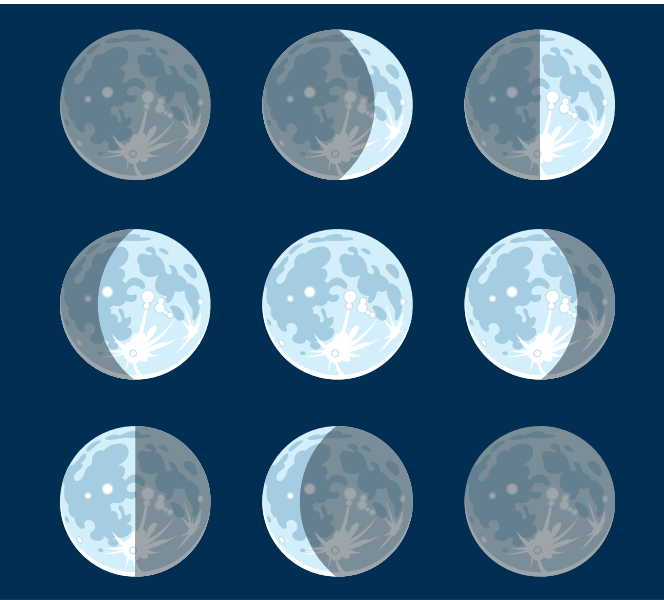


THE WHYNAUTS:

Episode 8: Patterns in the Sky

EDUCATOR GUIDE SUGGESTED GRADE LEVELS K-2



Per[]t
Museum of Nature and Science

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INTRODUCTION

HOW TO USE THIS GUIDE

The Whynauts **“Patterns in the Sky”** Video explores patterns such as day and night, the appearance of the Moon, and the seasons of the year. This guide is designed to help you incorporate the video into a complete learning experience for your students. It is composed of three main sections:

The **Viewing Strategies and Tools** section includes suggested discussion questions and a pre- and post-assessment to track student learning.

The **Supplemental Activities** section includes four activities that can be used in any order or combination.

The **Additional Resources** section includes a glossary, reading list, and links to continue learning.



LEARNING OBJECTIVES

Students will be able to:

- Observe, describe, and record patterns, including day and night, the appearance of the Moon, and the seasons of the year.
- Describe weather and how it impacts daily choices such as clothing and activities.

TEKS ALIGNMENT

K.8B. Identify events that have repeating patterns, including seasons of the year and day and night.

K.8C. Observe, describe, and illustrate objects in the sky such as the clouds, Moon, and stars, including the Sun.

1.8B. Observe and record changes in the appearance of objects in the sky such as the Moon and stars, including the Sun.

1.8C. Identify characteristics of the seasons of the year and day and night.

2.8B. Identify the importance of weather and seasonal information to make choices in clothing, activities, and transportation.

2.8C. Observe, describe, and record patterns of objects in the sky, including the appearance of the Moon.

NGSS ALIGNMENT

K-ESS2-1. Use and share observations of local weather conditions to describe patterns over time.

1-ESS1-1. Use observations of the Sun, Moon, and stars to describe patterns that can be predicted.

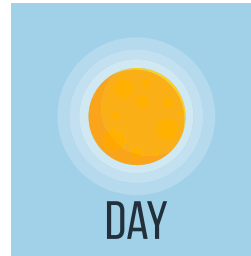
BACKGROUND INFORMATION

A **pattern** is a regular and repeating way in which something happens. Patterns allow us to make predictions based on our observations.

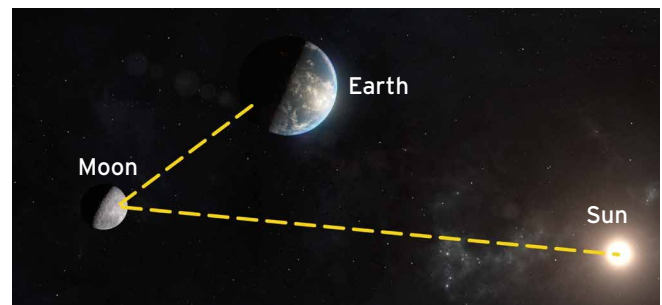


Objects in the sky can occur in patterns too! The Sun, Moon, clouds, and airplanes can all be observed in the sky. The **Sun** is a star at the center of our solar system that provides Earth with light and heat. The Earth revolves or travels around the Sun. The **Moon** travels around Earth and is our nearest neighbor in space.

The movement of the Sun across the sky makes the pattern we know as day and night. The Sun rises in the east every morning (sunrise), moves across the sky, and then sets in the west every evening (sunset). The **day** starts when the Sun rises and ends when the Sun sets. The **night** starts when the Sun sets and ends when the Sun rises. At night, we can often see the Moon and stars.



Like the Sun, the Moon rises in the east, moves across the sky, and then sets in the west. Sometimes we see the Moon at night, and sometimes we see the Moon during the day. It may look like the Moon itself is shining brightly, but it doesn't actually produce its own light. Instead, the Moon reflects the light from the Sun. A **reflection** is when light bounces off of one surface onto another surface.

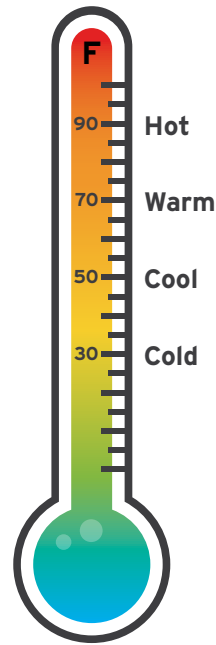


You may have noticed that the Moon doesn't always look the same. The Moon isn't actually changing its shape - only the **appearance** of the Moon is changing. As the Moon travels around the Earth, the parts of the Moon being lit by the Sun change. This is what gives us phases of the Moon. These phases follow the same pattern over and over again every month.

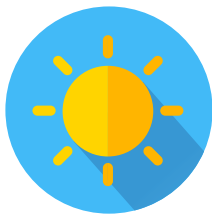


Weather describes the current state of the air around us at a specific time and place. Patterns in the weather help make decisions about clothing, activities, and the best ways to travel. There are multiple ways to describe weather, including temperature, cloud coverage, and precipitation.

Temperature describes how hot or cold something is, such as the air. Temperature is measured using a tool called a **thermometer**. The temperature of something can be **hot**, like hot cocoa; or it can be **cold**, like ice cream; or it can be somewhere in between. **Warm** describes things that are between hot and cold but closer to hot. **Cool** describes things that are between hot and cold but closer to cold. You can tell the air is really cold when you can see your breath outside.



