LESSON 5:

SPINNING MOON PHASES

SUPPLIES

LESSON KIT #5
- Cardboard Tubes (20)
- Gold Stars (1 sheet)

FOLDER
- Reference Sheet (20)
- Challenge Sheet (20)
- Moon Phases Template (4)
- Night Sky Template (6)
- Black Paper (20)

TEACHER BRINGS
- Oreos (optional extension)

PENCIL BOX
- Scissors
- Tape
- Glue

OBJECTIVES

- ☑ Identify and name the different phases of the moon.
- ☑ Understand why the moon appears to change shape from Earth.

HOOK

3-5 min

Imagine you're outside at night, looking up at the sky. Sometimes, you see a big, round moon shining brightly. Other times, you might see just a sliver of light, or even no moon at all. These changes in the moon's appearance are called moon phases. But why does the moon look different at different times? Let's find out!



INTRODUCTION

3-5 min

Did you know that the moon doesn't have its own light? Instead, it reflects light from the Sun. As the moon orbits around Earth, the amount of the moon that is lit up by the Sun changes, and we see different portions of its illuminated side. This is what causes the different moon phases. If you have ever looked at the moon in the night ky, you have probably already seen some of these different phases.

LET'S LEARN ABOUT LUNAR PHASES

The moon goes through all of its phases in about 29.5 days. This time period is called a lunar month. Each phase has its own unique look! For example, during the new moon phase, the moon is positioned between the Earth and the Sun. This means the side of the moon that is lit up by the Sun is facing away from us, making the moon invisible to us. As the moon continues its orbit, more of the illuminated side becomes visible, and we see a waxing crescent. This process continues until we reach the full moon, where the entire face of the moon is illuminated and fully visible from Earth.

After the full moon, the cycle reverses with the waning phases, where the visible portion of the light side decreases, leading back to the new moon.



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SPINNING MOON PHASES

DISCUSSION

5 min

Today's discussion involves a quick worksheet activity to help understand the phases of the moon.

- Begin by naming and explaining each phase of the moon using the Reference Sheet.
- Have students review and draw in what they know about the phases of the moon using the **Moon Phases Challenge**. Help younger students read the labels and show them the shape to draw on the reference sheet.
- Once students have completed the Challenge Sheet, move on to construction of a Moon Phase Spinner. Every student will make their own spinner.

ACTIVITY DIRECTIONS

30 min

1. Prepare the Night Sky:

- Have each student cut out the Night Sky template, making sure to include the center circle.
- Glue the template on a piece of black construction paper.
- Cut out the black construction paper to match the Night Sky template.
- If students wish, they can add stars on the template using stickers. Refer to previous constellation experiment to draw some real-life constellations!

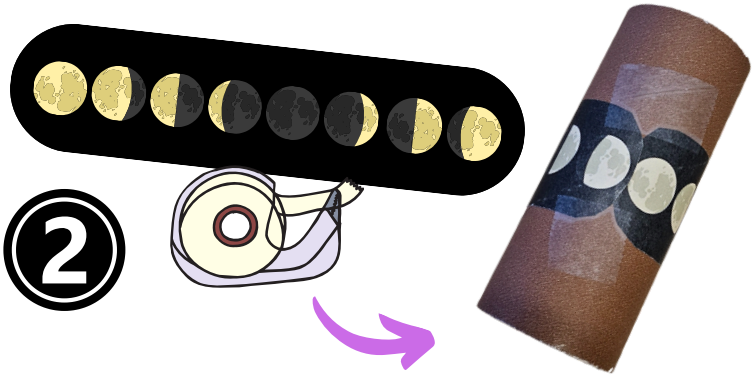


2. Prepare the Spinner:

- Have each student cut out the Moon Phases template,
- Wrap the Moon Template around the center of the cardboard tube, taping where it meets to attach it.
- Wrap the Night Sky Template around the cardboard tub, taping the seam so that in can be spun around the tube.
- Line up the viewing hole in the Night Sky template with the moon phases beneath. Start at the Full Moon.

3. Observe Moon Phases!

- Spin the Night Sky and observe the Moon Phases change through the viewing hole!





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SPINNING MOON PHASES

OBSERVE & EXPLAIN

5 min

Hands-On Interaction:

- Ask students to rotate their spinners and identify the different moon phases.
- Have them work in pairs or small groups to discuss which phase is currently visible and predict the next phase in the cycle.

