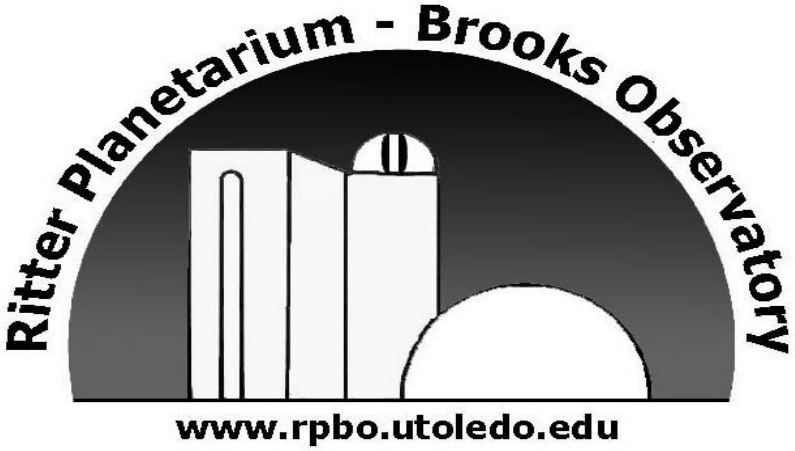


Bear Tales

Post-visit Packet

Ritter Planetarium-Brooks Observatory
Mail Stop 113 The Univ. of Toledo, Toledo OH 43606
Ph: (419) 530-2650 Fax: (419) 530-5167 E-mail: rpbo@astro.utoledo.edu

Name _____ Date _____

Summary

Now that you've seen the program you may be wondering what to do next. We're here to help. In the following pages we've provided some samples of vocabulary, possible questions and discussion topics as well as some activities that could be done in the classroom or at home. These are simply suggestions and we encourage you to modify this packet to suit your particular needs.

Concepts covered in show:

1. **Constellations**
   Constellations are defined and several examples are discussed throughout the year. Also covered are the reasons for changes in the sky throughout the year (i.e. the reason we see different constellations in different seasons.) Students are shown how to find certain stars, like the North Star.

2. **Greek Mythology**
   Several constellations are discussed in terms of the legends and stories describing them, including many Greek mythology tales.

3. **Skywatching**
   Here the students learn what kind of objects can be seen in the sky. Also discussed are the differences between what is seen with the naked eye, binoculars, and telescopes. The purpose of telescopes is discussed as well as some historical skywatchers.

4. **Sky objects**
   This is a discussion of the astronomical objects found in our nighttime sky. Among the items defined and discussed are things like our Milky Way and star clusters.

Name _____ Date _____

Vocabulary

1. **North Star**

2. **Constellation**

3. **Binoculars**

4. **Telescope**

5. **Milky Way**

6. **Galaxy**

7. **Star Cluster**

8. **Big Dipper**

9. **Light Pollution**

Name _____ Date _____

Vocabulary- Key

1. **North Star-** a star that marks the direction of North and lies directly over the North Pole.
2. **Constellation-** group of stars that seem to form a shape; sometimes human shapes or animals. 88 official constellations make up a map of the night sky
3. **Binoculars**- An optical device, such as a pair of field glasses, designed for simultaneous use by both eyes and consisting of two small telescopes joined with a single focusing device.
4. **Telescope-** An optical instrument used in viewing distant objects, as the heavenly bodies
5. **Milky Way**- our galaxy. Seen in our sky as a ribbon of light.

6. **Galaxy**- a collection of star systems. Galaxies can be classified into types: Spiral, Elliptical, and Irregular.
7. **Star Cluster**- A group of stars held together by gravity.

8. **Big Dipper**- a group of seven bright stars in the constellation Ursa Major, 3 marking the handle, and four making up the bowl.
9. **Light Pollution**- Lights that are on at night, that make the sky not quite as dark as it could be. City lights, like street lights, and parking lot lights are a few examples.

Name _____ Date _____

Short Answer and Discussion Questions

1. Can you see more stars out in the country or in the city? Why?

2. What is a telescope and what is it used for?

3. Name and describe the galaxy we live in.

4. What is a constellation? Give an example.

5. Using your example from above, or another of you choice, make up your own constellation story or legend.

Name _____ Date _____

Short Answer and Discussion Questions - Key

1. Can you see more stars out in the country or in the city? Why?

   You can see more stars in the country. That is because the extra lights of the city make it hard to see the dimmer stars. This effect is called light pollution.

