your introductory preparation.

Objectives

The ATM learning objectives provide guidelines for teachers to assess what learners can be expected to gain from each program. After completion of the AIMS Teaching Module, your students will be able to demonstrate dynamic and applied comprehension of the topic.

PREPARATION FOR VIEWING

SECTION 3

In preparation for viewing the video program, the AIMS Teaching Module offers activity and/or discussion ideas that you may use in any order or combination.

Introduction To The Program

Introduction to the Program is designed to enable students to recall or relate prior knowledge about the topic and to prepare them for what they are about to learn.

Introduction To Vocabulary

Introduction to Vocabulary is a review of language used in the program: words, phrases, usage. This vocabulary introduction is designed to ensure that all learners, including limited English proficiency learners, will have full understanding of the language usage in the content of the program.

Discussion Ideas

Discussion Ideas are designed to help you assess students' prior knowledge about the topic and to give students a preview of what they will learn. Active discussion stimulates interest in a subject and can motivate even the most reluctant learner. Listening, as well as speaking, is active participation. Encourage your students to participate at the rate they feel comfortable. Model sharing personal experiences when applicable, and model listening to students' ideas and opinions.

Focus

Help learners set a purpose for watching the program with Focus, designed to give students a focal point for comprehension continuity.

Jump Right In

Jump Right In provides abbreviated instructions for quick management of the program.

AFTER VIEWING THE PROGRAM

SECTION 4

After your students have viewed the program, you may introduce any or all of these activities to interact with other curriculum content areas, provide reinforcement, assess comprehension skills, or provide hands-on and in-depth extended study of the topic.

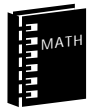
SUGGESTED ACTIVITIES

The Suggested Activities offer ideas for activities you can direct in the classroom or have your students complete independently, in pairs, or in small work groups after they have viewed the program. To accommodate your range of classroom needs, the activities are organized into skills categories. Their labels will tell you how to identify each activity and help you correlate it into your classroom curriculum. To help you schedule your classroom lesson time, the AIMS hourglass gives you an estimate of the time each activity should require. Some of the activities fall into these categories:



Meeting Individual Needs

These activities are designed to aid in classroom continuity. Reluctant learners and learners acquiring English will benefit from these activities geared to enhance comprehension of language in order to fully grasp content meaning.



Curriculum Connections

Many of the suggested activities are intended to integrate the content of the ATM program into other content areas of the classroom curriculum. These cross-connections turn the classroom teaching experience into a whole learning experience.



Critical Thinking

Critical Thinking activities are designed to stimulate learners' own opinions and ideas. These activities require students to use the thinking process to discern fact from opinion, consider their own problems and formulate possible solutions, draw conclusions, discuss cause and effect, or combine what they already know with what they have learned to make inferences.



Cultural Diversity

Each AIMS Teaching Module has an activity called Cultural Awareness, Cultural Diversity, or Cultural Exchange that encourages students to share their backgrounds, cultures, heritage, or knowledge of other countries, customs, and language.



Hands On

These are experimental or tactile activities that relate directly to the material taught in the program. Your students will have opportunities to make discoveries and formulate ideas on their own, based on what they learn in this unit.



Writing

Every AIMS Teaching Module will contain an activity designed for students to use the writing process to express their ideas about what they have learned. The writing activity may also help them to make the connection between what they are learning in this unit and how it applies to other content areas.



In The Newsroom

Each AIMS Teaching Module contains a newsroom activity designed to help students make the relationship between what they learn in the classroom and how it applies in their world. The purpose of In The Newsroom is to actively involve each class member in a whole learning experience. Each student will have an opportunity to perform all of the tasks involved in production: writing, researching, producing, directing, and interviewing as they create their own classroom news program.



Extended Activities

These activities provide opportunities for students to work separately or together to conduct further research, explore answers to their own questions, or apply what they have learned to other media or content areas.



Link to the World

These activities offer ideas for connecting learners' classroom activities to their community and the rest of the world.



