

See the Stars

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Read the “Directions” sheet for step-by-step instructions.

SUMMARY

In this activity, children and adults will take a trip to look at the night sky (indoors at a planetarium or outdoors with the naked eye or through a telescope) and think about the experience with suggested questions.

WHY

New experiences and places help children understand how ideas connect with the real world. Learning on field trips can spark curiosity and inspire children to ask better questions about the world around them. The people children meet on field trips can encourage children to think broadly about their own futures and help them to consider other possible jobs.

TIME

- 30 minutes or more

RECOMMENDED AGE GROUP

This activity will work best for children in kindergarten through 4th grade.

GET READY

- Read *Maria’s Comet* together. *Maria’s Comet* is a work of historical fiction about the childhood of Maria Mitchell, America’s first female professional astronomer. For tips on reading this book together, check out the Guided Reading Activity (http://americanhistory.si.edu/ourstory/pdf/telescope/telescope_comet.pdf).
- Read the [Step Back in Time](#) sheet.
- Select the best opportunity to investigate the sky:
 - With your “naked eyes,” if you live far from a city
 - In a planetarium, if you live in or near a city
 - With a telescope, if others in the neighborhood have a telescope (individual neighbors or colleges, universities, or museums)

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CHALLENGE WORDS

- **astronomy:** the science of the stars, planets, sun, moon, and sky
- **constellation:** a pattern of stars, like connect-the-dot pictures
- **planetarium:** a room that uses lights to show stars, planets, and the sky
- **telescope:** a tool for viewing far-off objects

YOU NEED

- Directions sheet (*attached*)
- ThinkAbouts tip sheets (*attached*)
- Step Back in Time sheet (*attached*)
- Transportation (*possibly*)
- Flashlight (*possibly*)
- Blanket (*possibly*)
- Computer with Internet access (*possibly*)
- Paper (*optional*)
- Art supplies (*optional*)

More information at <http://americanhistory.si.edu/ourstory/activities/telescope/>.



See the Stars

Step Back in Time

For more information, visit the National Museum of American History Web site <http://americanhistory.si.edu/ourstory/activities/telescope/>.

Maria (Mar-AYE-ah) Mitchell was America's first woman professional astronomer. She was the first American woman to discover a new comet, and won a gold medal from the king of Denmark as an award for her discovery. After Maria became famous she continued to work as an astronomer, and also taught astronomy to younger women at Vassar College. She used a telescope that is now part of the collection of the National Museum of American History. Maria not only helped her students at Vassar College, but brought attention to other American scientists, schools for girls, and the women's rights movement.



Maria and her father using a telescope to explore the sky (Illustration from *Maria's Comet*)



Maria Mitchell and her assistant with the Vassar telescope

Maria's father was an astronomer, too, and taught Maria about astronomy. He allowed Maria to use his tools, and also helped her meet other astronomers.

Astronomy was very useful and important to everyday life for many people in the 1800s. Sailors, like the ones in Maria's hometown of Nantucket, Massachusetts, used astronomy to find directions while out at sea. Maria was very good at math, making careful notes of what she saw, and was a very patient observer, which helped her become an astronomer, or expert in astronomy.

astronomer: scientist who studies the stars, planets, sun, moon and sky

astronomy: the science of learning about the stars, planets, sun, moon, and sky

comet: a ball of frozen gases, frozen water, and dust

observer: a person who looks at things very carefully

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For adults and kids to follow together.

1. Decide on your best opportunity for looking at the night sky.
 - a. If you live somewhere outside of a city, your best opportunity to see the night sky might be your own backyard! You will want to be as far from lights as possible, so the lights don't ruin your view.
 - b. Check out NASA's Night Sky Network Web site (<http://nightsky.jpl.nasa.gov/index.cfm>) to find the closest astronomy club to your location. These clubs often host "Star Parties" or "Public Viewings" where astronomers share their telescopes with others and talk together.
 - c. The local college or university might have a telescope! Visit the Web site of your local college or university to find out. Or do an Internet or GoogleMaps (<maps.google.com>) search for your state and "public telescope" or "observatory." For example, use Google to search for "observatory" and "Virginia."
 - d. Find a list of planetariums in your state at http://www.aplf-planetariums.info/index.php?onglet=planetariums&menu=liste_country&filtre=USA.
 2. Pick the best **ThinkAbouts** sheet for your adventure.
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3. If you are going away from home to look at the sky, travel to your star-gazing destination.

Tip While you're traveling, sing or listen to songs related to the sky, like "Twinkle, Twinkle Little Star," "When You Wish Upon a Star," "Moondance," or "Catch a Falling Star."

4. *(optional)* Draw a picture of what you saw or how you felt while looking at the night sky.

5. If you still have questions about the sky after your visit, or just want to learn more, check out the homepage for the International Year of Astronomy 2009 (<http://astronomy2009.us/>), NASA's Night Star Network (<http://nightsky.jpl.nasa.gov/index.cfm>), or the Astronomy Picture of the Day (<http://antwarp.gsfc.nasa.gov/apod/astropix.html>).

For more activities and information about *Maria's Comet* and astronomy in American history, visit <http://americanhistory.si.edu/ourstory/activities/telescope/>.

