Exploring the Sky from the Earth Intermediate

Finding Meaning in the Sky

Bringing the Heavens to Earth Gallery ①
Lower Level

Fact: The Earth turns on its axis once every 24 hours. The Earth revolves around the Sun once a year. Because the Earth turns on its axis, the stars seem to move in the sky as the night goes on. Because the Earth revolves around the Sun, we can only see some stars at certain times of the year.

Find two objects in the exhibit that demonstrate how people use the changing patterns of the stars to help them.

Think about the objects you found. What are these objects called? What are they used for? How do they help people? Draw a picture of a person using one of your objects here:

Universe in Your Hands Gallery ②
Lower Level

Fact: Because the Earth turns on its axis once every 24 hours, the Sun appears to move across the sky. Before people had clocks, the best way to tell time was to measure the angle of the Sun's shadow using a sundial.

Find the large sundial in the gallery. Try to figure out how it works. At what time of year are the shadows the longest? Make a sketch of how the sundial looks at noon in September.

Think about sundials. What are some disadvantages to using a sundial rather than a clock or watch? What are some advantages to using a sundial rather than a clock or watch? How would you modify a sundial to let you know the time without having to leave your house?

Before there were streetlights or lamps, alarm clocks or books, people looked at the Sun, Moon, planets and stars to help them see at night, tell time, and even make up stories. Use this guide to learn about how people all over the world used the sky, and how you can use it today.

How to use this guide

Fact This symbol represents a **fact** that you can use.

You'll see this symbol when you need to **find** something in the museum. **Find it!**

Think! This symbol is something to try, or something to **think** about.

Use these numbers and the maps on page two to find your way around. ① ③ ④

Changing Views of the Universe

From the Night Sky to the Big Bang ③
Lower Level

Fact: Telescopes changed what people could see in the sky. This changed the way they thought about the Universe. Before telescopes were invented, most people believed that the Sun, Moon and the planets all moved around the Earth.

Find the orange replica of Galileo's telescope. Look through the telescope at each setting. Draw a sketch of Jupiter and its moons at each day Galileo observed them.

Think about what Galileo's discovery would mean to people who lived in the 1600s. Galileo observed moons around the planet Jupiter. How do the moons move? Does this prove or disprove the theory that everything moves around the Earth? How would you feel if a new discovery changed what you believed about the Universe? How do you think people felt about Galileo's discovery of moons around Jupiter?

Universe in Your Hands Gallery ②
Lower Level

Fact: People created tools to help them predict when the Sun, Moon, stars and planets would appear in the sky.

Find an armillary sphere and an astrolabe.

Think about armillary spheres and astrolabes. What was an astrolabe used for? What was an armillary sphere used for? What types of tools do we have now to do what an astrolabe did? What types of tools do we have now to do what an armillary sphere did? How has our understanding of the Universe changed since the times people made these tools?

Exploring the Sky from the Earth Advanced

Backyard Astronomy

The Atwood Sphere ④
Lower Level

Fact: Groups of stars that appear to make pictures in the sky are called constellations. We see different constellations in the Northern hemisphere than we do in the Southern hemisphere. At different times of the year, different constellations are visible at different times.

Find and Try: Atwood Sphere. Take a ride. Make sure to check out the celestial sphere exhibits in the exhibit area.

Think: The Atwood Sphere used to be a teaching tool for Navy officers. Why do you think it was important for people in the Navy to learn about constellations? What technologies do you think are available to aid people in navigating ships today? Why do you think some constellations are only visible at certain times of the year?

The Milky Way Galaxy Gallery ⑤
Upper Level

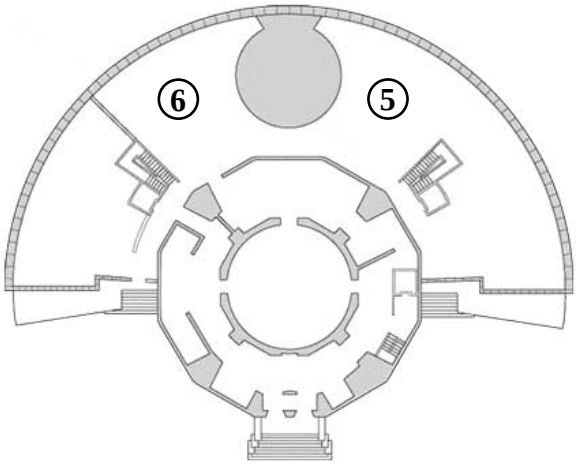
Fact: Our ancestors could see many more stars than we can see today. Light from streetlights, porch lights and other manmade sources leaks into the sky. This light pollution means that people in some big cities do not see more than 20 stars on a clear night.

Find and Try: "How Many is a Million." How does it make you feel to contemplate the number of stars in the Universe? Do you think this sculpture is a good way to visualize the number of stars one can see? Why or why not?

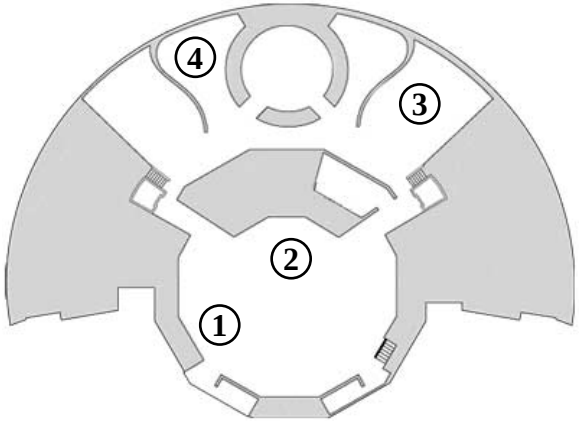
Think about what the stars mean to you. Long ago, before there was written history, all people told stories about the stars. Today, many people feel that stargazing is inspirational, and helps people remember that they are only a small part of the Universe. Have you ever seen the stars from a "dark skies site" away from city lights? If so, how did the experience make you feel? Do you think it is important for everyone to see lots of stars in the night sky? Why or why not? Some groups of people have convinced their cities to install different types of streetlights to decrease light pollution. Would you support such a measure if you were mayor of your city or town? Why or why not?

Maps

Upper Level



Lower Level



New technology

Our Solar System Gallery ⑥
Upper Level

Fact: Today we send up robotic explorers to take pictures and samples of planets and moons in our Solar System.

Find and Try: Virtual Visits—Adler Rover. Try driving it. Take a look at the planet models and think about which one you would like to visit.

Think about sending a robot explorer to another planet or moon. Which planet or moon would you visit? What type of questions would you like the robot explorer to help answer about the planet or moon? What type of equipment would your robot explorer need to answer your questions?

The Milky Way Galaxy Gallery ⑤
Upper Level

Fact: Scientists examine celestial objects in different ways. Not only do telescopes "see" in visible light, like our eyes, but they also detect other wavelengths of light.

Find and Try: Sun dome. Look at images of the Sun in different wavelengths of light.

Think: Which wavelength of light would you choose to best "see" an object obstructed by clouds and dust? Which wavelength of light would you choose to use to find out the temperature of sunspots? Which wavelength of light would you use to figure out how much radiation an object emits?