Culminating Activity

To wrap up the unit, AIMS Teaching Modules offer suggestions for ways to reinforce what students have learned and how they can use their new knowledge to enhance their world view.

VOCABULARY

Every ATM contains an activity that reinforces the meaning and usage of the vocabulary words introduced in the program content. Students will either read or find the definition of each vocabulary word, then use the word in a written sentence.

CHECKING COMPREHENSION

Checking Comprehension is designed to help you evaluate how well your students understand, retain, and recall the information presented in the AIMS Teaching Module. Depending on your students' needs, you may direct this activity to the whole group yourself, or you may want to have students work on the activity page independently, in pairs, or in small groups. Students can verify their written answers through discussion or by viewing the video a second time. If you choose, you can reproduce the answers from your Answer Key or write the answer choices in a Word Bank for students to use. Students can use this completed activity as a study guide to prepare for the test.

CONSUMABLE ACTIVITIES

The AIMS Teaching Module provides a selection of consumable activities, designed to specifically reinforce the content of this learning unit. Whenever applicable, they are arranged in order from low to high difficulty level, to allow a seamless facilitation of the learning process. You may choose to have students take these activities home or to work on them in the classroom independently, in pairs or in small groups.

CHECKING VOCABULARY

The Checking Vocabulary activity provides the opportunity for students to assess their knowledge of new vocabulary with this word game or puzzle. The format of this vocabulary activity allows students to use the related words and phrases in a different context.

TEST

The AIMS Teaching Module Test permits you to assess students' understanding of what they have learned. The test is formatted in one of several standard test formats to give your students a range of experiences in test-taking techniques. Be sure to read, or remind students to read, the directions carefully and to read each answer choice before making a selection. Use the Answer Key to check their answers.

ADDITIONAL AIMS MULTIMEDIA PROGRAMS

After you have completed this AIMS Teaching Module you may be interested in more of the programs that AIMS offers. This list includes several related AIMS programs.

ADDITIONAL READING SUGGESTIONS

AIMS offers a carefully researched list of other resources that you and your students may find rewarding.

ANSWER KEY

Reproduces tests and work pages with answers marked.

The Solar System: Our Neighbors in Space

THEMES

The Solar System: Our Neighbors in Space explores our solar system from its inception over 5 billion years ago. The program covers the nebula theory, the idea that the universe began as swirling matter that formed the planets. It also discusses asteroids, meteors, and the differences between terrestrial and Jovian planets. In addition, students will see the similarities and differences in the chemical makeup of each planet.

OVERVIEW

The nebula theory is the most prevalent theory about the creation of the solar system. Several of the planets in the solar system are terrestrial planets, which means that they are rocky and Earth-like, while others are called Jovian planets—these are mostly gaseous. An asteroid belt between Mars and Jupiter separates the terrestrial and Jovian planets, though Pluto doesn't really fit into either category. Students will examine the composition of each planet, including its surface, atmosphere and satellites.

OBJECTIVES

- ▶ To understand the origins of the solar system.
- ▶ To examine the types of bodies in the solar system, including planets, asteroids, meteors, and satellites.
- ▶ To see the difference between terrestrial and Jovian planets.
- ▶ To explore the individual planets, paying particular attention to their physical and chemical makeup.
- ▶ To understand Earth's history and future.

Use this page for your individual notes about planning and/or effective ways to manage this AIMS Teaching Module in your classroom.

Our AIMS Multimedia Educational Department welcomes your observations and comments.
Please feel free to address your correspondence to:

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INTRODUCTION TO THE PROGRAM

The Solar System: Our Neighbors in Space discusses the origins of the solar system and the physical and chemical makeup of the planets. The program details the different types of planets and discusses the other objects in space, like asteroids and satellites. Students are given a complete overview of the composition of the planets, their relationship to the sun, and their orbits. In addition, the program also helps students understand the unique qualities of Earth while examining the many similarities it shares with its neighbors.

INTRODUCTION TO VOCABULARY

Write the words “terrestrial” and “solar” on the board and ask students to write down as many related words as they can. How many examples can they come up with? What do all of these new words have in common? (A few examples include extra-terrestrial, terrain, terrarium, solarium, solarize. Words derived from “terrestrial” deal with the Earth. Words derived from “solar” deal with the sun.)

