

# Telescopes and Observatories

*Parent Guide*, page 1 of 2

*Read the “Directions” sheets for step-by-step instructions.*

## SUMMARY

In this activity, children and adults will watch and discuss a short video about how people use telescopes.

## WHY

By seeing how telescopes are used today, children will be better able to understand how historical telescopes worked for the people who used them in the past. Historical objects get most of their meaning from the way people interacted with them.

## TIME

- 10 minutes

## 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](http://americanhistory.si.edu/ourstory/pdf/telescope/telescope_comet.pdf)).
- Read the [Step Back in Time](#) sheet.

## CHALLENGE WORDS

- **astronomer:** scientist who looks at the stars, planets, sun, moon, and sky
- **dome:** a roof or ceiling shaped like half of a ball
- **lens:** a piece of see-through material (like glass) that focuses rays of light
- **rotate:** turn or spin
- **satelites:** machines that circle around the sky above the earth to send information
- **telescope:** a tool for viewing far-off objects

# Telescopes and Observatories

*Parent Guide, page 2 of 2*

## YOU NEED

- Talk Together Tip sheets (*attached*)
- Step Back in Time sheet (*attached*)
- Pictures sheets (*attached, optional*)
- Computer with Internet access (to view the video at <http://americanhistory.si.edu/ourstory/v/observatory.html>)
- Measuring tape (*optional*)

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



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## Telescopes and Observatories

### Step Back in Time

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

**M**aria (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

## Telescopes and Observatories

### *Talk Together Tips*, page 1 of 2

*These questions and ideas can help you make the most of the video.*

#### *Before you watch:*

- Have you ever used a telescope? How big was it?
- How hard or easy do you think it will be to move a telescope that is nearly 18 feet long?
- Measure 18 feet on the ground to get an idea of how big the telescope will be.

#### *While you watch:*

- Feel free to pause or rewind to double-check what you're seeing or what's being said.

#### *After you watch:*

- Draw a picture of either:
  - a scientist today, using the telescope in the observatory
  - Maria Mitchell, using her telescope
- Did anything in the video surprise you?
- 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](https://maps.google.com)) search for your state and “public telescope” or “observatory.” For example, use Google to search for “observatory” and “Virginia.”

Special thanks to the United States Naval Observatory in Washington, D.C. for contributing to this project.

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## Telescopes and Observatories

*Talk Together Tips, page 2 of 2*

- Take a look at some of the attached pictures. How are they different? How are they the same?
    - Compare the telescope in the video to the telescope pictured in *Maria's Comet*.
    - Compare the telescope in the video to the telescope in the National Museum of American History.
    - Compare the observatory at Vassar College (where Maria Mitchell taught) to the U.S. Naval Observatory (in the video).
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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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# Telescopes and Observatories

*Pictures, page 1 of 2*



Vassar College Observatory, mid 1800s



U.S. Naval Observatory, 2009

# Telescopes and Observatories

*Pictures, page 2 of 2*



12-inch Alvan Clark Telescope  
at the United States Naval Observatory



Illustration of Maria Mitchell  
and her father  
From *Maria's Comet*



Vassar College Telescope  
now at the National Museum of American History

# Telescopes and Observatories

*For Teachers*, page 1 of 2

*Read the “Parent Guide” and “Directions” sheets for step-by-step instructions.*

## OBJECTIVES

Students will be better able to:

- Describe how people use telescopes.
- Describe features of an observatory.

## STUDENT PERFORMANCE CRITERIA

- Accurately describes telescopes and observatories.

## STANDARDS

### *NCHS History Standards*

#### *K-4 Historical Content Standards*

8A: The student understands the development of technological innovations, the major scientists and inventors associated with them, and their social and economic effects.

#### *K-4 Historical Thinking Standards*

2H: Draw upon the visual data presented in photographs, paintings, cartoons, and architectural drawings.

4B: Obtain historical data.

### *IRA/NCTE Standards for the English Language Arts*

8. Students use a variety of technological and information resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge.

### *Benchmarks for Science Literacy*

#### *Grades K-2*

- 1-C-1: Everybody can do science and invent things and ideas.

# Telescopes and Observatories

*For Teachers, page 2 of 2*

*Grades 3-5*

- 1-C-3: Doing science involves many different kinds of work and engages men and women of all ages and backgrounds.
- 4-A-2: Telescopes magnify the appearance of some distant objects in the sky, including the moon and the planets.