

### Dear Teachers,

The following pages have been designed with you in mind. Flip through this book to find exciting, hands-on ideas for teaching space concepts with a pocket chart! (LER 2206)

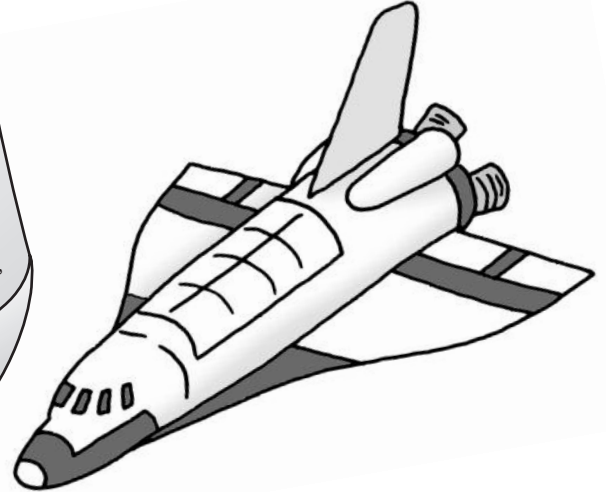
Pocket Chart Science - Space has been developed to provide creative teaching ideas and reproducible activities to support the use of a pocket chart. Suggested activities are designed to attract all types of learners. They encourage listening, speaking, observing and manipulating words and pictures to teach children about the planets, moon, stars, constellations, and much more. In addition, this book contains 172 ready-to-use cards to aid you in teaching about space. The cards display illustrations, fact lists, and words for each lesson, and are color-coded for handy organization. A Cards-At-A-Glance chart shows what is pictured on each card, and is located in the back of the book for easy reference. Also included is a Reading List to help you build a classroom library filled with children's literature about space.

This book quickly becomes a compact storage file! Tear out the sheets of cards along the perforated lines. Laminate the cards for extra durability, cut them, and store them in the pocket provided on the back cover of the book. As you use them, tear out the blackline master pages for photocopying, then use the folder pocket on the inside front cover for storage.

# Pocket Chart Science

## Space

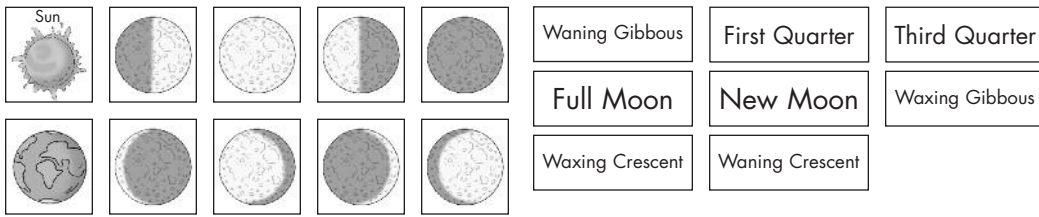
### Introduction Strategies



1. Brainstorm the word *space* with your students using a “free response” technique. Ask children to suggest words, phrases, and ideas that are associated with space. Draw attention to the words that represent key ideas and topics, including: *planets, stars, Moon, Sun, rockets, spacecraft, constellations, Martian, comet, asteroid, and meteor.*
2. Talk about space topics that have recently been in the news. As a precursory activity, collect news articles and headlines about space topics, and post them in the classroom. Encourage children to look for space coverage on television and in newspapers and magazines, and share the information with the class.
3. Help students determine fact from fiction when it comes exploring a topic like outer space. Watching movies and cartoons that feature aliens, space monsters, and flying saucers may contribute to students’ misconceptions about space, so you may need to spend some time comparing movie fantasies to basic scientific findings and accomplishments.
4. Visit NASA on-line! Take your students to NASA’s Web site ([www.nasa.gov](http://www.nasa.gov)) and browse. You’ll find helpful information, links, and pictures that will help foster interest among your students.
5. Invite your students to become familiar with the night sky! Ask them to sky-watch at a specific time each evening, and record their observations by making entries in a Sky Journal, or by drawing pictures of what they see.

# Teaching Notes: Phases of the Moon

Cards needed: (red ☀️)



## Background information:

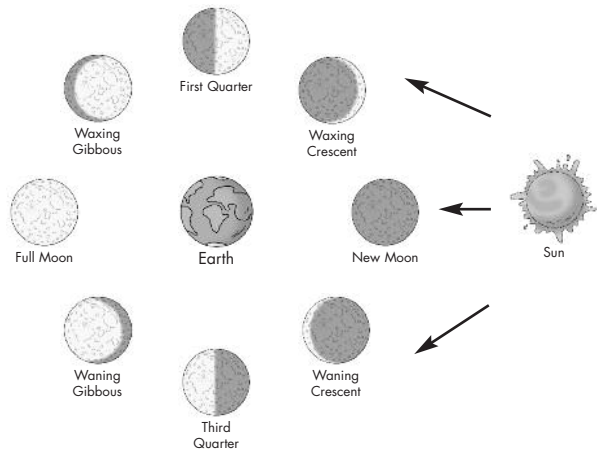
The Moon and the Earth are partners in space. They orbit each other constantly, despite the fact that the Moon is only a quarter of the Earth's size. Imagine the Earth as being grapefruit-sized...the Moon would be the size of a plum!