DISCUSSION IDEAS

The Solar System: Our Neighbors in Space discusses the origins of the solar system. Even today, we are constantly learning about how our solar system formed and how it continues to change. What recent space exploration missions have occurred? Why is it important to understand the other planets and asteroids in our solar system? (Recent missions include the Hubble telescope and the Sojourner exploration of Mars. The more we learn about our solar system, the better we can understand Earth and its delicate ecology.)

FOCUS

This program teaches students the history and evolution of the solar system. Encourage students to consider the countless advances made in astronomy in recent years, as well as the long history of people studying the heavens. Why are we so curious about the mysteries that space might hold?

JUMP RIGHT IN

HOW TO USE THE THE SOLAR SYSTEM: OUR NEIGHBORS IN SPACE AIMS TEACHING MODULE

Preparation

- ▶ Read *The Solar System: Our Neighbors in Space* **Themes**, **Overview**, and **Objectives** to become familiar with program content and expectations.
- ▶ Use **Preparation for Viewing** suggestions to introduce the topic to students.

Viewing THE SOLAR SYSTEM: OUR NEIGHBORS IN SPACE

- ▶ Set up viewing monitor so that all students have a clear view.
- ▶ Depending on your classroom size and learning range, you may choose to have students view *The Solar System: Our Neighbors in Space* together or in small groups.
- ▶ Some students may benefit from viewing the video more than one time.

After Viewing THE SOLAR SYSTEM: OUR NEIGHBORS IN SPACE

- ▶ Select **Suggested Activities** that integrate into your classroom curriculum. If applicable, gather materials or resources.
- ▶ Choose the best way for students to work on each activity. Some activities work best for the whole group. Other activities are designed for students to work independently, in pairs, or in small groups. Whenever possible, encourage students to share their work with the rest of the group.
- ▶ Duplicate the appropriate number of **Vocabulary**, **Checking Comprehension**, and consumable activity pages for your students.
- ▶ You may choose to have students take consumable activities home, or complete them in the classroom, independently, or in groups.
- ▶ Administer the Test to assess students' comprehension of what they have learned, and to provide them with practice in test-taking procedures.
- ▶ Use the **Culminating Activity** as a forum for students to display, summarize, extend, or share what they have learned with each other, the rest of the school, or a local community organization.

SUGGESTED ACTIVITIES

Writing

Write a short report on a famous scientist who studied the universe and solar system. Examples include Pythagoras, Ptolemy, Galileo, Kepler, Copernicus, Sir Issac Newton, Albert Einstein, and Stephen Hawking. What was his or her contribution to science? How was the person viewed by contemporaries? Did other scientists embrace the person's theories?



60 Minutes

Connection to Science

If possible, take students on a field trip to a nearby planetarium. Ask each student to use a notebook to record what they learn during the trip. After the trip, facilitate a discussion with students. Did they enjoy what they saw? What new facts did they learn about our solar system? Would they enjoy taking up star gazing as a hobby?



Extended Time

Critical Thinking

In the late 1700's a French scientist named Comte de Buffon put forth a theory about the beginning of the solar system. Buffon believed that a giant passing comet passed by the sun and pulled out the matter that became the solar system. Later, other theories about the origin of the solar system emerged. Ask students research some of these theories to learn more about them.

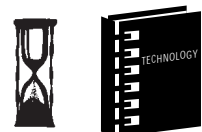


60 Minutes

After their preliminary research, organize a class debate. Give each student a chance to discuss the theory that he or she supports. Encourage students to provide scientific evidence for their choices.

Connection to Technology

Ask students to explore the Internet to find as many web sites as they can dealing with the solar system. Encourage them to begin with the NASA web site. What information is available on the web? How is this information similar or different from what you would find in a book or magazine? If you were doing a report on the solar system, would the Internet be a good place to look? Why or why not?



30 Minutes

(The Internet is an excellent place to do research, especially on scientific topics, because it is frequently more up-to-date than any other medium.)

