Tips from the Author



Going Around the Sun offers some wonderful opportunities for extended activities. Here are a few ideas:

Greate a play Teachers may want to use this book for a reader's theater. Students can help put the script

together with a narrator and ten or more characters. Younger children can also sing this adaptation of "Over in the Meadow" by Olive A. Wadsworth.



Remember their names and positions When Pluto was still considered a planet, one device to remember the names of the planets and their order from the Sun was "My Very Educated Mother Just Sent Us Nine Pizzas." Ask students for their ideas on how to remember it now.

Flannel board story Out of felt, cut a very large Sun and the relative sizes of the eight planets and dwarf planet, Pluto. Place them (or have children do it) on a navy blue or black flannel board as you sing or read the story.

Space Word Wall Discuss the action verb used for each planet, using the glossary as a guide. Write each verb on an index card and place on a poster board. On a larger board, place names of the planets and other nouns like galaxy, axis, etc. Older students can find adjectives and adverbs used in the story as well.

Planet bookmarks Visit my website,

www.MarianneBerkes.com, to learn how you can get reproducible bookmarks of the eight different planets. **Plan a model** Whether inside the classroom or outside on a playground or in a park, create a model of the planets rotating and revolving around a Sun. Here are three excellent sites for assistance with the numbers:

www.enchantedlearning.com/subjects/astronomy/ planets

www.exploratorium.edu/ronh/solar_system

http://www.planetary.org/explore/kids/activities/ solar_system_model.html

Discover more Here are a few books, web-based resources and organizations:

- Exploring the Solar System with 22 Activities by Mary Kay Carson (2006)
- The Planets by Gail Gibbons (Rev. Ed. 2005)
- Solar System by Mike Goldsmith (2005)
- The Planets in Our Solar System by Franklyn M. Branley (1998)
- The Planetary Society has educational games at www.planetary.org/explore/kids/
- The NASA Kids Club main page is www.nasa.gov/audience/forkids/home/index.html
- The Lunar and Planetary Institute has an education site, www.lpi.usra.edu/education
- Check out www.haydenplanetarium.org, and at the American Museum of Natural History's terrific "Ology" site, www.ology.amnh.org/astronomy/

I would love to hear from teachers and parents who come up with other creative ideas on ways to use this book. My website is www.MarianneBerkes.com



Tips from the Illustrator



I was visiting an elementary school in Graceville, Florida when I met an art teacher who grinned, grabbed my arm and hurried me to her big bright art room that smelled like imagination bubbling over. Her kids were making beautiful art by painting with crayons on a warm griddle.



"Exactly what I need to create the illustrations for Going Around The Sun: Some Planetary Fun" I said. I raced back to my studio in South Florida with a new pancake griddle under one arm and a great big box of crayons under the other.





griddle with aluminum foil. Then I turned the dial to "warm." You'll know the temperature is not too hot, and not too cool when your crayons slide across fresh sheets of paper like a whisper.

Day after lovely day I painted the backgrounds for all of the pages in this book with my melted crayons.

I painted clear gesso over all of the melted crayon backgrounds, and with brushes, acrylic gouache, color pencils and a little computer magic

I created the planets, star clusters and asteroids layer by layer over each other until I finished the art you see in these pages.









You can paint with melted crayons, too. You'll need a helpful adult, a griddle, some crayons, a little aluminum foil and some fresh paper. Or you could make wax paper planets like this:

Begin by sharpening crayons over a paper plate. Ask an adult to help by heating up an iron. Place your crayon shavings between two sheets of waxed paper and carefully set the iron on the waxed paper for just an instant. The crayon will melt quickly between the two sheets of waxed paper. When it cools you can cut out shapes of the planets and tape them to the inside of your windows or hang them from strings to create your very own solar system. You can visit me at www.JaneenMason.com.



Act It Out

Introduction

COMMECTING CHILDREN AND

PUBLICAT

In the book, *Going Around the Sun: Some Planetary Fun* by Marianne Berkes, the reader is introduced to the eight planets. In this activity, students use reproducible bookmarks for a Charades game about the planets.