Cloud coverage describes how many clouds are in the sky. A clear sky has very little or no clouds - like on a nice sunny day! **Partly cloudy** skies are a mix of clouds and sunlight. **Mostly cloudy** skies have more clouds than sunlight. **Overcast** skies are almost completely covered in clouds. Partly cloudy skies are great for cloud spotting.



Clear Sky



Partly Cloudy



Mostly Cloudy



Overcast

Precipitation describes the different forms of water that can fall from the sky toward the ground. **Rain** falls as liquid water. **Hail** is balls of ice that can fall during thunderstorms. **Sleet** starts falling as a liquid but freezes as it falls to the ground. **Snow** is solid ice crystals that fall from the clouds. Rain might fall onto the ground and make puddles, while snow might fall onto the ground and make piles of snow.



Rain



Hail



Sleet



Snow

Weather can impact the choices you make on a given day, like what **clothing** you wear to cover your body, what **activities** you do, or what **transportation** you use to move from one place to another. For example, on a rainy day, you might choose to wear a raincoat, stay inside to read a book, or take a car to school. On a sunny day, you might choose to wear a hat, play outside, or walk to school.

Seasons represent different times in the year that have characteristic changes in weather, amount of daylight, and environmental conditions. There are four seasons each year that repeat in the same pattern.

A yellow semi-circular graphic with a sunburst pattern in the background.

Summer

is usually the warmest season of the year, when our part of the Earth is tilted towards the Sun. In the Northern **Hemisphere**, summer includes June, July, and August. The leaves on the trees are bright green, the weather is warm or hot, and the days are very long.

A red semi-circular graphic with a pattern of falling leaves in the background.

Autumn/Fall

is a season of transition between summer and winter. In the Northern Hemisphere, autumn includes the months of September, October, and November. The weather starts to get cooler, and animals start to get ready for the cold. The days start to get shorter, and leaves start to fall from the trees.

A light green semi-circular graphic with a pattern of growing plants in the background.

Spring

is a season of transition between winter and summer. In the Northern Hemisphere, spring includes March, April, and May. The weather starts to get warmer, and animals start to become more active. The days start to get longer, and the leaves and plants are growing again.

A blue semi-circular graphic with a pattern of snowflakes in the background.

Winter

is the coldest season of the year, when our part of the Earth is tilted away from the Sun. In the Northern Hemisphere, winter includes December, January, and February. This season has the least amount of daylight, the weather is cold, and usually, all the leaves have fallen from the trees.

VIEWING STRATEGIES AND TOOLS

DISCUSSION QUESTIONS

■ SECTION 1: DAY AND NIGHT, APPEARANCE OF THE MOON [BEGINNING - 4:30]

- What are some things you have observed in the sky?
 - I have observed _____ in the sky.
- As the Sun moves across the sky, how do you think your shadow changes?
 - I think my shadow will _____.
- Day and night is a pattern discussed in the episode. Can you describe any other patterns?
 - _____ is a pattern because _____.
- Why do you think patterns are important?
 - I think patterns are important because _____.

■ SECTION 2: WEATHER AND SEASONS [4:30 - END]

- What is your favorite type of weather? Why?
 - My favorite type of weather is _____ because _____.
- How does weather affect your choices?
 - One way weather affects my choices is _____.
- What is your favorite season? Why?
 - My favorite season is _____ because _____.
- How do animals react to changing seasons?
 - One way animals react to changing seasons is _____.

Pre- and Post-Video Assessment

1. Draw some objects you observe in the sky during the day and during the night.

DAY	NIGHT

2. What clothing would you pick out for a rainy day?



3. What season comes next in the pattern below? Fill in the boxes below.



Spring



Summer



Autumn



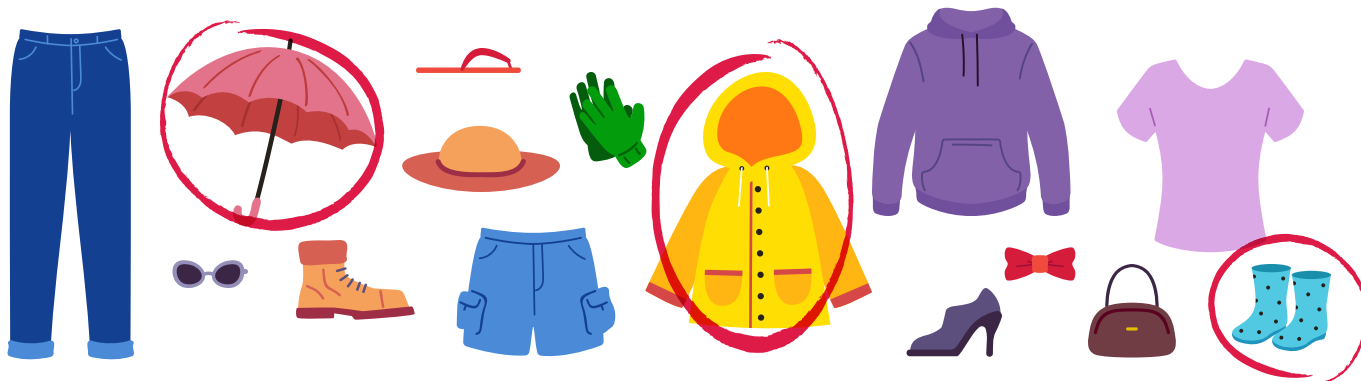
Winter

Pre- and Post-Video Assessment

1. Draw some objects you observe in the sky during the day and during the night.

DAY	NIGHT
(drawings will vary)	(drawings will vary)

2. What clothing would you pick out for a rainy day? Answers will vary, but should include at least one of the circled items.



3. What season comes next in the pattern below? Fill in the boxes below.



Spring



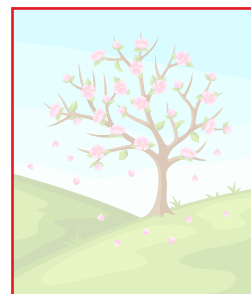
Summer



Autumn



Winter



Spring



SUPPLEMENTAL ACTIVITIES

Day and Night
Cookie Moon Phases
Weather Mobile
Season Sort

Day and Night

WHAT MAKES THE PATTERN OF DAY AND NIGHT?









