

Weekly Lessons/Overview and Goals: How can we predict the phases of the moon?

TEKS: 4.8C

4.8 Earth and space. The student knows that there are recognizable patterns in the natural world and among the Sun, Earth, and Moon system. The student is expected to:

4.8C collect and analyze data to identify sequences and predict patterns of change in shadows, seasons, and the observable appearance of the Moon over time (S)

Unit 8 Vocabulary:

4.8C

data

pattern

full moon

sequence

Seasons

first quarter moon

predict

Moon

third quarter moon

shadows

Moon phases

new moon

prediction

Monday: No School

Tuesday: No School**Wednesday: Moon Phases**

Essential Question: How can we predict the phases of the moon?

Engage

Pre-Assess using this [formative Assessment](#)

Explore

Modeling Moon Phases

1. Have students gain perspective and understanding of their models by having them stick a circle/dot sticker on their forehead that is labeled with an X to represent their home or city. Tell students that in this activity, their head are models of our planet Earth.
2. Make sure students understand that the light we see from the Moon comes from reflected sunlight. The Moon does not create its own light.
3. Many students believe Earth casts a shadow on the Moon. This is not true. We see different lit parts of the Moon depending on the positions of the Earth, Sun, and Moon in relation to each other. Do not use the word shadow when discussing Moon phases.
4. Make sure to refer to the cycle as both the Moon phases and the lunar cycle. Students may not realize it is a cycle if you only refer to it as the Moon phases.
5. Model the activity for the students before they begin.
6. Tell students the light represents the Sun, they represent Earth, and the ball represents the Moon.
7. Make sure students hold the Moon model above the level of their heads. (When the Moon is held at eye level, it will create an eclipse.)

Tell students to complete the following motions of the activity:

- A. Students should stand a few feet away from a lamp, face the lamp, and hold the Moon in front of them.
- B. With one arm fully extended and holding the ball above their head (not at eye level), students will need to make a one-quarter turn to their left with the Sun (lamp) on their right side.
- C. Ask them the following questions: What part of the Moon do the tiny people on your “Earth-headsee? Is the lit part on the right or the left side of the Moon? You may have to help some students see the dark and lit parts.
- D. Students will see a first-quarter moon. The name of the phase will be emphasized later on. For the time being, make sure to have students focus on the location of the lit part of the foam ball.
- E. After students see the first-quarter moon, tell them to stay in their positions.
- F. Have students continue to hold the Moon with a fully extended arm above their head and move again to make a one-quarter turn to the left so the Sun shines on the back of their heads.
- G. Students should now see a full moon, as the ball is fully lit. You may need to remind students to hold the Moon high and above eye level.
- H. After students see the full moon, tell them to again turn one-quarter to the left so their left shoulder faces the Sun. Ask them to look for the lit part on the Moon. This is the third quarter moon.
- I. Ask the students if the lit part that they see is different in any way (the opposite side of the moon is lit up when compared to the first quarter moon).
- J. After students see the third quarter moon, tell them to make one final one-quarter turn to the left. Now the Sun is shining on their “Earth-face, and the Moon is dark. This is the new moon phase. In this phase, the Moon rises and sets during the day. Because the Sun is so bright, we cannot see the new moon. (This is the same reason the stars cannot be seen during the day. The stars are there, but the Sun is too bright for us to see them.)

Thursday: Sub Day - 4th grade planning (Writing Camp)

- Close reading passage on the moon and notes

Friday: Phases of the Moon (cont. From yesterday)

Essential Question: How can we predict the phases of the moon?

Engage

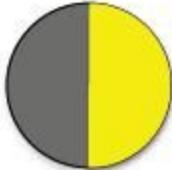
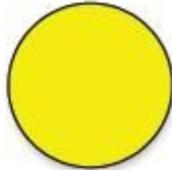
Read: *The Moon Inside - Mackin Via, Papa, Please get the Moon for Me E CAR, My Mommy Hung the Moon E CUR*

Explore & Explain

Today, model the phases again, this time as a demo. Encourage students to talk about what they observed yesterday.

Elaborate

Have students copy this table into their notebooks:

Reminder: You represent the Earth. The "X" represents where you live on Earth.	I am facing toward the Sun.	My right shoulder is facing the Sun.	I am facing away from the Sun.	My left shoulder is facing the Sun.
Shade the shadow area and color the brightly lit area yellow.				
Name the phase of the Moon.	New Moon	First Quarter	Full Moon	Third Quarter

*Optional: [Reading on Moon Phases](#), page 13-14

Evaluate

Phases of the Moon, [Memory Game](#)

Differentiation: A variety of activities (application, concrete, and kinesthetic) will be incorporated into both days to

engage all learners. Kagan structures will be introduced the first week of school.