The Moon has a rocky surface and weak gravity. It orbits the Earth in an elliptical circle, so it is not always the same distance from the Earth. As the light of the Sun hits the orbiting Moon, part of the Moon is in darkness, making the dark part invisible from Earth. The dark area that is invisible makes the moon appear to have different shapes (circle, crescent, semicircle, etc.). We call the different moon appearances (as seen from Earth) *phases of the moon*.

The *New Moon* phase occurs when the unlit side of the Moon faces the Earth, making the Moon invisible to us. Next comes the *Crescent Moon* phase, followed by the *Half Moon* phase, and the *Full Moon* phase. After the Full Moon, the phases continue in reverse order, until the *New Moon* returns. It takes 29.5 days for a moon phase cycle to be completed, and we call those 29.5 days a *lunar month*.

## Presenting the concept:

Arrange the picture cards in a circular shape in the pocket chart, as shown. Note: Because the pocket chart is not circular, the "circle" you form with the cards will not be perfect. Pass out the corresponding word cards to students. Start with the New Moon, and ask for student volunteers to place the correct word card under each moon phase, in a clockwise fashion.



## Extending the activity:

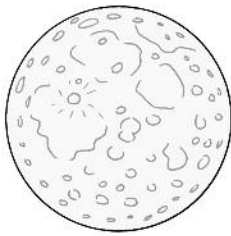
After students are familiar with the phases of the moon, introduce the Moon Log (page 4). Photocopy the page five times for each student. Ask students to observe the moon each night (weather permitting), and record their observations in the log. (Note: If students miss an observation due to weather or other circumstances, most newspapers show the phase of the moon in the weather section.) For each log entry, students should list the date and time of the observation, the weather conditions (clear/cloudy, temperature, precipitation), the name of the phase of the moon, and a sketch of the moon that evening. Have students refer to the information on Activity 1 (page 3) as they fill in the log. After one lunar month has passed, ask students to bring their Moon Logs to school, so you can discuss the data. Or review the Moon Logs each week to see how the moon changes over seven days. Note: Reassure students that on the nights that the Moon is obscured from view, they should simply make note of that in their Moon Log.

Name \_\_\_\_\_

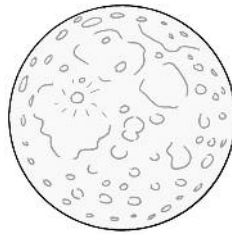
**Activity 1**

# Phases of the Moon

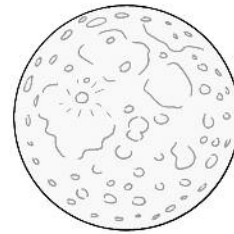
Directions: Read each name, and shade the blank moons to show the phases of the moon. The shaded parts should be the moon in darkness; the unshaded parts should be the part of the moon we see from Earth.



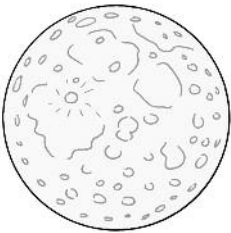
Waxing Gibbous



First Quarter



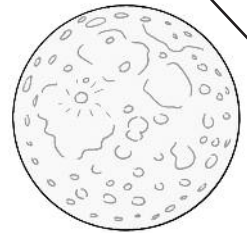
Waxing Crescent



Full Moon

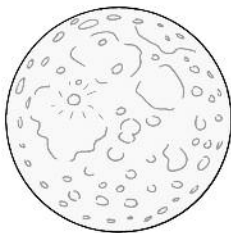
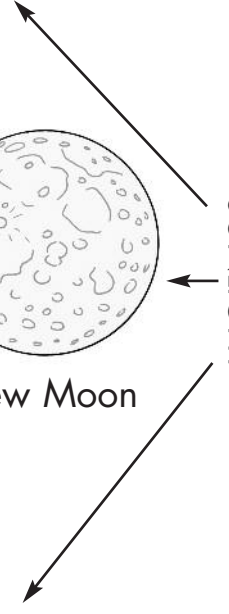


Earth

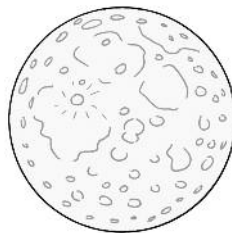


New Moon

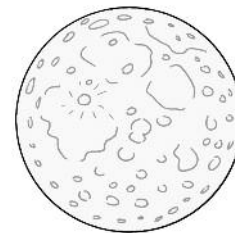
SUNLIGHT



Waning Gibbous



Third Quarter



Waning Crescent

Name \_\_\_\_\_

**Activity 2**

# Moon Log

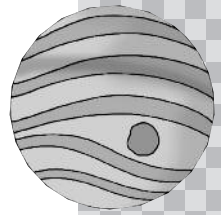
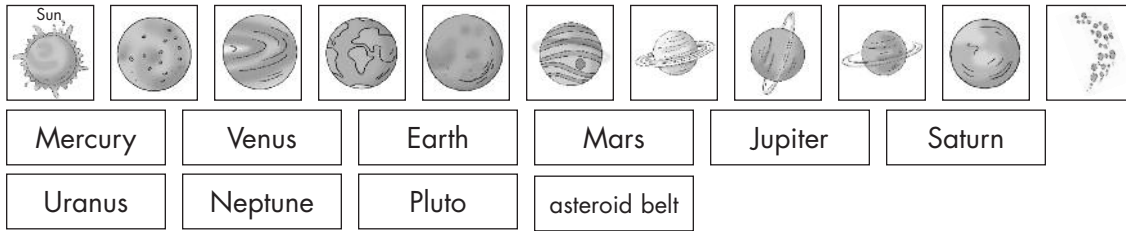
Directions: Record your observations each night in the chart below. List the date and time of your observations, weather conditions, and the name of the phase of the moon. Then sketch a picture of how the moon looks each night.