Objective:

Students will describe and illustrate how the Sun moves across the sky to make the pattern of day and night.

Materials (per student):

- Print out
- Brad or paper clip
- Art supplies (crayons, markers, etc.)
- Scissors

Lesson Outline:

1. Begin with a class discussion about the sky. Guide this discussion to the patterns of the **Sun** and **Moon**.
 - What do you observe in the sky?
 - What do you see in the sky during the **day**? At **night**?
 - Compare the day and night skies. What is similar, what is different?
2. Introduce patterns. **Patterns** form when the order of objects repeats over and over again. Show students a simple pattern using shapes, such as      . Since these objects are repeating in the same way, I can predict (guess) what shape is coming next. Have students make predictions.
 - What shape do you think is next? 
 - What shape would come after the heart? 
3. Connect patterns to the objects observed in the sky. The Sun and Moon make a pattern in our sky. The Sun rises in the east every morning and sets in the west every evening. The Moon also rises in the east and sets in the west.
4. Have students complete the day/night cut-out sheets.
 - Color the first circle. Color half as the daytime sky and half as the nighttime sky.
 - Color the second circle. Decorate the house and yard on the bottom half.
 - Cut out the circles along the dashed lines. For the second circle, cut along the side and roof of the house too.
5. Place the second circle (house) on top of the first. Line up the X at the center of both circles and insert the brad or fastener at this location.
6. Move the day/night circle from right to left to show the day/night pattern.
5. Discuss any misconceptions students may have.
 - Misconception: The Sun moves across the sky. Fact: The Sun only appears to move across the sky because of the rotation of the Earth.
 - Misconception: The Moon is only visible at night. Fact: The Moon rises and sets at different times based on the phase of the Moon. Sometimes we see the Moon at night, and sometimes we see the Moon during the day.
 - Misconception: There are no stars during the day. Fact: Stars are still in the sky during the day; we just can't see them! The light from the Sun is too bright.
 - Misconception: The Moon produces its own light. Fact: the Moon does not produce light; it reflects the light from the Sun.

Extensions:

- Experiment with shadows! Periodically throughout the day, go outside to trace student shadows. Have students stand in the same spot each time. What happens to their shadow as the Sun moves across the sky?
- **ELAR** - Have students write a short story about day and night.

Day and Night

WHAT MAKES THE PATTERN OF DAY AND NIGHT?

Materials:

- Printed activity page
- Brad or paper clip
- Art supplies (crayons, markers, etc.)
- Scissors

INTRODUCTION:

A **pattern** is a regular and repeating way in which something happens.

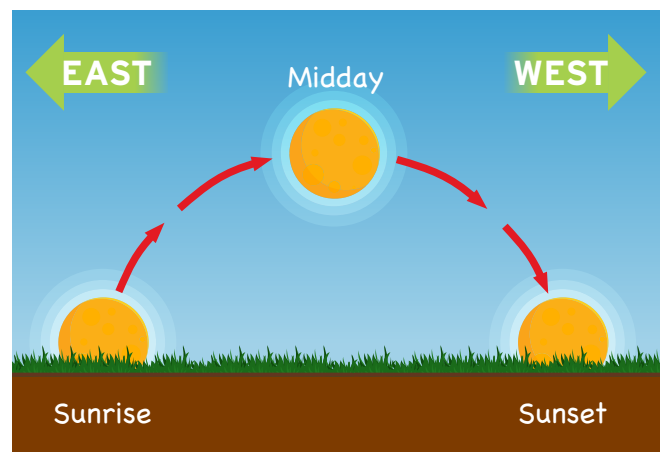


Since these objects are repeating in the same way, we can predict or guess what shape is coming next.

Objects in the sky can occur in patterns too. The Sun, Moon, clouds, and airplanes can all be observed in the sky. The **Sun** is a star at the center of our solar system that provides Earth with light and heat. The Earth revolves or goes around the Sun. The **Moon** travels around Earth and is our nearest neighbor in space. What other things can you observe in the sky?

The movement of the Sun across the sky makes the pattern we know as day and night. The Sun rises in the east every morning (sunrise), moves across the sky, and then sets in the west every evening (sunset). The **day** starts when the Sun rises and ends when the Sun sets. The **night** starts when the Sun sets and ends when the Sun rises. At night, we can often see the Moon and stars. Like the Sun, the Moon also rises in the east, moves across the sky, and then sets in the west. Sometimes we see the Moon at night, and sometimes we see the Moon during the day.

