

FACILITATOR GUIDE

Hide and Seek Moon

Learning objectives

- Tools help scientists study objects that are very far away.
- Binoculars make distant objects appear closer and brighter.
- NASA scientists use powerful telescopes to study objects in space.

Materials

- Moon poster with icons (3 ft x 3 ft)
- Poster-hanging adhesive strips
- Binocular invitation sheet
- 2–3 pairs of child-friendly binoculars
- Moon worksheet (for each participant)
- Markers
- Activity and facilitator guides
- Information sheets
- *Tips for Leading Hands-on Activities*
- *Moon Rope* storybook by Lois Ehlert, translated by Amy Prince

The Explore Science toolkit comes complete with all necessary materials for this activity. Materials are also readily available to create or restock activity kits. Graphic files can be downloaded from www.nisenet.org. The binoculars we include in the kit, GeoSafari® Jr. Kidnoculars®, tested as the most child-friendly and are available through www.educationalinsights.com. *Moon Rope*, by Lois Ehlert and translated by Amy Prince, can be ordered from online booksellers, or found in bookstores or your local library.

Safety

In any discussion with visitors about using binoculars outside, mention eye safety with respect to looking directly at the Sun with any kind of unprotected optics. Focus on looking only at birds, plants, trees, the Moon, or even distant buildings or other landmarks. You should never look directly at the Sun with binoculars!

Advance preparation

Before you begin:

- Assess your options for hanging the Moon poster at your site. We have provided Command™ adhesive strips, but if your site does not allow these to be used on the wall, you may use

painter's tape instead, or mount the poster to a stanchion sign using large binder clips. Hang the poster **6–8 feet away** from the table you'll use for the activity.

Notes to the presenter

The artistic and thematic inspiration for this activity come from the book *Moon Rope* by Lois Ehlert and translated by Amy Prince. You can make the book available for groups to browse before or after they try the activity.

Using binoculars may be a new experience for young children. Allow them time to explore this tool and to delight in the experience before directing their attention to the activity's tasks. Try reminding them of where else they may have seen this tool, and ask them, "What other things might you want to look for with your binoculars? What about when you're outside?" Even those who have tried them in the past may find it difficult to see through them and may need help and guidance. Allow children to build their confidence by using these age-appropriate strategies developed by the *My Sky Tonight* project of the Astronomical Society of the Pacific.

- **Provide Information** about binoculars as a tool for magnifying distant objects. For example, say, "Binoculars are a tool that help people see things that they can't see with only their eyes."
- **Demonstrate** how to hold the binoculars and try saying things like, "If I want to see the objects on the Moon poster, I'll look through the small lenses and point the binoculars toward the Moon."
- **Ask questions/make statements** that encourage children to describe what they are noticing. For example, "You're looking at the Moon through the binoculars, tell me what you see."

Some very young children may find it easier to explore and then talk about their observations rather than using the worksheet. Help children reflect on the difference between what they can see with their eyes alone and what they can see with binoculars. Prompts could include asking, "What did you notice on the Moon when you used the binoculars? Now use just your eyes. Do you notice a difference? How does the Moon look now? What else do you notice?"

This activity is designed to appeal to preschool-aged participants, as well as accompanying adults and older children, but the concepts in this activity are appropriate for all ages. When facilitating this activity for children older than preschool age, you may offer them an extra challenge.

- Encourage participants to draw in some detail what they see on the printed poster of the Moon.
- While one child uses the binoculars to find hidden images on the Moon, they might describe to a partner where and what those images are. Then encourage the partner to try to mark down the correct location on the printed image of the Moon, without looking through the binoculars themselves.

The image of the Moon on the large poster may look upside down to you, and it is upside down from how people in the Northern hemisphere would view a full Moon. Remember there is no up or down in space! This image is a composite of many high-resolution pictures of the Moon stitched together.

Optional extensions

Try offering this activity as part of a structured story-time program. Read *Moon Rope* by Lois Ehlert, translated into Spanish by Amy Prince, and then offer several extra sets of binoculars to allow multiple groups of children and families to experience the activity.

Difficult concepts

The *Moon Rope* story is an example of one of the ways people have made meaning out of the shapes they see on the Moon. The Moon is not simply an object of scientific exploration. Our closest celestial neighbor has inspired people from many cultures to tell stories about the Moon. Avoid making comparisons or using language in the activity that may indicate that contemporary or NASA science gives a view of the “real” Moon and that the story is not “real.” Be mindful of phrases like “myth” or “in ancient times.” Placing value to science and not story by alluding to one as “real” and the other as less, can be disrespectful to cultural knowledge bases where there is no clear distinction between science and story. For holders of native knowledge these are blurred and integrated. For more information about ways different cultures have interpreted the Moon, see The Cultural Moon information sheet.

Some visitors may think that we use telescopes attached to satellites orbiting in space to observe distant objects because we want to get closer to the objects. In fact, light traveling through Earth’s atmosphere distorts and appears to twinkle, so the less of it that we have between our telescope and the object in space, the better. Try saying, “It’s true that we use big telescopes in space to observe distant objects, and that’s because scientists put telescopes on spacecraft to avoid the distorting effects of Earth’s own atmosphere, not get closer to the objects.” Researchers are careful about the placement of ground-based telescopes, too. Many of these are located far from cities under very dark skies and often high up on mountains where there’s less atmosphere above them, and so less “twinkle.”

Staff training resources

Refer to the *Tips for Leading Hands-on Activities* sheet in your activity materials.

- An activity training video is available at vimeo.com/245834633
- A content training video is available at vimeo.com/245835169
- The NISE Network has a curated list of programs, media, and professional development resources in the NASA Wavelength Digital Library that directly relate to the toolkit. These resources can be viewed and downloaded from nasawavelength.org/users/nisenet.

Credits and rights

This activity was adapted from *Hide & Seek Moon* from the *My Sky Tonight* early childhood astronomy project, developed by the Astronomical Society of the Pacific. *My Sky Tonight* is based upon work supported by the Division of Research on Learning (DRL) of the National Science Foundation under Grant no. AISL #1217441. For more information, activities, and resources from *My Sky Tonight*, visit www.astrosociety.org/MySkyTonight.

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Artist's rendering of Hubble Space Telescope courtesy European Space Agency.

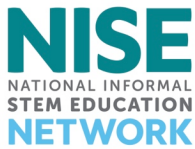
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Artist's rendering of LCROSS spacecraft courtesy NASA LCROSS.

LRO data poster courtesy NASA's Goddard Space Flight Center.

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