Dates Recorded: \_\_\_\_\_ through \_\_\_\_\_

Date/Time	Weather Conditions	Phase of Moon	Sketch

# Teaching Notes: The Nine Planets - The Basics

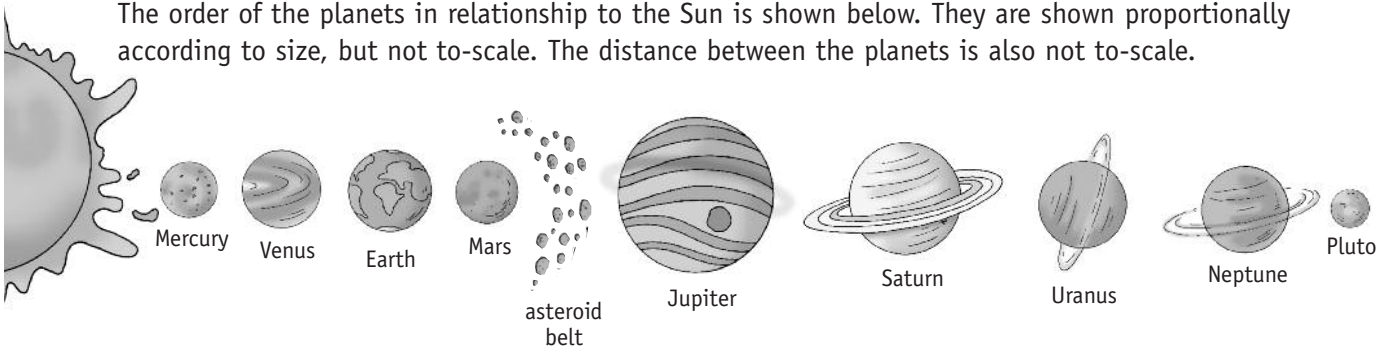
Cards needed: (yellow ☀️, Planet Identification cards)



## Background information:

So, what IS a planet? A **planet** is a large sphere made of rock, gas, or metal. The nine planets we know of orbit the huge, famous star we call the **Sun**. These nine planets are very unique, but scientists think they were all formed at the same time from dust and gas that had gathered near the Sun. Space **probes** have taught us a lot about the planets. Unmanned probes have visited every planet except Pluto, taking pictures, reading temperatures, and sending the information back to scientists on Earth.

The order of the planets in relationship to the Sun is shown below. They are shown proportionally according to size, but not to-scale. The distance between the planets is also not to-scale.

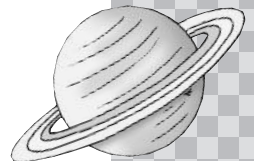


## Presenting the concept:

Arrange the pocket chart cards shown above, so the picture cards are positioned in a horizontal row at the top of the pocket chart, and the word cards are positioned at the bottom of the chart, in scrambled order. (You will have to put the word cards in the pocket chart tilted vertically, because they will not all fit side-by-side, horizontally.) Place the *Sun* card to the left of the planet cards, and pass out the yellow Planet Identification cards to nine students.

Concentrate first on having students learn how to identify each planet based on physical characteristics. Talk about the colors and features of the planets, referring to the yellow Planet Identification cards for information. Ask the nine students who are holding these cards to be the “experts” on their planet. After you have reviewed the basic physical characteristics of each planet, return to the pocket chart. Ask students to match the word cards to the pictures of the planets in the pocket chart. If students “get stuck,” refer to the Planet ID cards and the “experts” holding them.

Once identifying the planets becomes easier, help students learn the order of the planets from the Sun. Place the planets in order from left to right (with the Sun on the left). Put the word cards appropriately underneath the picture cards. Review the names of the planets in the proper order. Then make up a silly sentence (mnemonic device) to help your students remember the order of the planets. An example sentence follows: My (Mercury) Violet (Venus) Elephant (Earth) Made (Mars) James (Jupiter) Stay (Saturn) Under (Uranus) Nick’s (Neptune) Porch (Pluto).



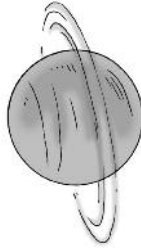
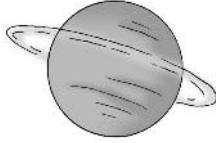
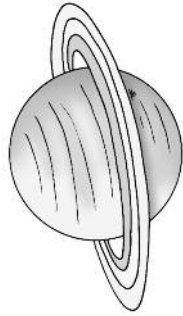
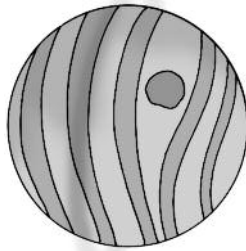
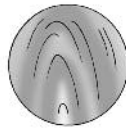
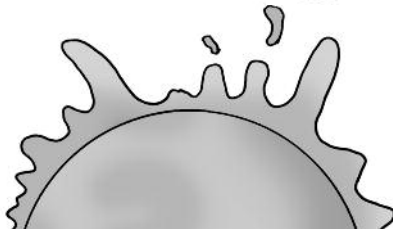
Name \_\_\_\_\_

**Activity 3**

# The Nine Planets

Directions: Write the name of each planet on the line below the picture.