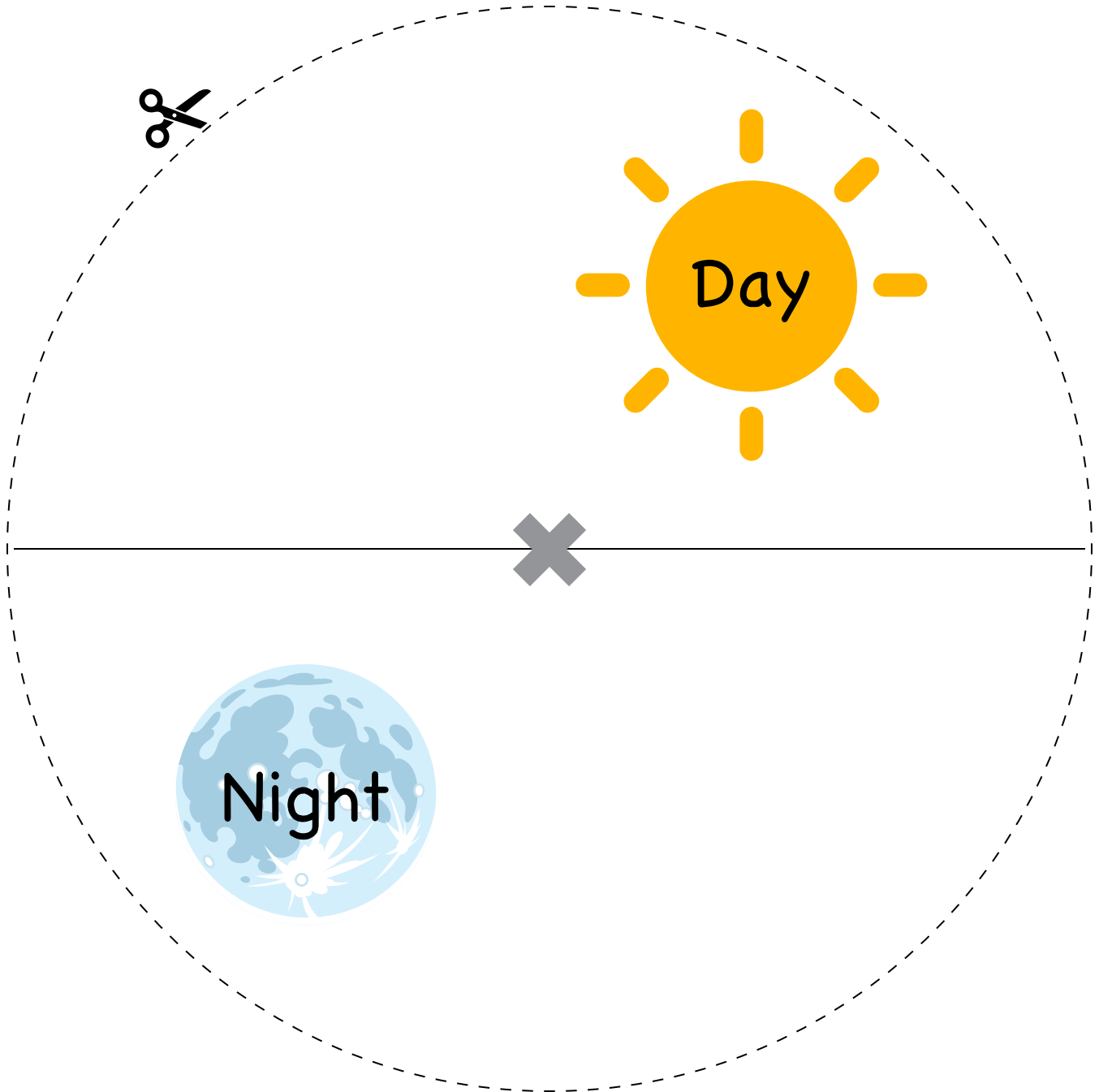
Now it is your turn - make a model showing the pattern of day and night.



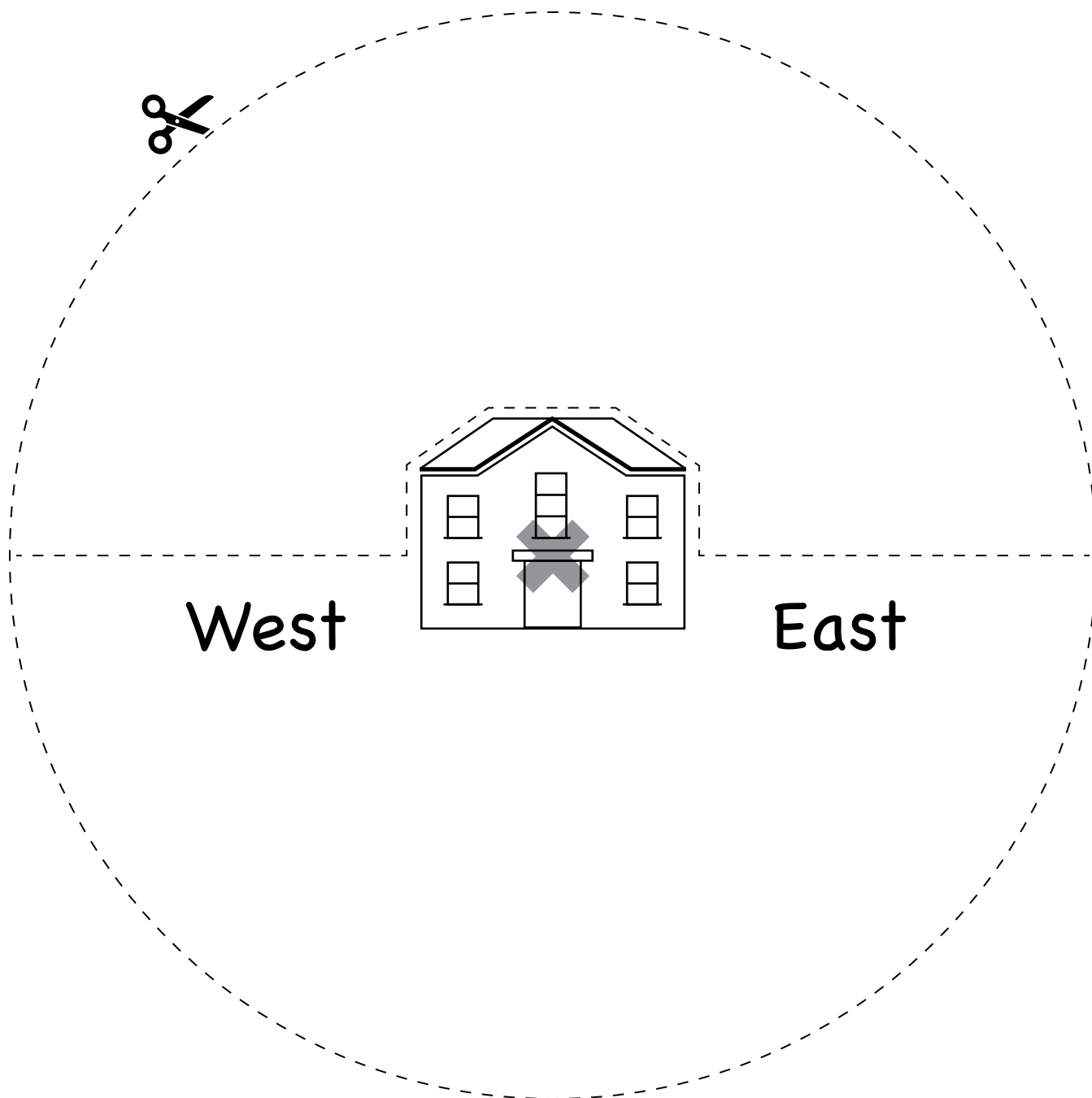
PROCEDURE:

1. Color the first circle. Color half as the daytime sky and half as the nighttime sky.
2. Color the second circle. Decorate the house and yard on the bottom half.
3. Cut out the circles along the dashed lines. For the second circle, cut along the side and roof of the house too.
4. Place the second circle (house) on top of the first. Line up the X at the center of both circles and insert the brad or fastener at this location.
5. Move the day/night circle from right to left to show the day/night pattern.