Extended Activity

The Greeks were some of the earliest astronomers. Starting around 600 BC, Greek philosophers and scientists developed a number of important astronomical ideas. Create a timeline of the major Greek astronomers and their accomplishments. Where do other people, like the Egyptians or Babylonians fit on the timeline? Place an asterisk next to any of the ancient theories that are still thought to be true.



Extended Time

(Many believe that the ancient Greeks, Egyptians, and Babylonians were studying the stars at about the same time. The Greeks are credited with such discoveries as the shape of heavenly bodies, the shape and rotation of the Earth, and the precise length of a year.)

Critical Thinking

Many people believe that as our planet becomes more populated, people will be forced to live in space. Ask students to imagine that living in space is a viable option in the future. Which planet would people be most likely to live on? Why? What are the immediate problems with living on another planet? Weather? Atmosphere?

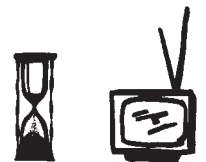


30 Minutes

(If planetary colonization did occur, Mars would probably be the most likely choice because of its location and its Earth-like terrain. The differences in climate and atmosphere would be the most problematic issues to overcome. The same is true of the moon. However, the moon is much closer than Mars and, therefore, would be faster and cheaper to travel to.)

In the Newsroom

In 1998, NASA sent an unmanned spacecraft to Mars. Ask students if they observed this mission on television or on the Internet. What was the purpose of this visit? What information did NASA gain? How was the Internet used in relaying that information? Are there any future visits planned to Mars?



Extended Time

(NASA has been exploring Mars for many reasons, one of which is to search for past or current life on the planet. This information helps scientists to better understand the history of the Earth. NASA sent live updates from the Sojourner over the Internet. The exploration of Mars will continue into the 21st century.)

Meeting Individual Needs

Use an encyclopedia or other resource book to look up the following words. What is the origin of each word? How does each word relate to the study of the solar system?

astronomy
geocentric
satellite
comet



20 Minutes

("Astronomy" is the study of the heavens. "Geocentric" is the belief that the Earth, and not the sun, is the center of the universe. A "satellite" is an object that revolves around a star or a sun. There are man-made satellites and natural satellites (like the moon). A "comet" is a heavenly body that moves through space in a regular orbit. Comets have long tails and can sometimes be seen from Earth.)

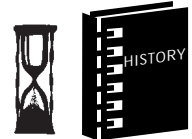
Connection to History

In the 1600s, German astronomer Johannes Kepler published three laws describing planetary motions. Ask students to find out what these laws are. Have them list an example of each law.

(Kepler's First Law states that planets move in elliptical orbits. This means that the planets are closer to the sun at some times than at others. For example, the Earth is 91,400,000 miles from the sun at its closest point and 94,500,000 miles from the sun at its farthest point.

Kepler's Second Law states that an imaginary line between the sun and a planet sweeps across equal areas in equal periods of time. In other words, when a planet is near the sun, the line sweeps across a wide, short area. When the planet is far from the sun, the line sweeps a large, narrow area in the same amount of time.

Kepler's Third Law states that a planet's orbital period depends on its average distance from the sun. For example, a planet that is four times as far from the sun as Earth takes eight times longer to orbit the sun.)



30 Minutes

Culminating Activity

Divide students into nine small groups, and ask each group to do some research on one planet. Encourage them to include the planet's history, climate, makeup, satellites, and relationship to the sun. Have each group do a live presentation about their planet. Encourage students to use visual or multimedia aids in their presentations.



60 Minutes

VOCABULARY

The following terms are from *The Solar System: Our Neighbors in Space*. Fill in the number of each term next to its closest definition.