The pictures are shown in order from the Sun.



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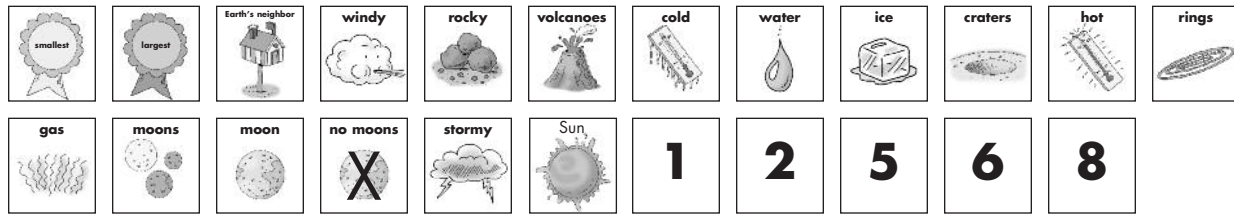
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1. Circle the LARGEST planet.
2. Draw a box around the SMALLEST planet.
3. Put an X through the planet that has the largest, most visible rings.

# Teaching Notes: The Inner Planets - Mercury, Venus, Earth & Mars

Cards needed: (orange ☀️, Planet Identification cards)



Inner Planets

## Background information:

Mercury, Venus, Earth and Mars all have something in common: they're the **inner planets**! Made of rock and metals like iron and nickel, these planets are heavy and dense. They would not float in water, unlike their gaseous cousins (Jupiter, Saturn, Uranus, and Neptune). The inner planets have only a thin layer of atmosphere. They're also the warmest planets, and the closest to the Sun. Characteristics of the four inner planets are listed below.

**Mercury** - Although it's the innermost planet, Mercury's not the hottest. It's a fast mover, though. It orbits the Sun once every 88 days! Like Venus, Mercury has no moon. It does have a rocky, bumpy surface pitted with craters. Mercury is the second-smallest planet. It has very hot days and very cold nights.

**Venus** - The second planet from the Sun, Venus is the brightest planet in the sky because its surface clouds reflect the Sun's light. This gives Venus the nickname *Morning Star* or *Evening Star*, because of its visibility from Earth in the early morning or twilight. Venus is a very hot and stinky planet, due to yellow-colored clouds of sulfur. It's about the same size as Earth.

**Earth** - Our planet is special for two very important reasons: it has liquid water on its surface, and it has conditions conducive to life. Changes in the Earth's orbit around the Sun have changed the surface of the Earth from being covered with glaciers (during the Ice Age) to enjoying seasons and more moderate temperatures. Earth is the largest inner planet.

**Mars** - Mars is the inner planet farthest away from the Sun. It has a reddish color and a dusty, windy surface. Mars has two moons (Phobos and Deimos) and a chillier temperature than the other inner planets. The word *Martian* refers to the prospect of life on Mars, which has never been confirmed or disproven, even when Viking space probes landed on Mars to take photographs, gather soil samples, and measure weather conditions!

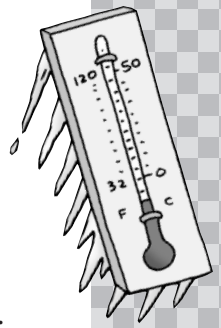
## Presenting the concept:

Begin by discussing the characteristics of the four inner planets (listed above and on the backs of the yellow Planet ID cards). If you feel they would be up to the challenge, have your students take notes as you talk about each planet. Or make lists on the chalkboard or create posters for each planet, listing their most important characteristics.

Next, move to the pocket chart. Place the four planet cards horizontally in the top pocket. Lay the characteristic cards (shown above) on a table or flat surface nearby. Invite individual students to select a characteristic card and place it under the appropriate planet card in the pocket chart. Use the number cards and the moon cards to indicate how many moons (if any) each planet has. As students place the characteristic cards under the planets, discuss the similarities between the inner planets. Use the information listed on the backs of the yellow Planet ID cards to double-check the characteristics students list for each planet.

## Extending the activity:

Ask each student to choose one of the inner planets (you may wish to exclude Earth, because students are obviously very familiar with it) and write about it! Ask them to write a letter home from the perspective of a visitor to the planet, describing its physical features. Ask them not to reveal the planet they are "visiting" in their letter. Then ask students to exchange letters, and try to guess which planet the visitor describes in his or her letter.



Name \_\_\_\_\_

**Activity 4**

# The Inner Planets

Directions: Use the words in the Word Box to describe each planet. Write the words on the lines below each planet. You will use most of the words more than once.

