CATCH UP WITH THE UNIVERSE

UNDERSTANDING THE UNIVERSE

Use this guide as a starting point, but remember: there's so much more to see and do at the Adler! Don't forget to take time to explore what interests you and your group.

This guide was written by Paulina L. and Susan M., Adler Teen Interns.

CHASING ECLIPSES

LOWER LEVEL

#15 on the map (at the end of this guide)

Watch the *Making Sense of Eclipses* video. Draw a model of a solar eclipse, showing the alignment of the Sun, Earth, and Moon.

Using what you have learned about solar eclipses, think about how the Sun, Earth, and Moon are aligned during a lunar eclipse and draw a model below

Find the spectroscope in the display case labeled Eclipse up Close. What was its purpose?

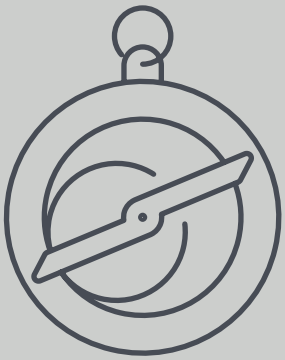
Discuss with your group how it might function. Record your hypothesis below.

UNIVERSE IN YOUR HANDS

LOWER LEVEL

#6 on the map

Astrolabes- Head to the Astrolabe section.



What is the function of an astrolabe?

Think about it. Why do you think the invention of the astrolabe is important in history?

CHICAGO'S NIGHT SKY

LOWER LEVEL

#8 on the map

Find the map of the city at night on the floor. **Take a selfie with your group!**

Head to the Light Pollution Solutions exhibit

Color: Why do you think Yellow and Blue light show different results in how stars show up in the night sky?

Direction: What difference does it make when the light is coming from above or below?If light shields are implemented in the city, how do you think that would affect the local organisms and their ecosystems?

Brightness: The full moon is pretty bright on its own, do you think a lot of bright lights are necessary? Find the right balance– at what level can you see at street level well, with less light bouncing to the sky?

Which one of these three solutions for light pollution would you prefer in cities like Chicago? Why?

Your Choice! Try making your own constellation on the interactive Create A Constellation piece OR draw your own. LOOK UP at the constellations on the ceiling if you need inspiration.

THE UNIVERSE: A WALK THROUGH SPACE AND TIME

LOWER LEVEL

#11 on the map

Take a look at the **Big Bang** visualization at the entrance of the exhibit. What do you notice?

Take some notes →

(cont. on next page)

THE UNIVERSE: A WALK THROUGH SPACE AND TIME

LOWER LEVEL

#11 on the map

Take a walk through the History of Time

The following questions are based off of the timeline. **Draw lines to match them with their correct answers.**

What was formed after 1/1,000,000,th of second after the Big Bang?	What was formed 200 seconds after the Big Bang?	What particles created the first atom?	What elements were formed from the first stars?

Carbon, calcium, and iron.	Electrons, neutrons, and protons.	Nuclei of light atoms.	Protons and neutrons.

How many years after the creation of the universe was the Sun formed? _____

How many years after the creation of the universe was Earth formed? _____

Opposite to the timeline you will see 3 videos playing, watch the video titled, GRAVITY SHAPES THE UNIVERSE

What forms the backbone of space?

_____

What pulls dark matter together?

_____

The Expanding Universe

How can scientists tell the universe is *expanding*?

_____

_____

_____

What is a **redshift**?

_____

_____

_____

Create your own wavelength!
Draw a model of a wavelength and label what color you think it is?
Hint, red is longer wavelengths and blue is short!

Draw Here

You Are Star Stuff

What elements from the universe are present in our body? _____

Fill in the blank

⅔ of our body is water and water contains _____.

Our bones have _____.

We breathe in _____.

In our blood, we have _____.

OUR SOLAR SYSTEM

UPPER LEVEL

#3 on the map

Head to the big rotating Earth under the title Our Home in the Solar System.
Read Exploration Begins on Earth, Atmosphere, and Temperature.

What does comparative planetology mean?

True or False?
A planet's mass affects its atmosphere. _____

Justify your answer.