Day and Night



Day and Night

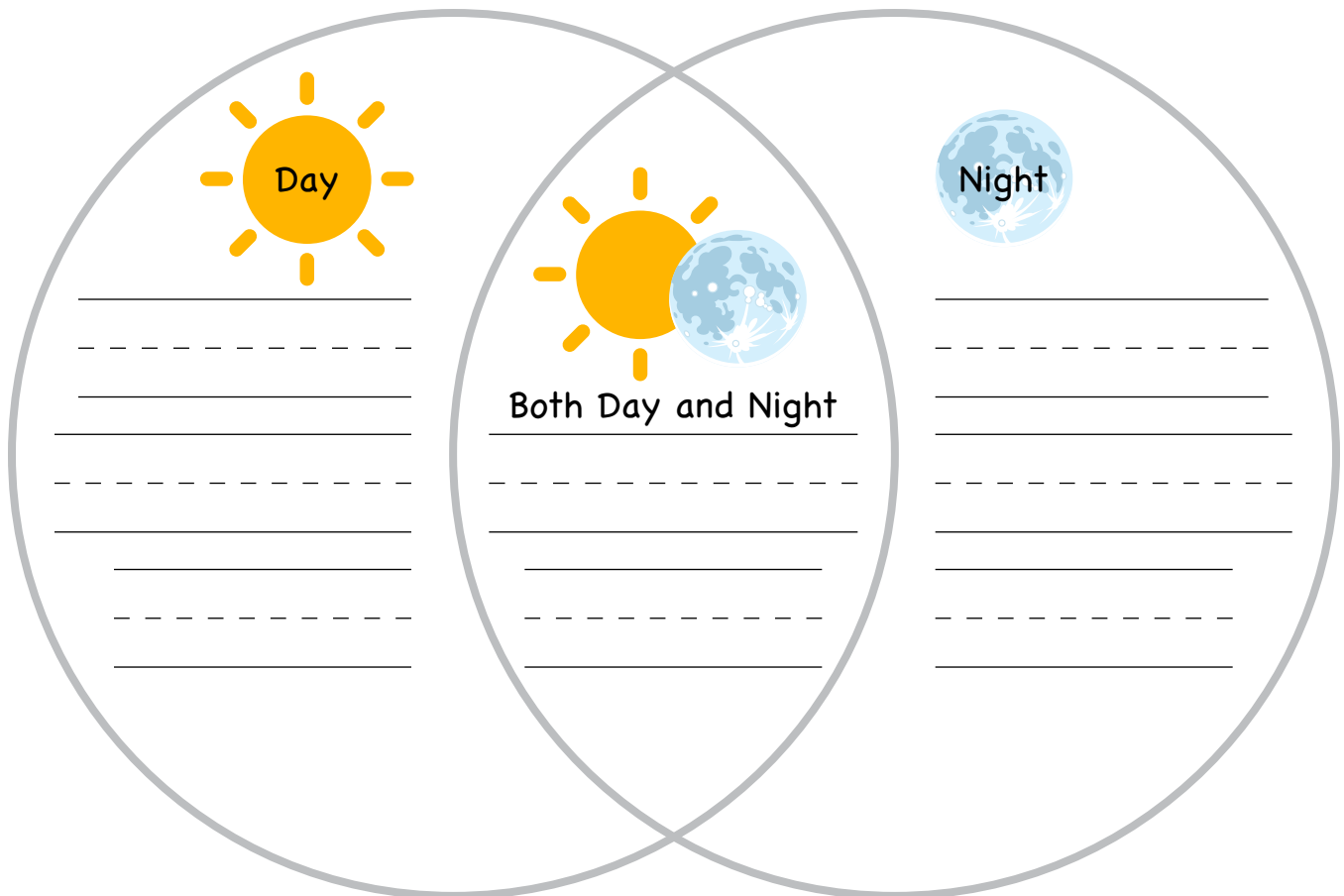


QUESTIONS

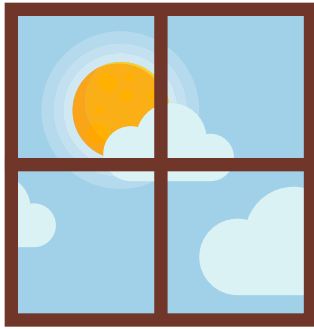
1. What did you draw in the daytime sky?

2. What did you draw in the nighttime sky?

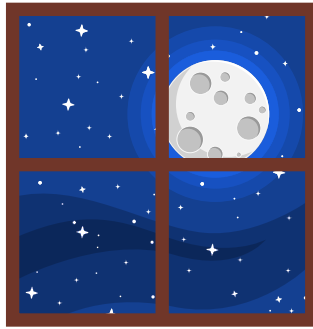
3. Complete the Venn diagram:



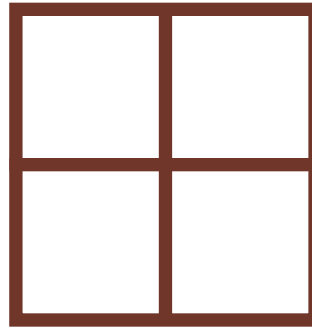
4. Complete the pattern:

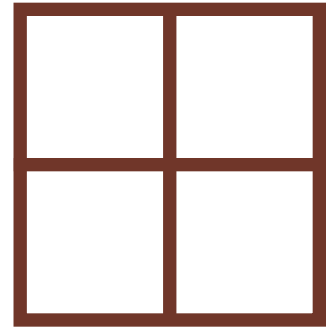


Day



Night





5. Complete the sentence:

The Sun rises in the _____ and sets in the _____.

The Moon rises in the _____ and sets in the _____.

QUESTIONS

1. What did you draw in the daytime sky?

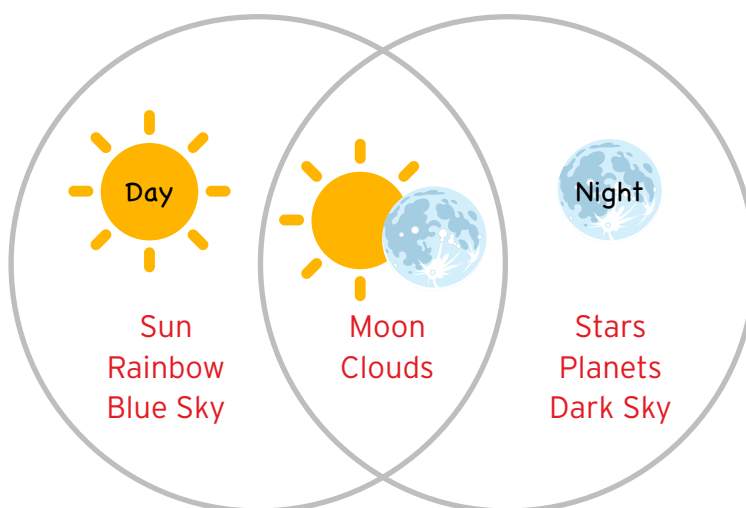
Answers will vary, but may include the Sun, a rainbow, and a blue sky.