Questions and Exploration:

- Why do these phases occur? Have students talk about what causes the moon to go through phases. Re-explain how the moon's position relative to Earth and the Sun creates the various phases.
- Tell students it takes about 29.5 days for the moon to go through all its phases, known as a lunar month.

Deeper Understanding:

- Discuss how the changing moon phases affect tides on Earth.
- Explore cultural significance: Many cultures use the moon to mark time, such as the lunar calendar used in many Asian cultures and the Islamic calendar.

Real-World Connection:

- Talk about how astronauts on the moon would see Earth go through similar phases.
- Discuss how understanding moon phases is important for space exploration and lunar missions.

Reflection:

- Ask students how this activity helped them understand the moon phases better.
- Encourage them to observe the moon over the next month and identify the phases they see.

EXTENSION

As a fun follow-up to the moon phases demonstration with the spinners, guide your students to create the different moon phases using Oreo cookies. Provide each student with an Oreo cookie, a plastic knife or spoon, a paper plate, and a napkin. Instruct them to carefully twist the Oreo cookies apart and use the knife or spoon to carve out the frosting to represent each moon phase, using the moon phases reference sheet as a guide. Have students arrange their Oreo moons in order on their paper plates, starting with the new moon and moving through the phases. Discuss how this activity helps them visualize the moon's changing appearance, and then let them enjoy their Oreo treats.



Exit Ticket



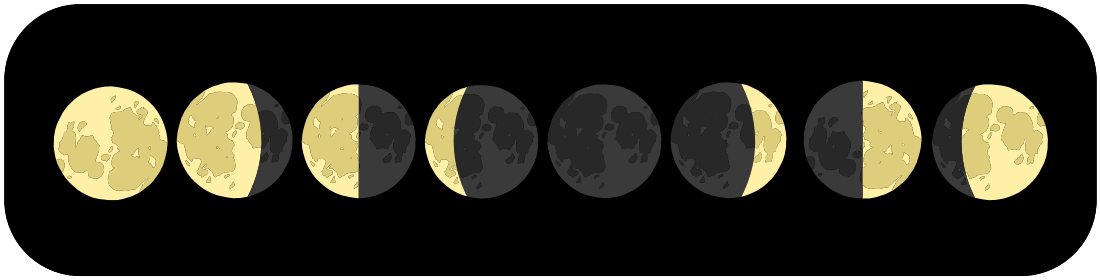
Ask each student one of the following questions as they walk out the door.

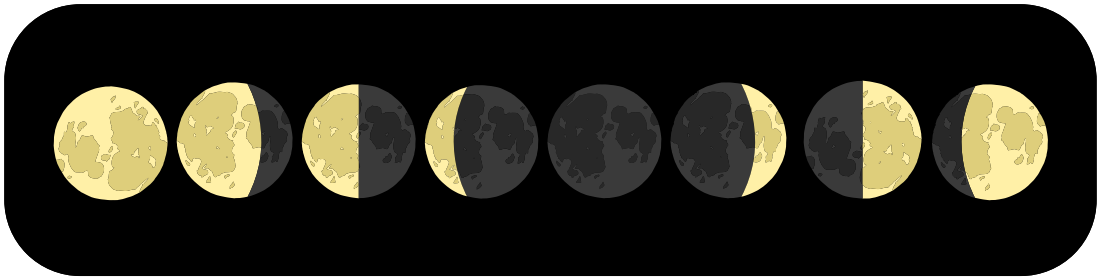
- Q: What do we call the moon when it is entirely lit up?
  - A: the full moon!
- Q: How many days are in a lunar month?
  - A: 29.5 days