2. What is a telescope and what is it used for?

   A telescope is a tool astronomers use to aid in making observations of things like planets and stars. The telescope helps by collecting more light than your eye could and also by magnifying the image.

3. Name and describe the galaxy we live in.

   Our galaxy is the Milky Way. We live in a spiral galaxy, which means it has a pinwheel shape. Our solar system is found in one of the spiral arms.

4. What is a constellation? Give an example.

   A constellation is a group of stars that together form a picture. There are 88 official constellations that make up a map of the sky. Examples will vary, but examples discussed in the show include: Orion the Hunter, Canis Major the Big Dog, Gemini the Twins, the Big Dipper, the Little Dipper, Ursa major the big bear, Ursa minor the little bear, Draco the Dragon, and Coma Bernices or Bernice's Hair.

5. Using your example from above, or another of you choice, make up your own constellation story or legend.

   Answers will vary

Name _____ Date _____

Classroom Activity

Bear Tales Word Find

Words to Find

Bernice'sHair

Big Dipper

Canis Major

Draco

Gemini

Little Dipper

Orion

Binoculars

Blackbeard

Telescope

E W T L J L A N N O Y J G A L Y H X W K G S
N R D V O O S H X I F N M R T V I T X I S O
N N E E U I D L T O V G X O N U W V B K C L
R Y O P J E O C N I C M A J G Q I G L A G D
C D W I P Y H I W D B D Z A U U P N R X B J
J H S D A I G Y I A O I F M Y O P D X E T X
C E J S R I D C L F Y B G S Q F K T R V W C
Z I P R Y M S G W C G K A I X M S N J B D Z
A K Q O N M O R I O N H C N C X I F M U X Z
R A L F C M A A A B S G Z A S C P I W F E R
D M A K M S F V F P W U B C E M W C O S E T
E M N J C N E Z W O I R W ' Z F A N E P U Z
L B W Q B U I L R R B K S V J W N R P J Y M
D T I B H I Y D E L M H J D G R P I Y G G G
Y I V N E D S W A T A F F J F Q D G E E G Z
Y B T X O X U C A I Q P M V Y E L G A P H M
K S E J Z C K V R B J O K V L M D Y M F A L
W F G J U B U F R X L J W T F V S G L P M R
Z S J B E Q D L O Z S C T D M O G Y K P H N
E J P A Z H J W A O E I H N R A G V J B R A
Z G R Y S G U T Z R L A J E P W P X D N H I
M D P B I V L U W H S M W X L G E M I N I F

Name _____ Date _____

Name _____ Date _____

Classroom Activity

Mrs. Witherspoon's Constellations Crawl

We see different constellations during the year because the Earth orbits the Sun, pointing us toward different directions in space.

To see how this works, simply imagine the four walls in a room as four different directions in space. Next, mark these walls with four different constellation signs. Make signs for:

Wall #1: Orion the Hunter
Wall #2: Leo the Lion
Wall #3: Scorpius the Scorpion
Wall #4: Pegasus the Flying Horse

You can write the constellation names, draw pictures of the characters or make a chart of the stars in that constellation. Be creative!

Now, make the Earth and the Sun. Find a lamp and place it in the center of the room. Make sure it shines in all four directions, and you have your very own Sun. For the Earth, that's easy – let your head be the Earth.

To start your constellation crawl, stand between the sun and wall #1 and face the stars of Orion. This is where the Earth is during winter. Notice, the Earth's night side (your face) points to Orion and we see it best in our night sky. Next, make your Earth orbit so it's between the Sun and wall #2 and you're facing the stars of Leo. Now it's Spring! And that is the best time to catch Leo the Lion in the night sky. Now, orbit to wall #3 and face the stars of Scorpius. When we see the Scorpion, it means summer has arrived. And finally, fall returns when you move to wall #4 and face the stars of Pegasus the Flying Horse.

Special thanks to the following resource:
Minneapolis Planetarium Amazing Stargazing Activity Book

Name _____ Date _____

Classroom Activity

Observing techniques

Quite often people are disappointed with their first look through a telescope. While space-based telescopes like the Hubble Space Telescope have provided society with stunning beautiful images, pictures from smaller ground based telescopes are generally less colorful and seemingly less detailed. However, all students can learn to be more detailed oriented observers. This activity attempts to encourage this type of observing through observations of hard-boiled eggs.

