**Starry, Starry Night**

60 Minute Space Science Lesson Planetarium and Observatory

Program

Grades: K-2

**TEACHER GUIDE**

**Objectives**

* Name at least three constellations visible in the evening/ morning sky.
* Identify any planets visible to the unaided eye.
* Differentiate between stars, planets, comets, the Moon and the Sun.
* State that we see different constellations at different times of the year.
* Explain why stars have different colors.

**Description**

Explore the heavens with your students as we view the nighttime sky in the Shafran Planetarium. All the stars that are visible from Ohio are projected on the planetarium dome. After a brief introduction of the objects and major constellations visible in the current evening sky, your class will view the planets, the Moon, and comets. The planetarium video equipment will take you and your class to visit the planets and stars, among the many highlights of the program.

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**Ohio’s Learning Standards**

**Grade K:** Earth and Space Science – Daily and Seasonal Changes

* The moon, sun, and stars are visible at different times of the day or night.

**Grade 1:** Earth and Space Science – Sun, Energy, and Weather

* The Sun is the principle source of energy.

**Grade 1:** Earth and Space Science – Motion and Materials

* Objects can be moved in a variety of ways, such as straight, zigzag, circular, and back and forth.

**Grade 2:** Earth and Space Science – Changes in Motion

* Forces change the motion of an object.

**Before Your Museum Visit**

If this will be your first trip to the Museum for your students, you may want to review the following:

# What is a Museum?

# What is the purpose of our visit to The Cleveland Museum of Natural History?

# How should we handle objects at the Museum?

* Introduce the vocabulary and additional resources provided below.

**Vocabulary**

**constellations** - star patterns that people use to make pictures of animals, people, monsters, and other objects in the nighttime sky.

**galaxy** - a collection of gas clouds and millions or billions of stars that can take on a spiral, elliptical or irregular shape. The Sun is a star in the milky way galaxy.

**legend/ myth** - a story told among a group of people for entertainment and to link a group of people with cultural knowledge. Some legends are based on real events or used to explain things people observed in their surroundings; others are pure fantasy.

**meteor, shooting star** - the momentary streak of light in the sky produced when a meteoroid passes through the Earth’s atmosphere.

**meteoroid, asteroid** - a small object made of dust or rock that circles the sun.

**milky way** - the sun and solar system belong to the milky way galaxy. All of the stars we see in the sky are part of the milky way, which appears as a hazy band across a very dark sky and contains several hundred billion stars.

**moon** – an object in an orbit around a **planet** or **asteroid**. It does not give off its own light and is usually solid.

**north star** - Polaris is the only star that doesn’t appear to move in the nighttime sky - we’ll explore why!

**observatory** - a building equipped with a telescope for viewing the real sky.

**planet** - a large object that moves around a star in an **orbit**. It does not give off its own light and does not have to be solid.

**planetarium** - a machine which projects images of stars, the sun, the moon and planets on the inside of a large round room with a domed ceiling. The machine rotates to illustrate celestial motions. Other planetarium equipment takes you past planets and to outer space. Also refers to the building or room which holds the machine.

**star** – Luminous hot balls of gas. The nearest example is our Sun. Stars come in different sizes and colors, appearing as tiny points in the nighttime sky because of their distance. Like our own Sun, stars produce their own light.

**Extension Activities**

1. Have students and parents observe the night sky on a clear night and compare it with what the students saw in the planetarium sky. A list of objects and constellations that they can look for in the clear night sky might be helpful.
2. Have students make star pictures using the dot-to-dot method. Place a sheet of tracing paper over a drawing or picture, and have students draw in and number some dots. Classmates can connect the dots in each other’s pictures, and then compare them to the originals. Have students make up star stories about their constellations and tell them to the class.
3. Watch the changes that occur in the sky with the stars during the school year. Students might want to keep a written notebook or a set of drawings for comparison.
4. Have the students use flashlights to show that stars get dimmer the farther away they are. Students can stand close to the light, and then step back until the light is significantly dimmer.
5. Find out how people in different parts of the world draw and use stars. Five, six and multi-point star images can be found on flags, clothing, paintings, etc.

**Online Resources for Teachers and Students**

Click the link below to find additional online resources. These websites are recommended by our Museum Educators and provide additional content information

CMNH Educators regularly review these links for quality. Web addresses often change so please notify us if any links have issues.

Cleveland Museum of Natural History http://[www.cmnh.org](http://www.cmnh.org/)

The Educator Resource Center offers educator workshops, thematic teaching kits, animal dioramas, and more for loan to area teachers.

Contact the ERC at 216-231-2075 for information on individual or school membership.

Visit the Museum’s ERC website for more information on workshops https://[www.cmnh.org/ERC](http://www.cmnh.org/ERC)

**Hours**

* Monday through Friday, 1 to 5 PM
* Wednesday, 1 to 6 PM
* Saturday, 9 AM to 2 PM

**Materials for Loan**

If you’re interested in additional resources be sure to check out the following ERC materials or browse ERC materials online at

<http://cmnh.hosting.l4u.com>

Related ERC kits for this topic include:

**Make a Starry Sky:** Students study posters of galaxies and create their own star clusters and nebulae using chalk, salt, and star boards.

**Portable Planetarium:** Launch into space from your own classroom! The STARLAB Portable Planetarium allows you and your students to step into the universe and explore interactive, cross-curricular lessons about astronomy, history and more. This inflatable planetarium can hold 30 students and requires teacher training and reservations through the ERC.

**Educator Resource Center (ERC)**