Materials Needed

- Going Around the Sun: Some Planetary Fun by Marianne Berkes
- Reproducible Bookmarks of the eight planets

Key Concepts

- Position of an object can be described relative to other objects.
- Objects can be described by their properties and classified accordingly.
- A system is an organized group of related objects or components.

For standards correlation please see our website.

Procedure

- 1. Read the book *Going Around the Sun: Some Planetary Fun* including the glossary for older students.
- 2. Download the eight different reproducible bookmarks for Going Around the Sun.
- 3. Pass bookmarks out to eight students (each student should have a different planet.)
- 4. Tell students they will be playing a number of games with the bookmarks. In this game eight students with the bookmarks will be acting out what their planet is.
- 5. The teacher is the "Sun" and picks the first planet. That "planet" can take a position somewhere in the room to give the class a clue what it might be.
- 6. The student cannot speak, but pointing and other gestures are permitted. They should move the way the planet does or give other hints ("sounds like" in Charades) to help the class guess who they are.
- 7. Place a time limit for each planet to add to the excitement.

Nature Connections

♦ Encourage children to create a model of the Solar System out of styrofoam balls and paper and have them map out the orbits of the panets. Are all of the orbits round? Have students discuss why this may or may not be the case.

♦ Have students choose a larger model to map out the distances of the solar system. For example, what if the school represented the sun? How far away would the different planets be in a large model? How do the two models compare to the actual solar system?

Additional Resources

Fun Astronomy Facts

Supernovas are explosions that can destroy an entire star.

The only star in the sky that doesn't appear to move from night to night is called Polaris, the North Star.

The closest star to our solar system is called Proxima Centauri and it's over 4 light years away.

♦ The light of the Sun takes 8 minutes to reach Earth.



Far, Far Away





In the book, *Going Around the Sun: Some Planetary Fun* by Marianne Berkes, the reader is introduced to the eight planets that orbit (revolve) around the sun. In this activity, students estimate the approximate distances between the planets.

Materials Needed

- ♦ A large roll of toilet paper
- Poster paper and markers
- Going Around the Sun: Some Planetary Fun by Marianne Berkes

Procedure

Key Concepts

- A system is an organized group of related objects or components.
- ♦ Math measures change.
- ♦ Rate compares one measured quantity with another.

For standards correlation please see our website.

1. Download or make a chart of the approximate distances of the planets from the sun. Mercury: 36 million miles

Venus: 67.2 million miles Earth: 93 million miles Mars: 141.6 million miles Jupiter: 483.6 million miles Saturn: 886.7 million miles Uranus: 1,784 million miles Neptune: 2,794.4 million miles

- 2. Read Going Around the Sun: Some Planetary Fun
- 3. On poster paper draw a large Sun and each of the eight planets, using the glossary in the book as a guide.
- 4. On a large roll of toilet paper, place the Sun on the first sheet.
- 5. Then using a scale of one tissue = 10,000,000 miles, mark off 3-1/2 sheets and place the planet Mercury on that sheet. Continue down the roll, placing the planets in their approximate distances from the Sun. Venus would require 6.7 sheets; Earth 9.3, Mars 14.1, Jupiter 48.4, Saturn 88.7, Uranus 178.6 and Neptune 280 sheets.

Nature Connections

♦ On a black piece of paper, have students create the night sky. Use glitter, glue, silver and gold pens, chalk and stickers for stars, planets and more.

♦ Ask students to research the constellations. Ask them how the groupings of stars got their names. Do some stars have more than one name? If so, why?

Additional Resources

Facts About Telescopes

♦ By placing one lens (convex) in front of another (concave), an image of a remote object can be magnified.

♦ The spectrum of colors in light do not bend equally through glass lenses and this causes a distortion of the image. The image distortion is corrected with mirrors.

How Old Are You on Mars?

Introduction



In the book, *Going Around the Sun: Some Planetary Fun* by Marianne Berkes, the reader is introduced to the eight planets that orbit (revolve) around the sun. In this activity, students learn the relationship between the Earth orbiting the Sun and how we measure time.

Materials Needed

- Going Around the Sun: Some Planetary Fun by Marianne Berkes
- Chart naming the four inner planets and the approximatre length of one year.