## Mercury

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## Venus

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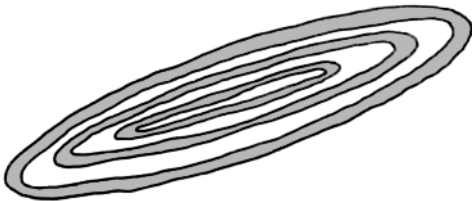
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### Word Box:

Earth's neighbor  
windy  
rocky  
has volcanoes  
cold  
hot  
has water  
has ice  
has craters  
has rings  
gassy  
closest to the Sun



## Earth

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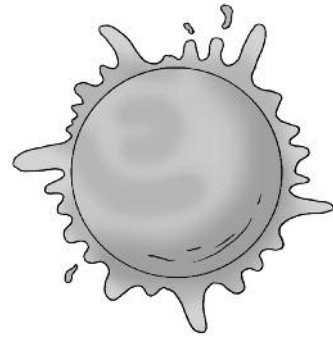
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## Mars

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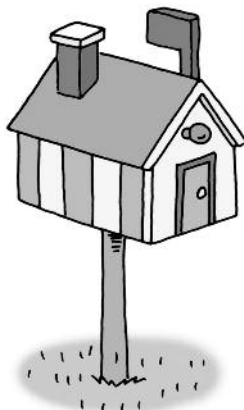
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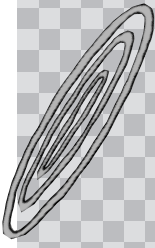




# Teaching Notes: The Outer Planets - Jupiter, Saturn, Uranus, Neptune & Pluto

Cards needed: (blue ☀️, Planet Identification cards)

				<b>1</b>	<b>2</b>	<b>5</b>	<b>6</b>	<b>8</b>	Earth	Jupiter	
									Mars	Venus	
				Outer Planets	Mercury	Saturn	Uranus	Neptune	Pluto		



## Background information

Farther from the Sun are the five **outer planets**! They're made of mainly gasses, liquids, and ice (with the exception of Pluto, which is composed more like an inner planet, with a rocky core). The outer planets are much less dense than the inner planets, and Jupiter, Saturn, Uranus, and Neptune are considered **gaseous planets**, due to their gassy composition. All five are cold, dark planets because of their distance from the Sun.

**Jupiter** - Jupiter is so big, the other eight planets could fit inside of it! It also spins extremely quickly, making its day only ten hours long. Jupiter appears to be striped and swirled with many bands of colors due to clouds and particles that give it this interesting texture. Jupiter is known for one large red spot (called the *Great Red Spot*) on its surface, which is actually a giant whirlpool cloud. Jupiter has 16 moons and a single ring.

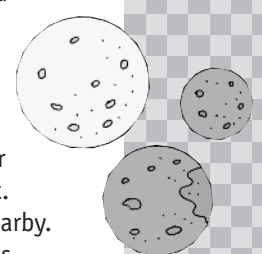


**Saturn** - Saturn is known as the **ringed planet**, despite the fact that other planets have rings, too. The dusty, gassy rings of Saturn are very impressive, and extend for more than 46,000 miles (74,000 km). Saturn has more moons than any other planet, with 18 confirmed, and possibly more in existence. Its frigid temperatures make this planet uninhabitable.

**Uranus** - Thanks to some photographs taken by the space probe Voyager 2 in 1986, we know a great deal about this ringed planet. Uranus has fifteen moons and many rings made of rock, ice, and dust. This planet also has a strange tilt: its vertical rings circle its horizontal axis.

**Neptune** - The strongest winds in the Solar System whip through Neptune's atmosphere! This frigid planet has a brilliant blue-green color and faint, narrow rings. Neptune has eight moons, the largest of which, Triton, measures 1,681 miles (2,705 km) across! That's a BIG moon!

**Pluto** - Pluto was discovered in 1930, but remains mysterious and unexplored because it is too far away to be examined with a telescope. Pluto is the smallest, coldest planet, and is farthest away from the Sun. Pluto is even smaller than our Moon, and has only one moon of its own (Charon). Its orbit is unusual, and sometimes brings it closer to the Sun than Neptune (making Neptune the ninth planet temporarily).



## Presenting the concept:

Discuss the characteristics of the five outer planets (see the backs of the yellow Planet ID cards). Have students take notes as you talk about each planet. As groups, ask them to make lists on the chalkboard or create posters for each planet, listing their most important characteristics. Then move to the pocket chart. Place the five planet cards horizontally in the top pocket. Lay the characteristic cards on a flat surface nearby. Invite individual students to select a characteristic card, and place it under the appropriate planet card. As students place the characteristic cards under the planets, discuss similarities between the outer planets. Use the number cards and the moon cards to indicate how many moons (if any) each planet has. Discuss the differences between the outer planets and Earth.

## Extending the activity:

Pass out the nine planet cards to student volunteers. Pass out all of the characteristic cards to the rest of the students. One at a time, ask the students holding characteristic cards to hold up the cards in front of the classroom. Ask the students holding planet cards that have that characteristic to stand near the person holding the characteristic card. For example, if a student holds up a "ROCKY" card, students holding Mercury, Venus, Earth, Mars, and Pluto should stand near him or her.

Name \_\_\_\_\_

**Activity 5**

# The Outer Planets

Directions: Use the words in the Word Box to describe each planet. Write the words on the lines below each planet. You will use most of the words more than once.