- | | |
|------------------|---------------------|
| 1. asteroid | 6. Pallas |
| 2. Copernicus | 7. terrestrial |
| 3. Ganymede | 8. volcanic |
| 4. Jovian | 9. Valles Marineris |
| 5. Nebula theory | 10. Olympus Mons |

- ___ vents on a planet that spew molten rock and gas
- ___ type of planet that is largely gaseous and much less dense than terrestrial planets
- ___ a small irregular planet-like object that rarely exceeds one kilometer in diameter
- ___ one of the largest known asteroids
- ___ the largest known volcano in the universe
- ___ Polish astronomer who developed a heliocentric model of the universe
- ___ states that the solar system formed from a rotating cloud of interstellar gas
- ___ one of the moons orbiting Jupiter
- ___ a series of huge canyons on Mars
- ___ Earth-like; made of rocky material like that on Earth

CHECKING COMPREHENSION

Read the following sentences and circle the letter of the word that best fills each blank.

The ___1___ theory is the most prevalent theory about the creation of the solar system. ___2___ takes the shortest amount of time to circle the sun, only 88 days. The asteroid belt in our solar system lies between Mars and ___3___. Several of the planets in the solar system are terrestrial planets, which means that they are ___4___. The planet Mercury has no ___5___ because its gravitational pull is too weak. Unlike Mercury and Venus, Earth has a(n) ___6___. The Barringer Crater in Arizona is the result of ___7___. Unlike Earth and Venus, Mars has no ___8___. The Martian atmosphere is composed mostly of ___9___. The rings of Saturn are brighter than those of Jupiter because they contain billions of ___10___.

1. A. Gravitational
B. Nebula
C. Copernicus
D. Elliptical
2. A. Venus
B. Mercury
C. Mars
D. Pluto
3. A. Saturn
B. Jupiter
C. Earth
D. Venus
4. A. Earth-like
B. gaseous
C. outside the asteroid belt
D. stormy
5. A. core
B. volcanoes
C. oceans
D. atmosphere
6. A. atmosphere
B. moon
C. belt of asteroids
D. terrestrial center
7. A. a volcano
B. erosion
C. a meteor
D. solar rays
8. A. atmosphere
B. moon
C. cloud cover
D. surface
9. A. carbon dioxide
B. oxygen
C. hydrogen
D. helium
10. A. radioactive rocks
B. icy snowballs
C. hydrogen clouds
D. rocky meteorites

MATCHING

Match each term on the left with the best group of words on the right.

- | | |
|---------------|--|
| 1. Titan | planet that rotates from east to west. |
| 2. Kepler | came up with the first heliocentric theory of the solar system |
| 3. Voyager | an asteroid located between Mars and Jupiter |
| 4. Ceres | Saturn's largest moon |
| 5. Red Spot | solar system's largest planet |
| 6. Uranus | spacecraft sent from Earth to explore the solar system |
| 7. Jupiter | discovered that the planets move in an elliptical rather than oval orbit |
| 8. Copernicus | a gigantic area on Jupiter that appears to consist of swirling gases |

TRUE OR FALSE

Place a T next to statements that are true and an F next to statements that are false.

1. ____ All of the planets rotate from East to West.
2. ____ Jupiter is the solar system's largest planet.
3. ____ Planets inside the solar system's asteroid belt are commonly called inner planets.
4. ____ Pluto is neither a terrestrial nor a Jovian planet.
5. ____ The planet Mercury most closely resembles Jupiter in appearance.
6. ____ Temperatures on Mercury are higher than those on Venus because Mercury is closer to the sun.
7. ____ Jupiter has twice the total mass of the other 8 planets combined.
8. ____ Jupiter has at least 16 moons.
9. ____ The planet Pluto wasn't discovered until 1781.
10. ____ Because of its orbit, Pluto is sometimes closer to the sun than Neptune.

FILL IN THE BLANKS

Use the following words to fill in the blanks below.

asteroids
geocentric
gravitational
Jovian
planets
Pluto
satellites
sulfuric acid
temperatures
water

1. Radioactive elements are believed to have heated the matter that would form the _____ .
2. Mars has two _____ or moons.
3. Early astronomers believed that the sun and planets revolved around the earth. This was known as a _____ theory.
4. The planet Mercury has no atmosphere because its _____ pull is too weak.
5. The _____ planets are largely gaseous and much less dense than the terrestrial planets.
6. The yellow clouds around Venus are made up of _____ .
7. Venus' atmosphere would be much like that of Earth if it had similar _____ .
8. There is evidence that indicates that Mars once had _____ .
9. Some scientists believe that _____ were left-overs from the solar systems planet-forming period.
10. For many years, _____ was referred to as Planet X.