2.. What did you draw in the nighttime sky?

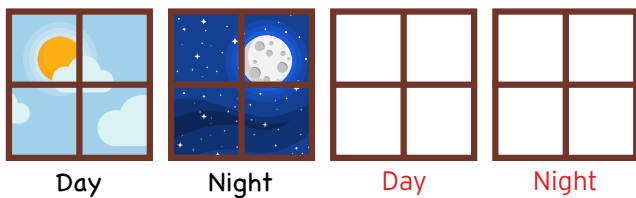
Answers will vary, but may include the Moon, stars, and a dark sky.

3. Complete the Venn diagram:

Answers will vary, but may include:



4. Complete the pattern:



5. Complete the sentence:

The Sun rises in the east and sets in the west.

The Moon rises in the east and sets in the west.

Cookie Moon Phases

HOW DOES THE APPEARANCE OF THE MOON CHANGE?

Objective:

Students will observe how the appearance of the Moon changes when we look at it from Earth, even though its shape doesn't actually change.

Materials (per student):

- Chocolate sandwich cookies (4 per student)
- Moon phases guide (1 per student)
- Spoon or popsicle stick (1 per student)
- Mirror
- Flashlight

Lesson Outline:

1. Begin with a class discussion about the sky. Guide this discussion to the patterns of the **Sun** and **Moon**.
 - What do you observe in the sky?
 - What do you see in the sky during the **day**? At **night**?
 - Compare the day and night skies. What is similar, what is different?
2. While it may look like the Moon is shining brightly in the sky, it isn't. The Moon doesn't produce its own light like the Sun. Instead, the Moon reflects light from the Sun. A **reflection** is when light bounces off of one surface and onto another surface.
 - Demonstrate the concept of reflection using a flashlight and mirror.
3. As the Moon travels around the Earth, its appearance changes. It goes through the same pattern every month.
4. Have students complete the Phases of the Moon activity.
 - The activity can be modified using black and white construction paper instead of food.
5. Discuss how the appearance of the Moon changes over the course of the month.
 - How does the appearance of the Moon change?
 - What is the next step in the pattern?

Extensions:

- **ELAR** - Read "[Breakfast Moon](#)" by Meg Gower. Complete the related Moon Journal provided by the Astronomical Society of the Pacific.
- **Career Connection** - Connect your students with a space scientist. You can reach out to scientists in your community or use a resource such as [Skype a Scientist](#).



Cookie Moon Phases

HOW DOES THE APPEARANCE OF THE MOON CHANGE?

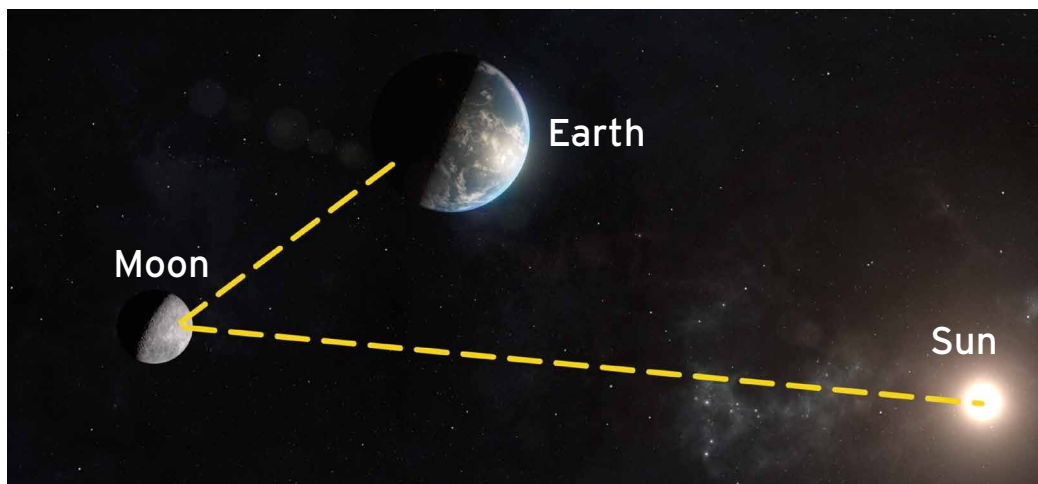
Materials:

- 4 chocolate sandwich cookies
- Spoon or popsicle stick
- Moon phases guide
- Mirror
- Flashlight

INTRODUCTION:

A **moon** is a natural object that travels around another natural object. Our Moon travels around the Earth and can be seen in the sky. Just like the **Sun**, the Moon rises in the east and sets in the west.

While it looks like the Moon itself is shining brightly, it doesn't actually produce its own light. Instead, the Moon reflects the light from the Sun. A **reflection** is when light bounces off of one surface onto another surface.



You may have noticed that the Moon doesn't always look the same. The Moon isn't actually changing its shape - but the parts of the Moon being lit by the Sun change as the Moon travels around Earth. This is what gives us phases of the Moon. These phases follow the same **pattern** over and over again.