## Saturn

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## Uranus

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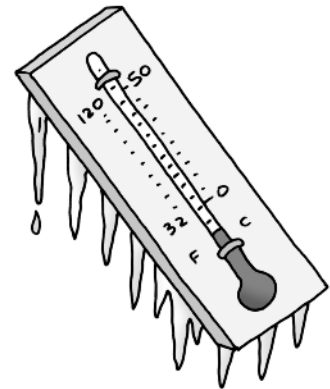
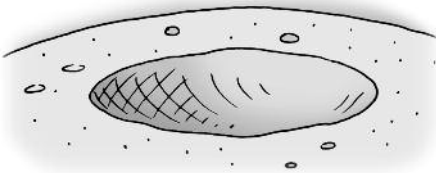
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### Word Box:

windy  
rocky  
has volcanoes  
cold  
smallest planet  
has water  
has ice  
has craters  
has rings  
gassy  
farthest from the Sun  
largest planet



## Neptune

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## Jupiter

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## Pluto

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# Teaching Notes: Stars & Other "Sky Stuff"

Cards needed: (green ☀️)

				The Scales (Libra)	The Dolphin (Delphinus)	The Great Bear (Ursa Major)	The Lion (Leo)
				The Big Dipper	The Southern Fish (Piscis Austrinus)	The Swan (Cygnus)	The Winged Horse (Pegasus)
				The Scorpion (Scorpius)	star	constellation	asteroid belt
				galaxy	meteor	meteorite	comet
						asteroids	

## Background information

Most people believe a constellation is a group of stars arranged in a pattern. Actually, a **constellation** is an area of the sky that starts and stops at specific boundaries. We recognize major constellations by the shapes assigned to the arrangements of the stars. Some of the most familiar constellations include: the Big Dipper, the Little Dipper, Ursa Major and Minor (big and little bears), Scorpius (the scorpion), and Pegasus (the winged horse).

Constellations are found within **galaxies**, which are huge groups of stars, dust, and gas. There are many galaxies in the Universe. **Stars** are groups of gasses that emit heat and light; but stars aren't the only things that shine in the sky. Meteors, comets, meteorites, and asteroids also move through the sky. **Comets** are icy balls with gassy, dusty tails. They are rarely seen with the naked eye, and take hundreds of years to orbit the Sun. **Meteors** (or **shooting stars**) may look like brief, bright streaks up in the night sky. They're actually hunks of rock that fly into the Earth's atmosphere, and either burn up or land somewhere. When they land, they're called **meteorites**. Many meteorites fall into the oceans or deserts and are never noticed, but some larger ones hit the Earth with enough force to carve-out a crater! **Asteroids** are like miniature rocky planets floating around in space. Many asteroids orbit the Sun in the **asteroid belt** between Mars and Jupiter.

## Presenting the concept:

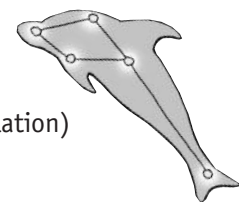
Begin with a quick matching activity to familiarize students with the pictures and words for this lesson. Place the picture cards in a vertical row down the left side of the pocket chart. Place the corresponding word cards down the right side of the pocket chart, in scrambled order. Ask for student volunteers to match the picture and word cards appropriately, by rearranging the cards in the chart.

Next, try building some of the simple constellations (the Big Dipper, the Southern Fish, and the Dolphin are nice and easy) in the pocket chart by arranging the star cards in the proper shape. Invite students to sketch their own imaginary constellations, and create them in the pocket chart using the star cards.

## Extending the activity:

Place the cards shown above on a table or flat surface near the pocket chart. Read the following riddles, one by one, and ask students to record their answers on a piece of paper. To check the answers, ask student volunteers to find the answer card for each riddle, and place it in the pocket chart.

1. I'm a mini-planet made of rocks and metals. I like to "hang out" with my buddies between Mars and Jupiter. What am I? (asteroid)
2. I'm a hunk of burning rock that streaks through the night sky. What am I? (meteor)
3. It sometimes takes me hundreds of years to travel around the Sun. As I move, my dusty tail trails behind me. What am I? (comet)
4. When I crash to the earth, I can leave a huge dent. What am I? (meteorite)
5. Stars, dust, and gasses are what I'm made of. What am I? (galaxy)
6. I'm an area of the sky known for the shapes of my star clusters. What am I? (constellation)

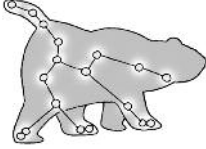
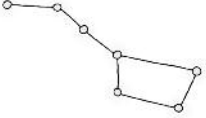
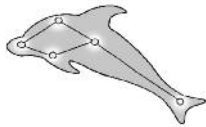
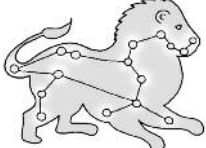

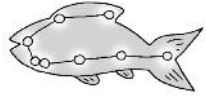
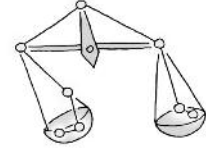




Name \_\_\_\_\_

**Activity 6**

# Constellation Lists

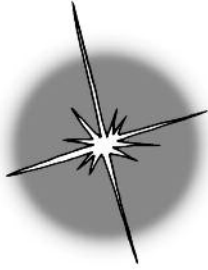
Directions: Look at the constellations shown below. Write the common name and scientific name next to each picture. Use the names in the Word List for help. Some of the blanks have been filled in for you.