SOLAR SYSTEM CHART

Complete the chart below by researching each of planet of the solar system.

	Average distance from sun	Year (in Earth days)	Diameter at equator	Rotation Period	Average Daytime Temperature
Mercury					
Venus					
Earth					
Mars					
Jupiter					
Saturn					
Uranus					
Neptune					
Pluto					

WORD SEARCH

The following words can be found in the maze below. The letters may be arranged horizontally, vertically, diagonally or backward.

Neptune
Titan
Nebula
Pallas
Venus
Europa
Ceres
Asteroid
Earth
Pluto

c	e	S	E	R	E	C	e	u	o	t	l
r	a	t	v	s	T	e	t	i	a	t	n
n	r	e	c	p	E	s	a	c	m	c	p
e	P	b	r	N	U	d	y	i	V	r	L
t	A	S	T	E	R	O	l	D	E	w	U
p	L	u	c	P	O	l	t	n	N	d	T
E	L	a	y	T	P	a	i	u	U	s	O
e	A	l	n	U	A	s	n	s	S	c	e
a	S	R	i	N	s	y	a	t	c	i	v
s	d	s	T	E	d	o	n	o	e	u	o
t	s	t	d	H	T	l	T	A	N	p	c
y	p	N	E	B	U	L	A	e	u	r	s

TEST

Circle the phrase which best answers each question.

1. The position of the planets from nearest to furthest from the sun is:
 - Mars, Venus, Earth, Mercury, Pluto, Saturn, Uranus, Jupiter.
 - Earth, Venus, Mars, Saturn, Pluto, Jupiter, Neptune, Uranus, Mercury.
 - Saturn, Earth, Venus, Mars, Jupiter, Pluto, Uranus, Neptune, Mercury.
 - Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto.
2. The inner planets are the _____ planets and the outer planets are the _____ planets.
 - asteroid...meteor
 - solar...lunar
 - terrestrial...Jovian
 - nuclear...electromagnetic
3. The asteroid belt _____ the inner and outer planets.
 - separates
 - joins
 - increases the gravitational pull of
 - increases the heat of
4. _____ is one explanation of how our solar system was created.
 - Solar expansion
 - The Asteroid Belt
 - The Nebula theory
 - Meteor activity
5. The inner planets are largely made up of:
 - asteroids.
 - meteors.
 - gases.
 - rocky materials.

TEST (CONTINUED)

6. The two smallest planets in the solar system are:

- Venus and Mars.
- Earth and Venus.
- Mercury and Earth.
- Pluto and Mercury.

7. All nine planets in our solar system move in elliptical orbits around:

- the asteroid belt.
- the sun.
- the moon.
- the solar system.

8. The rocky materials on Earth's surface are the _____ of those on any planet.

- densest
- most eroded
- most porous
- lightest

9. The rings of Saturn consist of:

- asteroids.
- moons.
- snowballs of ice.
- solar dust

10. The farther away a planet is from the sun, the _____ it becomes.

- denser
- larger
- hotter
- colder

ADDITIONAL AIMS MULTIMEDIA PROGRAMS

You and your students might also enjoy these other AIMS Multimedia programs:

Earth Science Essentials Series

Oceans: Charting the Vastness

The Universe: The Vast Frontier

Geology of the Earth: Of Forces, Rocks, & Time

Weather: The Chaos Which Surrounds Us

The History of the Earth: Over the Eons

ANSWER KEY for page 18

VOCABULARY

The following terms are from *The Solar System: Our Neighbors in Space*. Fill in the number of each term next to its closest definition.