Key Concepts

- $\boldsymbol{\diamond}$ Rate compares one measured quantity with another.
- Use knowledge and evidence to formulate explanation.
- Evidence should be used in explanations.

For standards correlation please see our website.

Procedure

- 1. Download or make a chart showing showing the approximate length of a year for the four inner planets. (Mercury = 88 Earth days, Venus = 225 Earth days, Earth = 365.25 Earth days, and Mars = 687 Earth days.
- 2. Read Going Around the Sun: Some Planetary Fun.
- 3. Explain that every time the Earth goes around the Sun once, we have "aged" one year (or 365.25 days.)
- Ask students to figure their age in Earth days (age x 365.) Example for a person who is 10 years old on Earth: 10x365 = 3650 Earth days old.
- 5. From the chart, ask students to determine how old they would be on Mars compared to their age on Earth. (It takes Mars 687 days to go around the Sun once.)
- 6. Example for a person who is 10 years old: Divide the 3,650 Earth days by 687 = 5.3 years. Students who are ten years old would only be a little over 5 years old on Mars.

Nature Connections

♦ When Earth goes around the Sun one time, you have become one year older. Ask students if they would be younger or older on Venus? Then ask students how old a 10 year old Martian is in Earth years.

♦ Our year (365 days, or 366 days every four years) is measured by the time it takes Earth to revolve around the Sun once. What would happen if we didn't add an extra calendar day every four years?

Additional Resources

Fun Facts ABout Space Shuttles

There have been five Space Shuttles in the United States: Columbia, Challenger, Discovery, Atlantis and Endeavor.

♦ The Space Shuttle is 184 feet long and requires the worlds largest tractor to pull it to the launch pad.

♦ The weight of a Space Shuttle is 4.5 million pounds.



Line Up

Introduction



In the book, *Going Around the Sun: Some Planetary Fun* by Marianne Berkes, the reader is introduced to the eight planets. In this activity, students use the reproducible bookmarks to line up in the order of the planets.

Materials Needed

- Going Around the Sun: Some Planetary Fun by Marianne Berkes
- Reproducible bookmarks of the eight planets

Key Concepts

- Systems have levels of organization.
- Objects in the sky have patterns of movement.
- Models can be used in explanations.

For standards correlation please see our website.

- Procedure
- 1. Read the book Going Around the Sun: Some Planetary Fun, including the glossary for older students.
- 2. Download the eight reproducible bookmarks for *Going Around the Sun*. Make enough copies for each student in your class since you can use them for more activities.
- 3. Pass bookmarks out to eight students in the class. (Each student should have a different planet.)
- 4. Tell students they will be playing a number of games with the bookmarks and the first game requires eight students to line up in the order of the planets.
- 5. Ask: "Will the student who has 'Mercury' please come to the front of the room?"
- 6. Ask: "What is the next planet that is closest to the Sun? Please come up and stand next to Mercury." Do this until eight students are lined up in the correct order of the planets.

Nature Connections

♦ A fun way for young children to remember the order of the planets is by memorizing this sentence. The beginning letter of each word is the same letter as the planet:

> <u>My Very Excellent Mother</u> Just Served <u>Us Nachos</u>

♦ Have students research asteroids, comets and meteors. Discuss the differences between the three. Where would asteroids, comets and meteors appear in the "human model" activity described above?

Additional Resources

Fun Facts about Asteroids

There is an asteroid belt in the solar system which sits between the orbits of Jupiter and Mars.

Some asteroids are no bigger than a grain of sand, while others can be more than 100 miles across.

Asteroids are often called *dirty snowballs*, as they are made up of mostly frozen gas.

Some asteroids are thrown out of the belt and become *comets*.



Planet Poetry

Introduction



In the book, *Going Around the Sun: Some Planetary Fun* by Marianne Berkes, the reader is introduced to the eight planets and other objects that orbit around the Sun. In this activity, students write a vertical poem describing a planet or other object that goes around the Sun.