Word List:	Common Name	Scientific Name
The Southern Fish		_____
Pegasus		part of Ursa Major (no scientific name)
Scorpius		_____
The Scorpion		_____
The Big Dipper		_____
Libra		Piscis Austrinus
The Winged Horse		_____
Delphinus		_____
Leo		Cygnus
Piscis Austrinus		
The Lion		
The Swan		
Cygnus		
The Scales		
Ursa Major		
The Great Bear		
The Dolphin		

**Activity 7**

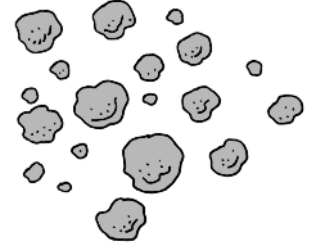
# Spacey Stuff

Directions: Fill in each blank with one of the words from the Word List.



**Word List:**

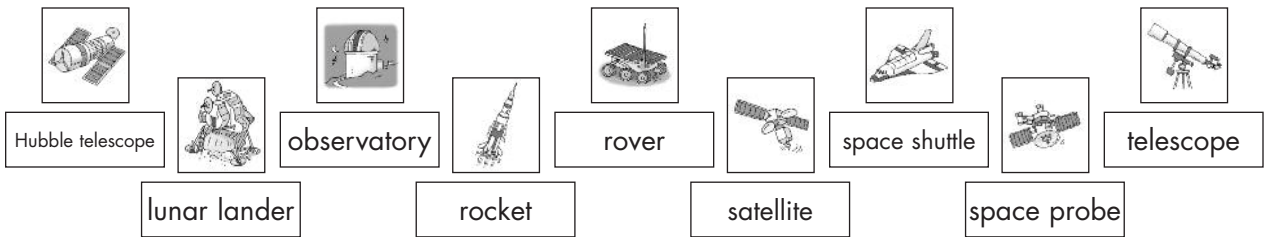
meteor, galaxy, meteorite, comet,  
asteroid, constellation, star



1. Pegasus, the winged horse, is a famous \_\_\_\_\_.
2. A twinkling ball of gasses that can usually be seen from Earth at night is called a \_\_\_\_\_.
3. A \_\_\_\_\_ is an icy ball with a dusty, gassy tail.
4. When a piece of rock from space crashes to Earth, we call it a \_\_\_\_\_.
5. An \_\_\_\_\_ is a hunk of rock that orbits the Sun in a group.
6. A huge group of stars, dust, and gas is called a \_\_\_\_\_.
7. A \_\_\_\_\_ is a piece of rock that enters the Earth's atmosphere.

# Teaching Notes: Space Technology

Cards needed: (purple ☀️)



## Background information

Many different types of crafts and machines are launched into space, each one performing an important job. They help us learn about space by gathering information, taking photographs, and safely transporting scientists (**mission specialists**) into space.

When the space shuttle Columbia was launched in 1981, it was the first time a reusable spacecraft had ever been put into space! Before Columbia left Earth's atmosphere, spacecraft were only used once.

**Space shuttles** can be used over and over because they land like gliders and have less of a chance of being ruined. Other famous space shuttles include Discovery, Atlantis, and Endeavour. **Rockets** are the only vehicles with enough strength and power to push a spacecraft into space. They launch shuttles, probes, satellites, and other spacecraft out of Earth's atmosphere. Atlas, Titan 3, and Saturn V are three of the United States' most famous rockets.

**Space probes** really like to travel! Space probes like Voyager, Mariner, Pioneer, Galileo, and Viking have visited every planet except Pluto. These unmanned flying robots take pictures of the planets, and sometimes even take measurements and temperature readings. **Lunar landers** have been used by astronauts to land on the surface of the Moon as gently as possible. Once an astronaut lands on a space surface, space vehicles called **rovers** help him or her move around.

**Space telescopes** bring space objects into view without interference from Earth's atmosphere. The **Hubble Space Telescope** was launched in 1990, and is the largest telescope to orbit the Earth's surface. The Hubble itself is a complicated arrangement of mirrors, solar panels, and communication antennae. As it moves, this space telescope sends images down to radio telescopes on Earth.

A planet-orbiting **satellite** is an example of space technology with many uses! Communications satellites are used every day to relay radio, television, and telephone transmissions throughout the world. Military satellites in space are used to spy on individuals and countries, and track and control missiles, too. Satellites also help meteorologists track and forecast weather systems and observe changes in the Earth's atmosphere.

## Presenting the concept:

Before explaining these examples of space technology, pass out the picture and word cards shown above. Invite students to move throughout the classroom, looking for their "partner," the person with the word or picture card that matches the card they are holding. When the partners find each other, ask them to post their pair of cards in the pocket chart. Go through the pairs of word and picture cards, and see if they are correct. As you review the pairs, provide students with additional information about the uses and history of each device.

## Extending the activity:

Invite students to invent new forms of space technology by creating illustrations or writing descriptive paragraphs about their inventions. Or watch for articles in the newspaper describing recent advances or uses of space technology. Clip the articles and post them on a Space Technology board (along with your students' space technology inventions.) Visit the NASA Web site for updated glimpses of space technology, too.