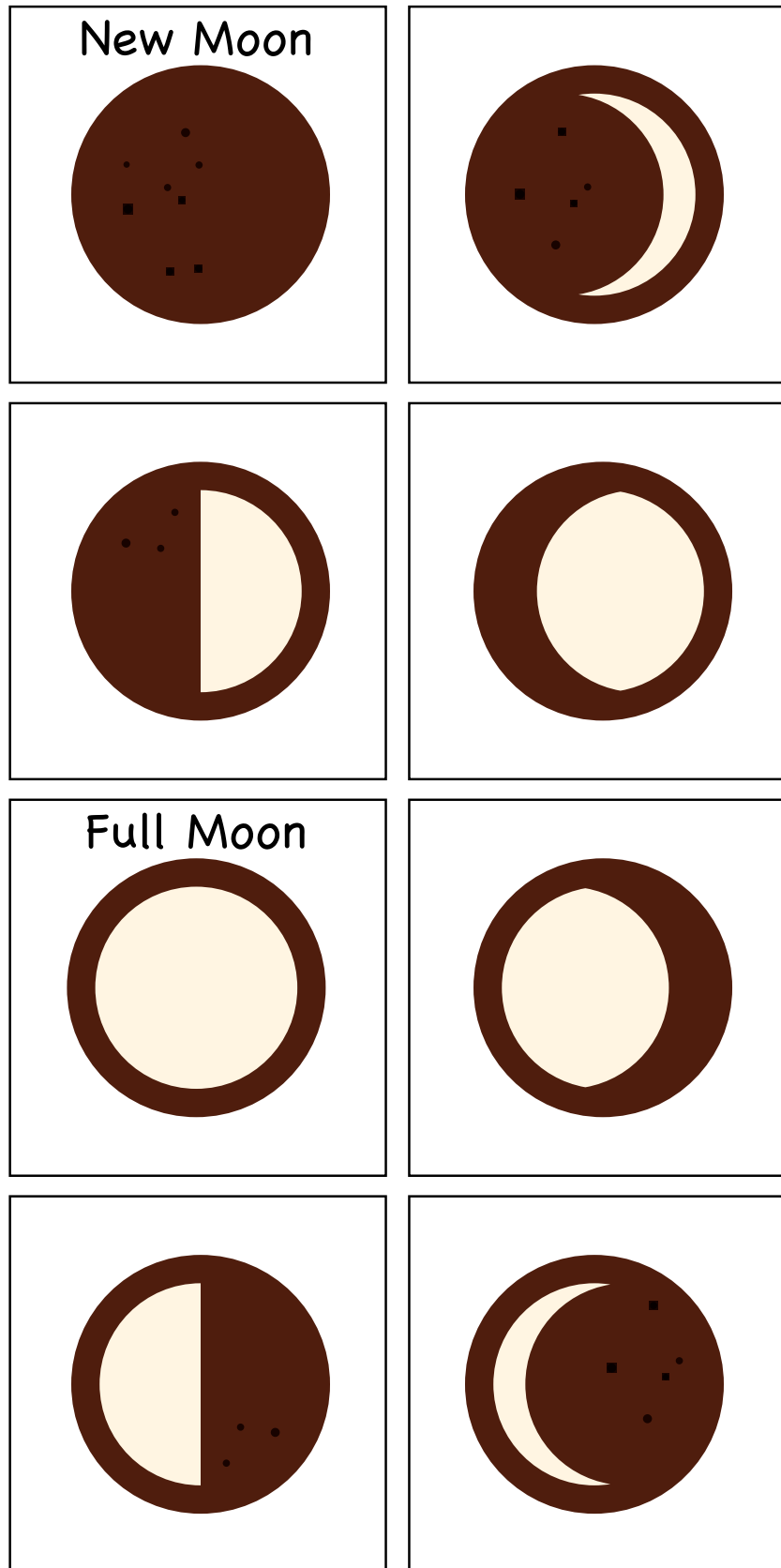
Now it is your turn - recreate the Moon's phases using cookies!

PROCEDURE:

1. Carefully unscrew the first cookie so that most of the cream stays on one-half of the cookie. If some cream remains on the other half, use your spoon/popsicle stick to transfer the cream back to the half with the most cream on it.
2. Using the Moon Phases Guide, place your cookies on the matching phases of the Moon.
3. Unscrew the second cookie. Looking at the Moon phases guide, the next two cookies on the top and bottom look like they fit together, like puzzle pieces. Use your spoon/popsicle stick to move and shape the cream so that both halves match the pictures of the Moon phases guide.
4. Do the same thing with the other two cookies, moving the cream to match the pictures on the Moon phases guide as closely as possible.



Cookie Moon Phases



QUESTIONS

1. What does the cookie part of your chocolate sandwich cookie represent?

The cookie part represents

2. What does the cream part of your chocolate sandwich cookie represent?

The cream part represents

3. What patterns do you see as you follow the Moon phases guide sheet?

One pattern I can see is

4. Observe the Moon tonight. Draw its appearance below.



QUESTIONS

1. What does the cookie part of your chocolate sandwich cookie represent?

The cookie part represents the actual Moon.

2. What does the cream part of your chocolate sandwich cookie represent?

The cream part represents the appearance of the Moon or how we see the Moon.

3. What patterns do you see as you follow the Moon phases guide sheet?

One pattern I can see is _____. Answers will vary.

4. Observe the Moon tonight. Draw its appearance below.

Answers will vary.

Weather Mobile

HOW DO WE DESCRIBE WEATHER?

Objective:

Students will connect vocabulary terms with different forms of weather and precipitation and learn how to differentiate between these different forms. This will allow students to describe the weather they experience daily.

Materials (per student):

- Scissors
- String
- Flat piece of cardboard to attach the mobile
- Tape
- Something to color with, like crayons or markers

Lesson Outline:

1. Begin with a class discussion about **weather**. Ask students how they would explain the three main ways weather can be described: **precipitation**, **cloud coverage**, and **temperature**. Use real-life examples as needed, such as comparing the weather of yesterday to the weather of today.
2. Have students complete the weather mobile cut-out sheets.
 - Direct students to draw and color a picture that matches the given vocabulary word on each circle, using the written definitions and their own experiences as inspiration.
 - Harder words like “sleet” and “partly cloudy” may require some more explanation or example images shown from a book or online.
 - Cut out the mobile pieces. Cut along the dashed lines. The definitions on the right side of the page can be added to their science journals.
 - Direct the students to cut different lengths of string so that each circle will hang at different heights. Then, students will attach one string to each circle by taping one end of the string to the backside of the circle.
 - Once the strings are attached to the pictures, direct the students to tape them to a square of cardboard to create the mobile.

3. Review the ways weather can be described. Ask students questions about the weather. Students can use the mobile and saved definitions to help them answer.
Sample questions: What is the temperature like outside now? Look outside the window. How would you describe the cloud cover? If any, what type of precipitation is falling from the clouds?
4. Extend the lesson by connecting the weather to **clothing** and **activity** choices. Students should use the mobile and definitions to help them answer.
Sample questions: If it is cold, snowy, and overcast outside, what clothing should you wear? What activities might need to change if a thunderstorm occurs outside?