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See the Stars

ThinkAbouts for star-gazing at a planetarium

Planning suggestions:

- Find out if there are specific times that are best for visiting and if there are different shows.
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Before you go:

- What do you expect to see at the planetarium?
 - Take a look at the sky during the day. What things can you see?
 - Do you know the names of any constellations?
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During the trip:

- What do you see? Stars? Clouds? Planets? About how many of each do you see?
 - Do you see any planets?
 - Look at a part of the sky and connect the dots to imagine a picture.
 - Do you see any of the constellations you have heard of? Did you learn about any new constellations? What was the story behind your favorite?
 - How does looking at the sky make you feel? Big? Small? Curious? Bored? Sleepy?
 - Are all of the stars equally bright?
 - Who else uses the planetarium? What do they use it for?
 - Ask the staff: What do you do at the planetarium? How did you get excited about working at the planetarium? What's your favorite part about working there? What other jobs are there at the planetarium?
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After the trip:

- Did you see everything you expected to see? Did anything surprise you?
- Do you still have questions? Check out the homepage for the International Year of Astronomy 2009 (<http://astronomy2009.us/>), NASA's Night Star Network (<http://nightsky.jpl.nasa.gov/index.cfm>), or the Astronomy Picture of the Day (<http://antwrp.gsfc.nasa.gov/apod/astropix.html>).

More information at <http://americanhistory.si.edu/ourstory/activities/telescope/>

See the Stars

ThinkAbouts for star-gazing with your naked eyes

Planning suggestions:

- Go somewhere far from street lights and shopping centers.
- Bring a flashlight to find your way around in the dark and a blanket to lie down on.

Tip After a few minutes in the dark, your eyes will adjust and you'll be able to see more details in the night sky.

Before you go:

- What do you expect to see?
- Try looking at the sky from under a street light.
- Take a look at the sky during the day. What things can you see?
- Do you know the names of any constellations? Or what a specific constellation looks like in the sky?

During the trip:

- What do you see? Stars? Clouds? Planets? Comets? About how many of each do you see?
- Compare looking from under a street light to looking up from the dark area.
- Look at a part of the sky and connect the dots to imagine a picture.
- Do you see any of the constellations you have heard of?
- How does looking at the sky make you feel? Big? Small? Curious? Bored? Sleepy?
- Are all of the stars equally bright?

After the trip:

- Did you see everything you expected to see? Did anything surprise you?
- Do you still have questions? Check out the homepage for the International Year of Astronomy 2009 (<http://astronomy2009.us/>), NASA's Night Star Network (<http://nightsky.jpl.nasa.gov/index.cfm>), or the Astronomy Picture of the Day (<http://antwrp.gsfc.nasa.gov/apod/astropix.html>).

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See the Stars

ThinkAbouts for star-gazing with a telescope

Before you go:

- What do you expect to see?
- Take a look at the sky during the day. What things can you see?
- Do you know the names of any constellations?
- For an idea of what to expect, watch this video about a new telescope observatory at the National Air and Space Museum (<http://www.youtube.com/watch?v=s6ngPDCXAxU>).

During the trip:

- What do you see? Stars? Clouds? Comets? About how many of each do you see?
- Do you see any planets? Describe their color. Compare different planets—are they all the same size or shape?
- Look at a part of the sky and connect the stars to imagine a picture, like you are making a “connect-the-dots” picture.
- How does looking at the sky make you feel? Big? Small? Curious? Bored? Sleepy?
- Are all of the stars equally bright?
- Ask the staff or the owner of the telescope: What do you do with the telescope? How did you get excited about working with the telescope? What’s your favorite part about working with the telescope? Does anyone else also use this telescope?
- Compare looking at the sky with your own eyes to looking at the sky through the telescope. Which way looks brighter to you? Which way makes things look smaller to you?

After the trip:

- Did you see everything you expected to see? Did anything surprise you?
- Do you still have questions? Check out the homepage for the International Year of Astronomy 2009 (<http://astronomy2009.us/>), NASA’s Night Star Network (<http://nightsky.jpl.nasa.gov/index.cfm>), or the Astronomy Picture of the Day (<http://antwrp.gsfc.nasa.gov/apod/astropix.html>).

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OBJECTIVES

Students will be better able to describe the sky and their personal feelings about the sky.

STUDENT PERFORMANCE CRITERIA

- Accurately describes what is seen and felt.

STANDARDS

NCHS History Standards

K-4 Historical Content Standards

- 1B: The student understands the different ways people of diverse racial, religious, and ethnic groups, and of various national origins have transmitted their beliefs and values.

21st-Century Skills

Learning and Innovation Skills

- Critical Thinking and Problem Solving

Benchmarks for Science Literacy

Grades K-2

- 1-C-1: Everybody can do science and invent things and ideas.
- 2-C-1: Numbers and shapes can be used to tell about things.
- 4-A-1: There are more stars in the sky than anyone can easily count, but they are not scattered evenly, and they are not all the same in brightness or color.

Grades 3-5

- 1-C-3: Doing science involves many different kinds of work and engages men and women of all ages and backgrounds.

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- 4-A-1: The patterns of stars in the sky stay the same, although they appear to move across the sky nightly, and different stars can be seen in different seasons.
- 4-A-2: Telescopes magnify the appearance of some distant objects in the sky, including the moon and the planets.