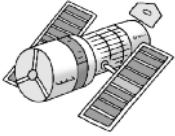
**Activity 8**

# Space Technology

Directions: Write the name of each space technology device next to its picture, and describe its use.

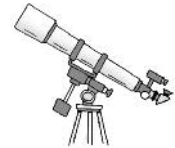
**Names**

**Uses**



\_\_\_\_\_

\_\_\_\_\_



\_\_\_\_\_

\_\_\_\_\_



\_\_\_\_\_

\_\_\_\_\_



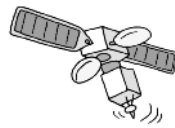
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\_\_\_\_\_

\_\_\_\_\_



\_\_\_\_\_

\_\_\_\_\_

**Word List:**

satellite

rover

shuttle

observatory

lunar lander

Hubble telescope

telescope

rocket

space probe

# Reading List

Astronauts Are Sleeping

Natalie Standiford  
Alfred A. Knopf, Inc., NY: 1996

The Bear on the Moon

Joanne Ryder  
Morrow Junior Books, NY: 1991

Can You Hitch a Ride on a Comet?

Sidney Rosen  
Carolrhoda Books, Inc., Minneapolis: 1993

Here in Space

David Milgrim  
Troll Communications L.L.C., NY: 1997

The Magic School Bus:

Lost in the Solar System

Joanna Cole  
Scholastic, Inc., NY: 1990

Man on the Moon

Anastasia Suen  
Penguin Putnam, Inc., NY: 1997

New Moon

Pegi Deitz Shea  
Boyd's Mills Press, Honesdale, PA: 1996

The Planets in Our Solar System

Franklyn M. Branley  
HarperCollins Publishers, NY: 1998

So That's How the Moon Changes Shape!

Allan Fowler  
Children's Press, Chicago: 1991

Stars for Sarah

Ann Warren Turner  
HarperCollins Publishers, NY: 1991

Through Moon and Stars and Night Skies





































































































Ann Warren Turner  
HarperCollins Publishers, NY: 1990

Tinker and Tom and the Star Baby

David McPhail  
Little, Brown & Co., Canada: 1998

# Cards-At-A-Glance

Cards are shown as front-to-back pairs.

Mercury			Mercury Type: rocky planet Temperature: 333-273°K Color: grey Year length: 88 days Day length: 176 days Volcanoes: inactive Water: no Windy: no			Earth's neighbor	asteroids			observatory	Jupiter	star
Venus			Venus Type: rocky planet Temperature: 467°K Color: reddish yellow Year length: 225 days Day length: 243 days Volcanoes: active Water: no Windy: no			Earth's neighbor windy	1			meteor	Saturn	asteroids
Earth			Earth Type: rocky planet Temperature: 288°K Color: blue and white Year length: 365 days Day length: 24 hours Volcanoes: active Water: yes Windy: yes			rocky The Big Dipper	2			galaxy	Uranus	meteorite
Mars			Mars Type: rocky planet Temperature: 218°K Color: red/brown Year length: 687 days Day length: 24.6 hours Volcanoes: active Water: no Windy: yes			rocky Dolphin (Delphinus)	5			comet	Neptune	meteor
Jupiter			Jupiter Type: gas giant Temperature: 165°K Color: white, orange, red, brown Year length: 4,333 days Day length: 9.9 hours Volcanoes: no Water: no Windy: yes			rocky Great Bear (Ursa Major)	hot			star (x3)	Jupiter	space probe
Saturn			Saturn Type: gas giant Temperature: 95°K Color: yellow, white, blue Year length: 29.5 days Day length: 10.7 hours Volcanoes: no Water: no Windy: yes			rocky Southern Fish (Piscis Austrinus)	rings			star (x3)	Saturn	rover
Uranus			Uranus Type: gas giant Temperature: 76°K Color: green Year length: 84 years Day length: 17.2 hours Volcanoes: no Water: no Windy: yes			rocky Swan (Cygnus)	lunar lander			star	Uranus	telescope
Neptune			Neptune Type: gas giant Temperature: 47°K Color: greenish blue Year length: 165 days Day length: 16.1 hours Volcanoes: no Water: no Windy: yes			volcanoes Lion (Leo)	gas			star	Mercury	lunar lander
Pluto			Pluto Type: rocky planet Temperature: 233°K Color: reddish yellow Year length: 90.5 days Day length: 6.4 days Volcanoes: no Water: no Windy: yes			cold Winged Horse (Pegasus)	gas			star	Venus	constellation
Earth			Earth			cold Scorpion (Scorpius)	gas			star	Earth	comet
Neptune			Neptune			cold Scales (Libra)	moons			star	Mars	galaxy
Uranus			Uranus			water space shuttle	6			rocket	Mercury	rocket
Pluto			Pluto			water rover	8			New Moon	Venus	telescope
Saturn			Saturn			sun satellite	no moons			Waxing Gibbous	Jupiter	telescope
Jupiter			Jupiter			ice telescope	moon			asteroid belt	Saturn	telescope
			smallest windy			craters Hubble telescope	stormy			space probe	Uranus	telescope
						gas star	stormy			meteorite	Neptune	telescope