Materials Needed

- ♦ Two sheets of paper
- Pen or pencil
- Going Around the Sun: Some Planetary Fun by Marianne Berkes

Procedure

Key Concepts

- The Sun, Moon, stars, birds, clouds, airplanes, all have characteristics that can be observed and described.
- Objects can be described by their properties and classified accordingly.

For standards correlation please see our website.

- 1. Read the book, Going Around the Sun: Some Planetary Fun.
- 2. Explain to students how to write a *vertical poem*, often called an *acrostic poem*, formed by using the letters of a word to begin each line in the poem.
- 3. Ask students to choose a planet or other object in spaec that goes around the sun and write the name of their topic vertically on the first sheet of paper.
- 4. On the other sheet of paper ask students to "brainstorm" as many words or phrases they can think of describing their "topic."
- 5. Next they should look at the words they "brainstormed", choosing any that begin with the same letter of the topic they wrote vertically on the first sheet.
- 6. Explain that an acrostic poem is not always easy to do if the topic word is difficult to match to a lot of other words, i.e. "Jupiter" is more of a challenge to write about in a vertical poem than "Mars." If a student finds one too difficult, ask him/her to try a different planet or object in space.

Nature Connections

Suggest that students visit a planetarium in their area to learn more about our place in the universe. If there isn't one close by, take a look on the internet to find out more about planetariums.

♦ Invite students to observe the night sky and write a short poem about what they see. How many of the objects are natural, and how many of the objects are made by man?

Additional Resources

More Solar System Activites

http://www.readwritethink.org/files/ resources/interactives/acrostic

http://www.kidzone.was/planets/ index.htm

http://www.enchantedlearning.com/ subjects/astronomy/planets

http://www.enchantedlearning.com/ subjects/astronomy/planets



Same and Different



Introduction

In the book, Going Around the Sun: Some Planetary Fun by Marianne Berkes, the reader is introduced to the eight planets that rotate around the Sun. In this Venn Diagram activity, students describe and compare one of the four inner planets in the book with one of the four outer planets.

Materials Needed

- ♦ Going Around the Sun: Some Planetary Fun by Marianne Berkes
- Venn Diagram template

Key Concepts

- Use knowledge and evidence (data) to formulate explanation.
- Objects can be described by their properties and classified accordingly.
- Objects have measurable and observable properties, which use tools.

For standards correlation please see our website.

- 1. Explain to students what a Venn diagram is and pass out blank copies. (View http://www.graphic.org/venbas.html for more information on Venn diagrams.)
- 2. Note that shared characteristics are listed in the overlapping section, allowing for easy identification of which characteristics are similar and which are different.
- 3. Read the story and ask students to choose one of four "inner" planets that they would like to compare with one of the four "outer" planets.
- 4. Review the glossary after you have read the story, noting that the illustrations give you an idea of the sizes of the planets.
- 5. For older children, have them read all the back matter that can be used as a resource for this project.

Nature Connections

Invite students to observe the night sky and keep a journal of what they see. Can they name any of the constellations? Do they see any asteroids or meteors? How can they tell if an object is a star or a planet? How much more can they see with binoculars? A telescope? What other tools can they use to observe the sky?

Study the cover of *Going Around the Sun*, pointing out that Pluto had been "Planet Number 9." Ask students to write a sequel about dwarf planets.

Additional Resources

Solar System Activities from the Internet

http://www.planetary.org/explore/kids

http://www.nasa.gov/audience/forkids/ kidsclub/flash/index.html

http://www.lpi.usra.edu/education

http://stardust.jpl.nasa.gov/classroom/ guides.html



Dawn Publications & www.dawnpub.com & (800) 545-7475

Procedure

Showtime!

Introduction

ONTHE CHILDREN AND

In the book, *Going Around the Sun: Some Planetary Fun* by Marianne Berkes, the reader is introduced to the eight planets. In this activity, students either perform a Reader's Theater, or "sing" the story in a movement activity.

Materials Needed

- Going Around the Sun: Some Planetary Fun by Marianne Berkes
- Script for a Reader's Theater
- Felt costumes for the Sun and planets

Key Concepts

A system is an organized group of related objects or components.

For standards correlation please see our website.

- Models can be used in explanations.
- Position of an object can be described relative to other objects.