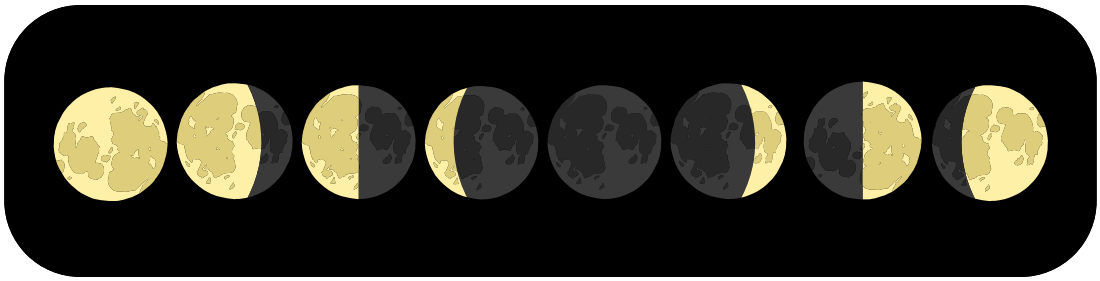
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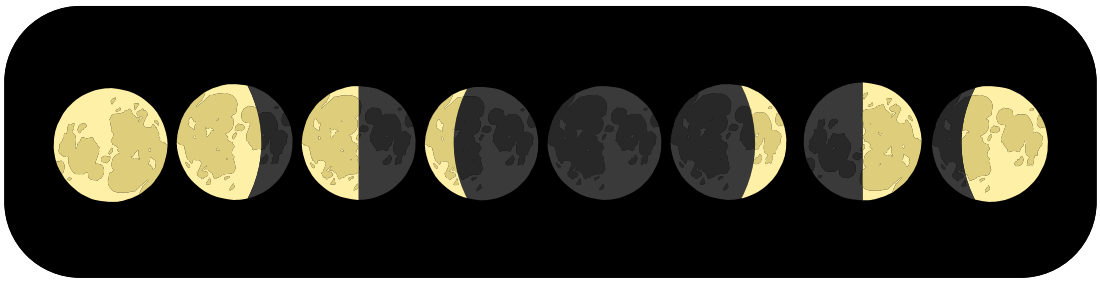
MOON PHASES TEMPLATE

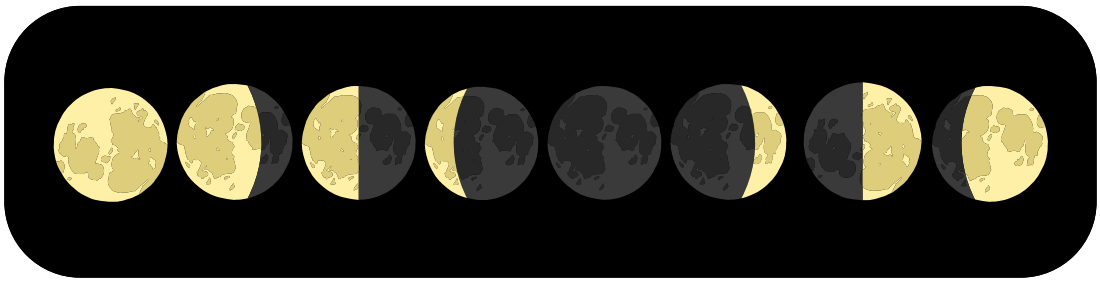
Have each student cut out one Moon template

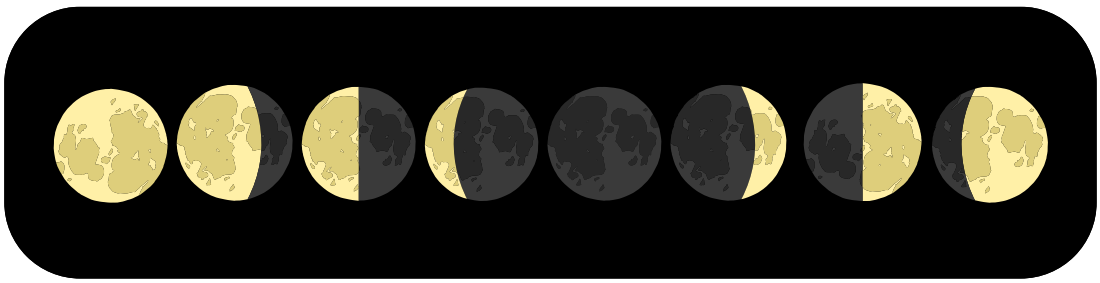










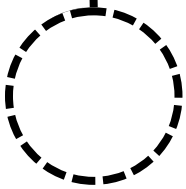


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NIGHT SKY TEMPLATE

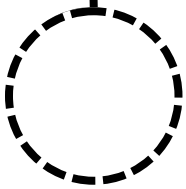
Have each student cut out one Night Sky template

Night Sky Template



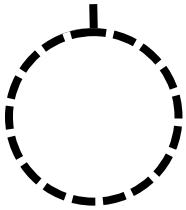
Make sure to cut out center!