- | | |
|------------------|---------------------|
| 1. asteroid | 6. Pallas |
| 2. Copernicus | 7. terrestrial |
| 3. Ganymede | 8. volcanic |
| 4. Jovian | 9. Valles Marineris |
| 5. Nebula theory | 10. Olympus Mons |

- 8 vents on a planet that spew molten rock and gas
- 4 type of planet that is largely gaseous and much less dense than terrestrial planets
- 1 a small irregular planet-like object that rarely exceeds one kilometer in diameter
- 6 one of the largest known asteroids
- 10 the largest known volcano in the universe
- 2 Polish astronomer who developed a heliocentric model of the universe
- 5 states that the solar system formed from a rotating cloud of interstellar gas
- 3 one of the moons orbiting Jupiter
- 9 a series of huge canyons on Mars
- 7 Earth-like; made of rocky material like that on Earth

ANSWER KEY for page 19

CHECKING COMPREHENSION

Read the following sentences and circle the letter of the word that best fills each blank.

The ___1___ theory is the most prevalent theory about the creation of the solar system. ___2___ takes the shortest amount of time to circle the sun, only 88 days. The asteroid belt in our solar system lies between Mars and ___3___. Several of the planets in the solar system are terrestrial planets, which means that they are ___4___. The planet Mercury has no ___5___ because its gravitational pull is too weak. Unlike Mercury and Venus, Earth has a(n) ___6___. The Barringer Crater in Arizona is the result of ___7___. Unlike Earth and Venus, Mars has no ___8___. The Martian atmosphere is composed mostly of ___9___. The rings of Saturn are brighter than those of Jupiter because they contain billions of ___10___.

1. A. Gravitational
 B. Nebula
C. Copernicus
D. Elliptical
2. A. Venus
 B. Mercury
C. Mars
D. Pluto
3. A. Saturn
 B. Jupiter
C. Earth
D. Venus
4. A. Earth-like
B. gaseous
C. outside the asteroid belt
D. stormy
5. A. core
B. volcanoes
C. oceans
 D. atmosphere
6. A. atmosphere
 B. moon
C. belt of asteroids
D. terrestrial center
7. A. a volcano
B. erosion
 C. a meteor
D. solar rays
8. A. atmosphere
B. moon
 C. cloud cover
D. surface
9. A. carbon dioxide
B. oxygen
C. hydrogen
D. helium
10. A. radioactive rocks
 B. icy snowballs
C. hydrogen clouds
D. rocky meteorites

ANSWER KEY for page 20

MATCHING

Match each term on the left with the best group of words on the right.

-
1. Titan planet that rotates from east to west.
2. Kepler discovered that the planets move in an elliptical rather than oval orbit
3. Voyager spacecraft sent from Earth to explore the solar system
4. Ceres an asteroid located between Mars and Jupiter
5. Red Spot a gigantic area on Jupiter that appears to consist of swirling gases
6. Uranus planet that rotates from east to west
7. Jupiter solar system's largest planet
8. Copernicus came up with the first heliocentric theory of the solar system

ANSWER KEY for page 21

TRUE OR FALSE

Place a T next to statements that are true and an F next to statements that are false.

1. F All of the planets rotate from East to West.
2. T Jupiter is the solar system's largest planet.
3. T Planets inside the solar system's asteroid belt are commonly called inner planets.
4. T Pluto is neither a terrestrial nor a Jovian planet.
5. F The planet Mercury most closely resembles Jupiter in appearance.
6. F Temperatures on Mercury are higher than those on Venus because Mercury is closer to the sun.
7. T Jupiter has twice the total mass of the other 8 planets combined.
8. T Jupiter has at least 16 moons.
9. F The planet Pluto wasn't discovered until 1781.
10. T Because of its orbit, Pluto is sometimes closer to the sun than Neptune.

ANSWER KEY for page 22

FILL IN THE BLANKS

Use the following words to fill in the blanks below.

asteroids
geocentric
gravitational
Jovian
planets
Pluto
satellites
sulfuric acid
temperatures
water

1. Radioactive elements are believed to have heated the matter that would form the planets .
2. Mars has two satellites or moons.
3. Early astronomers believed that the sun and planets revolved around the earth. This was known as a geocentric theory.
4. The planet Mercury has no atmosphere because its gravitational pull is too weak.
5. The Jovian planets are largely gaseous and much less dense than the terrestrial planets.
6. The yellow clouds around Venus are made up of sulfuric acid .
7. Venus' atmosphere would be much like that of Earth if it had similar temperatures .
8. There is evidence that indicates that Mars once had water .
9. Some scientists believe that asteroids were left-overs from the solar systems planet-forming period.
10. For many years, _____ was referred to as Planet X.