Earth is at the right distance from the Sun to have life. However, Earth can get cold without its atmosphere. What does the atmosphere do to prevent this?

Now head to the big Sun in the exhibit.

The diameter of the sun is 863,370 mi and the diameter of earth is 7,917.5 mi. Approximately how many Earths can fit across the sun?

What activity does the Sun release into the solar system?

How do scientists use their study of solar activity?

HELPFUL REMINDER!

Don't forget to visit Mars, Moon, and Meteorites exhibits. Get to touch ACTUAL pieces from Mars, our Moon, and two meteorites!

Explore the other planets.

Have you noticed that all but two planets rotate counter clockwise, which ones are they?

Do they both spin clockwise or does one spin on its side? _____

Which ones? _____

(cont. on next page)

OUR SOLAR SYSTEM

UPPER LEVEL

#3 on the map

Head towards the windows after viewing the sun, and look for the Solar system Stands.
Let's do some math, and don't forget to show your work!

If you took 800 years to travel from Jupiter to Venus, how many miles per year would you have to drive?
Hint! Look for Jupiter and Venus among the solar system stands to find the distance.

A) **Find the distance between Jupiter and Venus**

HINT!

Look for Jupiter and Venus among the Solar System stands to find the distance

Speed = Distance ÷ Time

B) **Plug into the equation. Don't forget the units!**

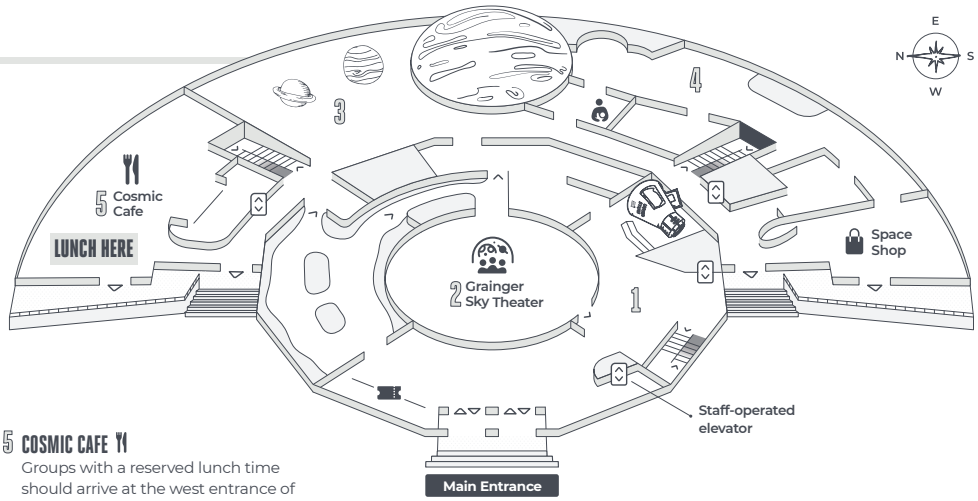
UPPER LEVEL

1 MISSION MOON
Step inside the story of Captain James A. Lovell, Jr., and witness the beginnings of America's journey into space.

2 GRAINGER SKY THEATER
Tickets available at the box offices.
Destination Solar System
Imagine the Moon

3 OUR SOLAR SYSTEM
Explore the many worlds—planets, moons, dwarf planets, and asteroids—that orbit the Sun.
Red Rover: Mars Activity Station is set up here.

4 PLANET EXPLORERS
Children in Pre–K through 3rd grade can blast off to Planet X and take the helm in this modern-day space adventure.