Procedure

- 1. Read the book *Going Around the Sun: Some Planetary Fun* including the glossary for older students.
- 2A. Explain to students that they are going to put a script together with a narrator and ten or more characters, based on the book for a Reader's Theater. Students may decide to add more characters to their script, e.g. other dwarf planets and asteroids and comets. (The narrator would read the prose at the bottom of each page, while each "planet" would read the verse.)
- 3A. Students line up in order of the planets and read their verse. (The person that is in line first The Sun could be the narrator.)
- 2B. Younger students dress up as the planets. Costumes can be made using different colors of felt material. (See photo on "Tips from the Author" page in the book.)
- 3B. Students "sing" their verse to the tune of "Over in the Meadow" as they go around Mother Sun, or other students in the class sing the story as each planet acts out his/her motion: whirl, sparkle, tilt, etc.

Nature Connections

♦ In reader's theater, students "perform" by reading scripts without costumes or props. It's a way to enhance the student's reading skills since they practice reading with a purpose, while getting a better understanding of what is being read.

♦ For younger students who cannot "perform" a Reader's Theater, acting out the motions and singing the story gives them greater understanding of the book. They are "learning by doing" and having fun!

For more information about readers theatre, see the IRA web site at: http://www.readwritethink.org/classroom-resources/ lesson-plans/readers-theatre-172.html

Additional Resources

Fun Facts About The Moon

♦ The Moon is 239,000 miles away from the Earth.

♦ The Moon is covered in many bowl shaped holes called *craters*.

Neil Armstrong was the first human being to step onto the surface of the Moon.

The dark spots on the Moon are caused by ancient lava flows created when asteroids hit the surface of the Moon and cracked the surface.



Size It!

Introduction



In the book, *Going Around the Sun: Some Planetary Fun* by Marianne Berkes, the reader is introduced to the eight planets that orbit (revolve) around the sun. In this activity, students compare the sizes of planets to different fruits and vegetables.

Materials Needed

- Fruits and vegetables listed below
- Long roll of white paper
- Markers
- Going Around the Sun: Some Planetary Fun by Marianne Berkes

Key Concepts

- Models can be used in explanations.
- A system is an organized group of related objects or components.
- Objects can be described by their properties and classified accordingly.

For standards correlation please see our website.

- Procedure
- 1. Unroll the paper and lay it out on a long table and tape it down.
- 2. Read Going Around the Sun: Some Planetary Fun.
- 3. On the paper, ask nine students to draw a large Sun and each of the eight planets, in the correct order and approximate sizes, using the glossary in the book as a guide. Note: Students need to be aware of what the others are drawing, i.e. when the student draws the Earth, the student drawing Mercury should make it smaller, whereas the student drawing Jupiter should make his/her's a lot bigger.
- 4. When they have finished, place a large pumpkin (about 60 inches wide) where the drawing of the Sun is.
- 5. Put the other fruits and vegetables in a large bowl and set it on the table.
- Students remove fruits and vegetables from bowl working together to assign the correct fruit or vegetable to each planet. Relative sizes: Mercury – one pea; Venus – small grape; Earth – small radish; Mars –blueberry; Jupiter – cantaloupe; Saturn – grapefruit; Uranus – orange; Neptune – small peach or plum.

Nature Connections

♦ Use a telescope and try to find Venus in the night sky. What other objects can students find in a telescope? Can they find any man made objects in the night sky?

♦ Determine the distance that Venus is from Earth. Ask students to research different types of vehicles, including space craft. How long would it take someone to get to Venus from the Earth using one of these vehicles? How long would it take them to reach the dwarf planet Pluto?

Additional Resources

Fun Facts about The Sun

- Solar Winds are made up of atomic particles pushed out from the Sun.
- Solar Flares can cause satelites orbiting the Earth to malfunction.

Sun Spots are areas of the Sun's surface that are cooler than the surrounding areas.

98% of all matter within the Solar System is found within the Sun.



Who Am I?

Introduction

ONNE CHILDREN AND

In the book, *Going Around the Sun: Some Planetary Fun* by Marianne Berkes, the reader is introduced to the eight planets. In this activity, students use reproducible bookmarks for a guessing game about each planet.