ANSWER KEY for page 23

SOLAR SYSTEM CHART

Complete the chart below by researching each of planet of the solar system.

	Average distance from sun	Year (in Earth days)	Diameter at equator	Rotation Period	Average Daytime Temperature
Mercury	36,000,000	88 days	3,100 miles	59 Earth days	625° F
Venus	67,250,000	225 days	7,570 miles	243 Earth days	980° F
Earth	92,950,000	365 days	7,926 miles	1 Earth day	60° F
Mars	141,500,000	687 days	4,200 miles	24 hrs. 37 min.	-10° F
Jupiter	483,500,000	4,333 days	88,700 miles	9 hrs. 55 min.	-229° F
Saturn	887,500,000	10,759 days	75,100 miles	10 hrs. 14 min.	-240° F
Uranus	1,785,000,000	30,685 days	29,000 miles	10 hrs. 49 min.	-240° F
Neptune	2,795,000,000	60,188 days	27,600 miles	15 hrs. 40 min.	-280° F
Pluto	3,675,000,000	90,700 days	4000 miles	6 Earth days	-300° F

ANSWER KEY for page 24

WORD SEARCH

The following words can be found in the maze below. The letters may be arranged horizontally, vertically, diagonally or backward.

- Neptune
- Titan
- Nebula
- Pallas
- Venus
- Europa
- Ceres
- Asteroid
- Earth
- Pluto

c e **S E R E C** e u o t l
r a t v s T e t i a t n
n r e c p **E** s a c m c **p**
e **P** b r **N** U d y i **V** r **L**
t **A S T E R O I D** E w **U**
p L u c P O l t n **N** d **T**
E L a y T P a i u **U** s **O**
e **A** l n U **A** s n s **S** c e
a **S** R i **N** s y a t c i v
s d s T **E** d o n o e u o
t s t d **H** **T I T A N** p c
y p **N E B U L A** e u r s

ANSWER KEY for page 25

TEST

Circle the phrase which best answers each question.

1. The position of the planets from nearest to furthest from the sun is:

- Mars, Venus, Earth, Mercury, Pluto, Saturn, Uranus, Jupiter.
- Earth, Venus, Mars, Saturn, Pluto, Jupiter, Neptune, Uranus, Mercury.
- Saturn, Earth, Venus, Mars, Jupiter, Pluto, Uranus, Neptune, Mercury.
- Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto.

2. The inner planets are the _____ planets and the outer planets are the _____ planets.

- asteroid...meteor
- solar...lunar
- terrestrial...Jovian
- nuclear...electromagnetic

3. The asteroid belt _____ the inner and outer planets.

- separates
- joins
- increases the gravitational pull of
- increases the heat of

4. _____ is one explanation of how our solar system was created.

- Solar expansion
- The Asteroid Belt
- The Nebula theory
- Meteor activity

5. The inner planets are largely made up of:

- asteroids.
- meteors.
- gases.
- rocky materials.

ANSWER KEY for page 26

TEST (CONTINUED)

6. The two smallest planets in the solar system are:

- Venus and Mars.
- Earth and Venus.
- Mercury and Earth.
- Pluto and Mercury.

7. All nine planets in our solar system move in elliptical orbits around:

- the asteroid belt.
- the sun.
- the moon.
- the solar system.

8. The rocky materials on Earth's surface are the _____ of those on any planet.

- densest
- most eroded
- most porous
- lightest

9. The rings of Saturn consist of:

- asteroids.
- moons.
- snowballs of ice.
- solar dust

10. The farther away a planet is from the sun, the _____ it becomes.

- denser
- larger
- hotter
- colder