You will need:

- 1 hardboiled egg (with a green dot on one side) per student
- 1 empty egg carton per small group
- egg identification worksheets as illustrated in Figure A
- Overhead beam projector, spotlight, or flashlights

What to do:

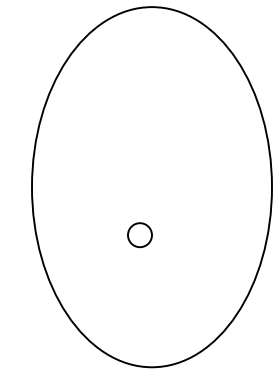
1. Separate the class into small groups (we recommend 4-5 students per group.)
2. Give each student their own hard-boiled egg as well as a worksheet (provided) that contains four outlines of the shape of an egg.
3. Ask the students to carefully inspect their eggs, looking for any distinctive features on the sides or on the ends that they could draw on their worksheets. The goal for each student is to find features on the egg that they can draw on their "egg identification sheet", such that someone else would be able to match the egg to the drawing, and therefore determine the original "owner" of the egg. The overhead beam projector and a spotlight are made available for close inspection of eggs under lighting that brings out very subtle features (bumps, valleys, grooves, spots, cracks). Beware of students just making random dots to represent a rough appearance. Remind them they are looking for distinguishing marks!
4. Once all the students have made their drawings, have the groups swap eggs and drawings with another group of the same size.
5. The students should then attempt to match up the drawings. Once they've matched write the names from the drawings in the egg carton, placing the egg in its assigned spot.
6. Finally return the carton containing proposed identifications for verification.
7. Afterwards, review the motivation for this exercise - to learn how to see, describe and draw faint or subtle features on an object which is thought of by most people as having a smooth, featureless surface.

Allan Meyer, Bay Area Project ASTRO astronomer

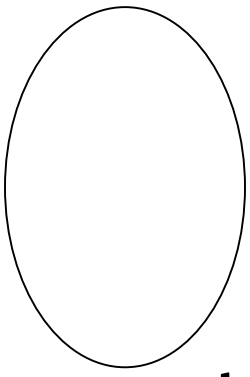
Name _____ Date _____

Classroom Activity-worksheet

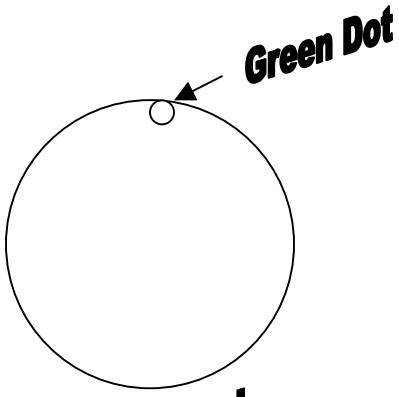
Observing techniques



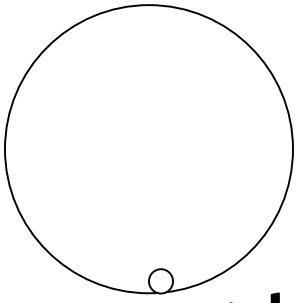
Green Dot Side



Opposite Side



Pointy End



Wide End

Name _____ Date _____

Recommended Astronomy Web Sites

After seeing a program you may be interested in finding out more about a particular subject. These are some of our favorite websites.

Misc

Ritter Planetarium-Brooks Observatory	**www.rpbo.utoledo.edu**
Search for Extra-Terrestrial Intelligence Inst.	www.seti.org
SETI@home	setiathome.ssl.berkeley.edu
Space.com	www.space.com
Space Ref	www.spaceref.com
Heavens Above (Satellite Tracking)	www.heavens-above.com

Education

Windows to the Universe	windows.arc.nasa.gov
Bad Astronomy	www.badastronomy.com
The Nine Planets	seds.lpl.arizona.edu/nineplanets/nineplanets

NASA

NASA Homepage	www.nasa.gov
NASA Human Space Flight	www.spaceflight.nasa.gov
NASA Jet Propulsion Laboratory	www.jpl.nasa.gov
Space Telescope Science Institute (Hubble)	www.stsci.edu

Telescopes

Meade	www.meade.com
Celestron	www.celestron.com
Orion	www.telescope.com
Astromart	www.astromart.com

Magazines

Sky and Telescope	www.skyandtelescope.com
Astronomy Magazine	www.astronomy.com

Societies and Organizations

International Dark-Sky Association	www.darksky.org
The Astronomical Society of the Pacific	www.aspsky.org
International Astronomical Union	www.iau.org
The Planetary society	planetarysociety.org