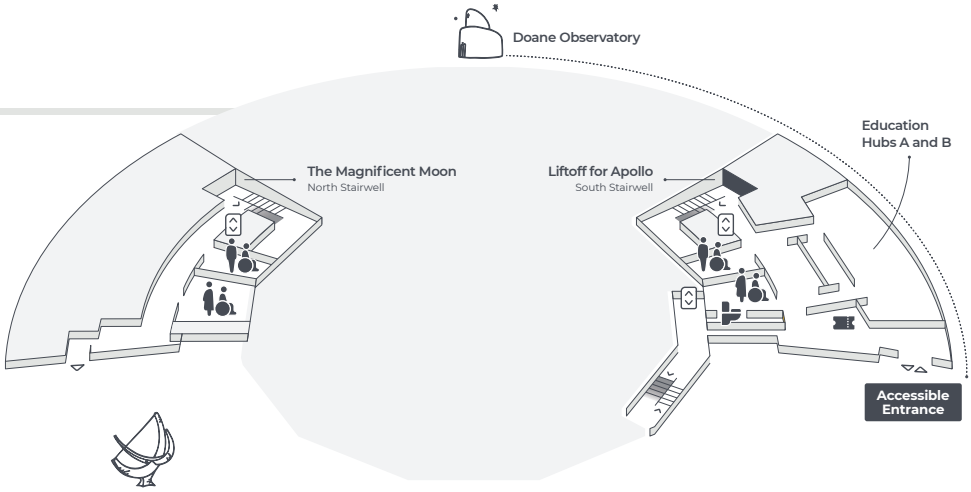


5 COSMIC CAFE
Groups with a reserved lunch time should arrive at the west entrance of the Cafe 5 minutes before their scheduled lunch.

MID-LEVEL

AMENITIES ON THIS LEVEL INCLUDE:

Restrooms equipped with changing tables
Water fountains
Ground level exits
Vending machines (South)
All Gender restroom



LOWER LEVEL

6 UNIVERSE IN YOUR HANDS
Go back in history to learn about some of the cultures that have engaged in the quest to understand their place in the Universe.

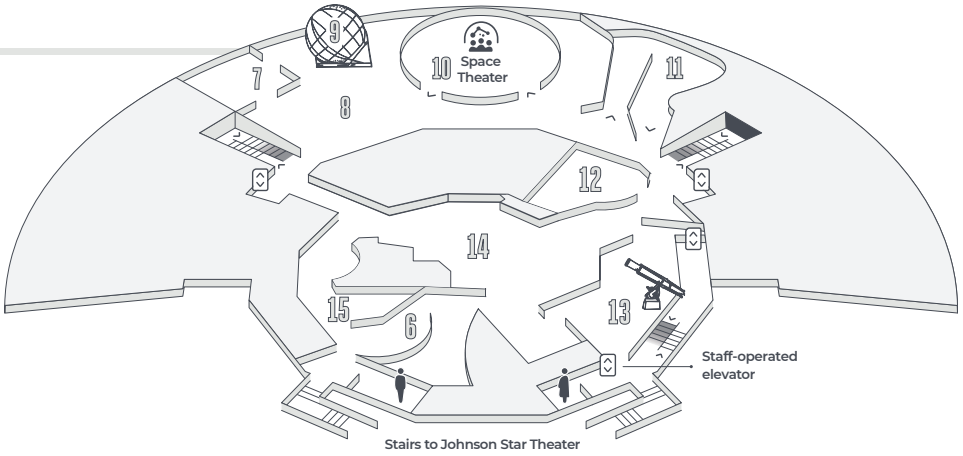
7 COMMUNITY STAR STUDIO
Let your imagination shine in this collaborative design space.
Check at exhibit for available times.

8 CHICAGO'S NIGHT SKY
Discover how your night sky connects you to everyone, past and present, in every place on Earth.

9 THE ATWOOD SPHERE
The Atwood is not operational at this time.

10 SPACE THEATER
Tickets available at the box offices.
Skywatch Live!
Planet Nine
One World, One Sky

11 THE UNIVERSE: A WALK THROUGH SPACE & TIME
Visit distant corners of the cosmos and witness how the Universe has evolved over 13.8 billion years.



12 SPACE VISUALIZATION LABORATORY
Both Adler and visiting experts collaborate to create new ways for people to virtually explore the Universe.

13 TELESCOPES: THROUGH THE LOOKING GLASS
Uncover the extraordinary beauty and technology of some of the world's most important telescopes.

14 COMMUNITY STARGAZER'S HUB
Unravel the mystery behind tools of observation.

15 CHASING ECLIPSES
Discover how people past and present have predicted when and where to stand in the narrow corridor of totality—and prepare to chase down a total solar eclipse for yourself.