Materials Needed

- Going Around the Sun: Some Planetary Fun by Marianne Berkes
- Reproducible Bookmarks of the eight planets

Key Concepts

- Position of an object can be described relative to other objects.
- Objects can be described by their properties and classified accordingly.
- Models can be used in explanations.

For standards correlation please see our website.

- Procedure
- 1. Read the book Going Around the Sun: Some Planetary Fun, including the glossary for older students.
- 2. Download the eight different reproducible bookmarks for *Going Around the Sun*. Make enough copies for each student in your class to use for more activities.
- 3. Pass out bookmarks to eight students (Each student should have a different planet.)
- 4. Tell students they will be playing a number of games with the bookmarks and in this game the class will have to guess which planet is standing in front of the room.
- 5. A student with a bookmark volunteers to come to the front of the classroom, not revealing which planet he/she has. The class needs to guess which planet he/she is. They will be allowed four (or more) questions to which the student with the bookmark answers "yes" or "no." Questions could be "Do you have moons?" or "Are you an inner planet?" or directly "Are you Venus?"
- 7. If the students guess correctly with the number of questions you determine, the child goes back to his desk and another student with a bookmark volunteers to come up to the front. If they have not guessed who it is, the student reveals his planet and picks another student with a bookmark to come to the front of the room.

Nature Connections

♦ Pass out the reproducible bookmarks to all the students in the class. Ask them to write two sentences describing their planet, not mentioning which one they are. e.g. "I am sometimes mistaken for a star." "I am the hottest planet of them all." Students volunteer to read their sentences to the class starting with "Who am I?"

♦ Have students research other objects in the Universe. What adjectives and verbs would they use to describe the other items in space?

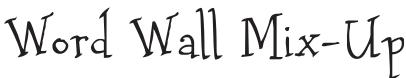
Additional Resources

Fun Facts About Comets

Comets come from two places in our Solar System the Oort Cloud beyond Pluto and the Kuiper Belt located between Jupiter and Mars.

Comets leave the cloud when a large comet changes the gravitational pull on a smaller comet, or when comets collide.

Because a comet is made of up ice and dirt, it will melt the closer it gets to the Sun.





ONAR CHIDREN AND

In the book, *Going Around the Sun: Some Planetary Fun* by Marianne Berkes, the reader is introduced to the eight planets that rotate around the sun. In this activity, students learn sentence structure as they study the planets.

Materials Needed

- Going Around the Sun: Some Planetary Fun by Marianne Berkes
- Bulletin Board
- Colored Index Cards

Procedure

Key Concepts

- Objects can be described by their properties and classified accordingly.
- A system is an organized group of related objects or components.
- Students analyze in terms of order and systems.

For standards correlation please see our website.

- 1. Write the names of the eight planets on blue index cards and tack them one under the other on a bulletin board, in the correct order, beginning with "Mercury."
- 2. Write the action verb (adding an "s") used in the story for each planet on a red or orange index card and place those cards one under the other in a separate column, but mix them up.
- 3. Read the story. For older students read the glossary as well.
- 4. Ask students to help match the correct action verb to each noun (planets) explaining that sentences need to have both a noun and a verb.
- 5. Alternately, take the cards off the bulletin boardand pass out one card to each student. Invite students to find the classmate(s) that have a matching part to each sentence.

Nature Connections

Invite students to observe the night sky. How many sentences can they construct from the objects they see? e.g. "A star *twinkles*", "the moon *shines*", or "the sky *darkens*."

Ask older students to write down words (on yellow cards) that enhance the sentences on the bulletin board. (e.g. "brilliantly" and "slowly"). The student brings up his/her card and adds it on to the sentence. e.g. Venus *sparkles* "brilliantly" or Neptune *moves* "slowly."

Additional Resources

Links to Space Observatories

The Cincinnati Observatory http://www.cincinnatiobservatory.org/

Mount Washington Observatory http://www.mountwashington.org/

The Exploratorium http://www.exploratorium.edu/observatory/

NASA Earth Observatory http://earthobservatory.nasa.gov/

Lowell Observatory http://www.lowell.edu/