Night Sky Template



Make sure to cut out center!

Night Sky Template



Make sure to cut out center!

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MOON REFERENCE SHEET

Directions: Use the Moon Phases Reference Sheet to help you learn about each phase of the moon.



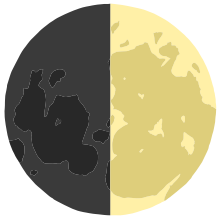
New Moon:

When the moon is between Earth and the Sun, the side of the moon facing us doesn't get any sunlight, so we can't see it. This is called the new moon.



Waxing Crescent:

After the new moon, a small part of the moon starts to catch sunlight, and we see a tiny crescent shape.



First Quarter:

As the moon moves further in its orbit, half of it is illuminated by the Sun, and we see a half-moon. This is called the first quarter.



Waxing Gibbous:

More than half of the moon is now lit, and it's growing towards a full moon.

Full Moon:

When the moon is on the opposite side of Earth from the Sun, its whole face is illuminated, and we see a full moon.



Waning Gibbous:

After the full moon, the moon starts to move back towards the new moon. More than half is still lit, but it's shrinking.



Last Quarter:

Again, we see a half-moon, but this time it's the opposite half from the first quarter.



Waning Crescent:

Finally, only a small crescent is visible before it goes back to being a new moon.

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MOON PHASES CHALLENGE

Directions: Use the Moon Phases Reference Sheet to help you **draw** each phase of the moon.
The New Moon has been added to get you started!

LAST QUARTER

WANING GIBBOUS

WANING CRESCENT



FULL MOON



NEW MOON

WAXING GIBBOUS

WAXING CRESCENT

FIRST QUARTER

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SPINNING MOON PHASES: STUDENT DIRECTIONS

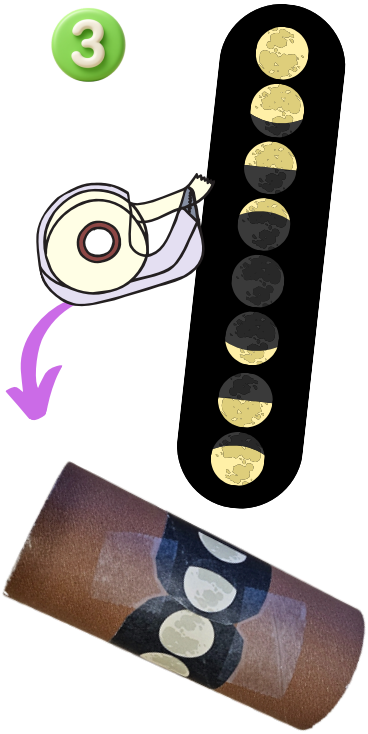
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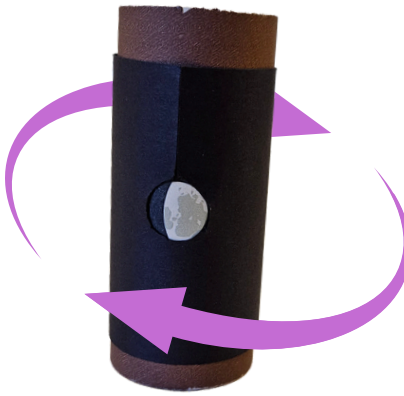
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SPINNING MOON PHASES: STUDENT DIRECTIONS

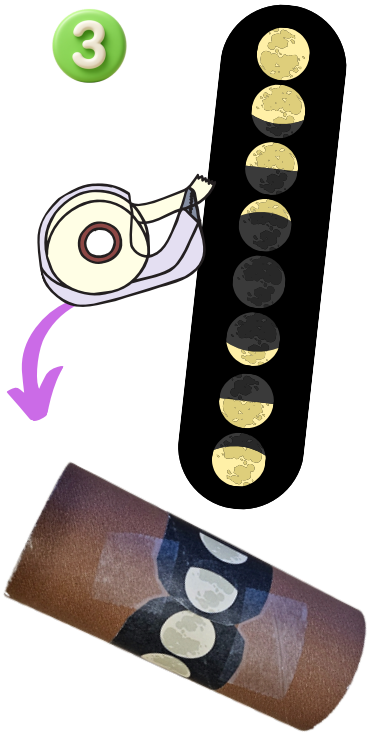
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