



Title: Phases of the Moon
Grade(s): 4th
Subject(s): Science, Writing, Art, Technology
Author: Representatives from Phillips Academy & Princeton Alternative Elementary Schools

Overview: Students will investigate different phases of the moon. After listening to Goodnight Moon, students will be able to identify four phases of the moon (new moon, first quarter, full moon, and last quarter). Students will make daily observations of the moon and keep a record of their observations on a MOON PHASE CALENDAR hung on their refrigerator at home. A similar calendar will be posted on a bulletin board in the classroom. Observations and record keeping of the moon's appearance could serve as a starting point for a unit on space or space exploration.

Content Standards: SC (4) 9. Describe the appearance and movement of Earth and its moon.
ELA (4) 5. Use a wide range of strategies and skills, including using sentence structure, locating information, and distinguishing fact from fiction, to comprehend fourth-grade informational and functional reading materials.
ELA (4) 9. Respond in writing to open-ended questions.
ELA (4) 12.3 Using note-taking skills to gather information.

Local/National Standards:
Primary Learning Objectives: Identify the four phases of the moon and to increase awareness of changes in the moon's appearance and placement in the sky.

Additional Learning Objectives: Use art, writing and technology (Scratch) to complete a RAFT activity.
Approximate Duration of Lesson: 3 days (45 min lessons suggested)
Materials and Equipment: NOT INCLUDING MANAGING THE CALENDAR Goodnight Moon by Margaret Wise Brown, hangers, yarn or string, handouts, art supplies, chart paper
Technology Resources Needed: Computer, Promethean Board, Internet, teacher created Scratch (Moon Phases) activity
Background/Preparation: Previous knowledge of the moon. Decide which week you want your students to start observations, and start labeling the calendar with that week (note: The first week on this calendar may not be the first week of the current month.) Label all the other squares with subsequent dates. Make a copy of a MOON PHASE CALENDAR & USEFUL INTERNET RESOURCE sheet for each student.



**Procedures/
Activities:**

- Step 1 Read **Goodnight Moon** to the class. Ask students, *"What did you notice about the moon on each page?"* Prompt students if necessary to get them to respond that the moon is full in each picture, except the pictures featuring the cow jumping over the moon. *"What do you think the word lunar means? What is a calendar? What do you think a lunar calendar is?"*
- Step 2 The teacher will demonstrate her Scratch movie **MOON PHASE**
This activity demonstrates the moon phases and requires student groups to correctly recreate the illustration using chart paper and art supplies.

Role	Audience	Format	Topic
Cartoonist Illustrator Writer Blogger	Peers Parents	Paper/Art Supplies Glogster or British Council Comics, Science journals Blog	Is this the correct representation of the moon phases?

Each group will present their final product
**(THE LESSON CAN COME TO A CLOSE HERE
FOR DAY 1)**

Next, divide students into small groups (depending on the number of computers available). Students will access web sites provided by the teacher on handout.

Students will research the names of each phase of the moon along with what the phases look like and what a lunar calendar looks like. Monitor students' progress, and answer questions as they are asked. After students have finished their research, have them sit in a circle to share and document what they discovered.

- Step 3 Inform students that they will be constructing a lunar calendar for the current month at home or in school (YOUR CHOICE). The teacher will have pre-made calendars ready that can be glued onto the rectangular piece of construction paper. On the calendar, students label the days that each phase falls on for the current month. The completed calendar can be tied to the center of a coat hanger with string or yarn.



Step 4 Students will independently continue making daily observations, until the moon appears as it did the first day it was observed (approximately 30 days). This activity could be extended through a second 29 ½ - 30 days, so that students experience the continuous cyclical changes in the moon.

**Attachments:
Assessment
Strategies:**

See Below

Students will be evaluated on their class participation during discussion opportunities.

Review students' lunar calendars to check for accuracy using a rubric of your choice.

Students will have the opportunity to review what they learned. If students have science journals, they can write about what they learned and their feelings about the topic or activity.

Extension:

- As an extension, students can develop additional lunar calendars for the rest of the year.
- In some cultures the full moon has names. Have students research using a traditional or web-based almanac. Here are the traditional names given to each month's full moon from the "Old Farmer's Almanac":

January - Wolf Moon

February - Snow Moon

March - Worm Moon

April - Pink Moon

May - Flower Moon

June - Strawberry Moon

July - Buck Moon

August - Sturgeon Moon

September - Harvest Moon

October - Hunter's Moon

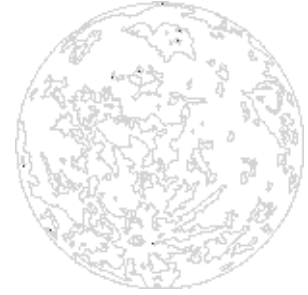
November - Beaver Moon

December - Cold Moon

Let the children make up their own moon calendars individually or in groups. Using Scratch (or another technology format) the students or groups will be able to create their own calendar for their birth month.

Remediation:

During centers, have struggling students meet with the teacher to read lower level texts/resources in the science station (ex. **The Moon Book** by Gail Gibbons and **Big Bright Moon** by Cindy Loo, **If You Decide to Go to the Moon** by Faith McNulty or **On the Moon** by Anna Milbourne.) The teacher should question students as they are reading to check for comprehension.



Name _____

Month _____

Moon Phase Calendar

Insert the dates, time, moon observational drawing, and any additional information needed to fill in the calendar.

Useful Internet Resources

*Moon Phases

<http://www.youtube.com/watch?v=2aFGNGEcDOK>

<http://www.youtube.com/watch?v=sXK63GpwUqk>

* Virtual Reality Moon Phase Pictures

<http://tycho.usno.navy.mil/vphase.html>

EACH group will record their responses/ideas to these suggested set of questions. You may come up with some you have for other groups.

Is the moon always visible in the nighttime sky?	Is the moon ever visible in the daytime sky?	Does the moon always rise as the sun sets?	Does the moon always look the same?	Is the moon always in the same place in the sky?