Extensions:

- Encourage students to record the weather each day in a weather journal. Do any patterns emerge over a week? A month? A year?
- Instead of a mobile, make a matching game with the definitions and cards.

Weather Mobile

HOW DO WE DESCRIBE WEATHER?

Materials:

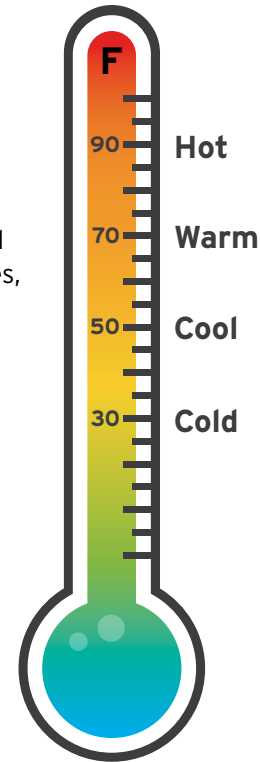
- Scissors
- String
- Flat piece of cardboard to attach the mobile
- Tape
- Something to color with, like crayons or markers

INTRODUCTION:

Weather describes the current state of the air around us at a specific time and place. **Patterns** in the weather help us make decisions about clothing, activities, and the best ways to travel. For example, on a rainy day, you might choose to wear a raincoat, stay inside to read a book, or take a car to school. On a sunny day, you might choose to wear a hat, play outside, or walk to school.

There are multiple ways to describe weather, including temperature, cloud coverage, and precipitation.

Temperature describes how hot or cold the air is around us. For example, you can tell the air is really cold when you can see your breath outside.



Cloud coverage describes how many clouds are in the sky and if you can see the Sun. A clear sky with no clouds is a lot different than a sky full of clouds blocking our view of the Sun.





Precipitation describes different forms of water that fall from the sky toward the ground. For example, rain might fall onto the ground and make puddles, while snow might fall onto the ground and make piles of snow.

Now it is your turn to make a mobile to help you describe the weather.

PROCEDURE:

1. Print the activity pages. (3 total)
2. On each page, there are words and definitions that describe the weather. Each word is also on a circle. Draw a picture in each circle to help you remember what the word means.
Example: You might draw an umbrella and raindrops to remind you of rain.
3. Use scissors to cut out the circles. Set aside.
4. Cut the string into 12 pieces. Make the pieces of string different lengths.
5. Tape one end of a string to the back of each circle.
6. Tape the other end of the strings to the piece of cardboard- this is the top of the mobile. Continue taping until all the circles are connected.

Weather Mobile

Draw a picture in each circle to help you remember what the weather word means.

Precipitation is water that falls from the clouds and lands on the ground.

- **Rain** is water that falls from the clouds
- **Sleet** is rain that freezes as it falls from the sky
- **Snow** is small and soft pieces of ice
- **Hail** is small and hard balls of ice



Rain

Sleet

Snow

Hail

Cloud coverage is how many clouds are in the sky.

- **Sunny** is when there are no clouds in the sky
- **Partly cloudy** is when there are both clouds and sun
- **Cloudy** is when there are lots of clouds in the sky
- **Overcast** is when the sky is full of clouds



Sunny

Partly Cloudy

Cloudy

Overcast

Temperature is how hot or cold the air is around us.

- **Cold** is when the temperature in the air is really low
- **Hot** is when the temperature in the air is really high
- **Cool** is when the temperature in the air is closer to cold than hot
- **Warm** is when the temperature in the air is closer to hot than cold



Cold

Hot

Cool

Warm

QUESTIONS

1. What is your favorite type of weather?

My favorite type of weather is _____ because

_____.

2. What is your least favorite type of weather?

My least favorite type of weather is _____ because

_____.

3. What does the cloud coverage look like today? (Use your mobile to help answer.)

The cloud coverage is _____ today.

4. What is the temperature outside today?

The temperature is _____ today.

5. Is there any precipitation outside today? Circle one: Yes / No

If yes, what type of precipitation is falling from the clouds?

_____ is falling from the clouds.

Season Sort

WHAT ARE SOME CHARACTERISTICS OF THE SEASONS OF THE YEAR?

Objective:

Students will be able to describe and identify the characteristics of the seasons.

Materials:

- Sorting cards
- Seasons chart/circle

Lesson Outline:

1. Begin with a class discussion about the **seasons**.

- Review the four seasons: spring, summer, fall, winter.
- What do you observe in each season? What is the weather like? What is happening to the trees? How do you dress? What activities do you do?

2. Seasons represent different times in the year.

Each season has different temperatures, weather conditions, and lengths of daylight.

- Pass out a card to each student.
- Have students travel around the room and work with classmates to determine which season their card may represent.
- Encourage students to use the sentence stem below to share their item and thoughts. You may wish to cut out a large circle and divide it into the four seasons, so students can place their cards in the appropriate season after they share. Sentence stem: _____ represents _____ because _____.

3. As a class, reflect on any cards that were hard to sort because they might fit into more than one season depending on their location or personal experiences.

- What are some similarities and differences between the seasons?
- Make a Venn diagram comparing two of the four seasons.

Extensions:

- **Art:** Have students create a seasons poster by folding a piece of paper into four squares. Students should label and draw a picture that represents each season.
- **Math:** Take a poll of favorite seasons. Make a picture or bar graph of the results.



Season Sort

WHAT ARE SOME CHARACTERISTICS OF THE SEASONS OF THE YEAR?

INTRODUCTION:

Seasons represent different times in the year that have characteristic changes in weather, amount of daylight, and environmental conditions. There are four seasons each year that repeat in the same **pattern**.

Summer

is usually the warmest season of the year, when our part of the Earth is tilted towards the Sun. In the Northern **Hemisphere**, summer includes June, July, and August. The leaves on the trees are bright green, the weather is warm or hot, and the days are very long.

Autumn/Fall

is a season of transition between summer and winter. In the Northern Hemisphere, autumn includes the months of September, October, and November. The weather starts to get cooler, and animals start to get ready for the cold. The days start to get shorter, and leaves start to fall from the trees.

Spring

is a season of transition between winter and summer. In the Northern Hemisphere, spring includes March, April, and May. The weather starts to get warmer, and animals start to become more active. The days start to get longer, and the leaves and plants are growing again.

Winter

is the coldest season of the year, when our part of the Earth is tilted away from the Sun. In the Northern Hemisphere, winter includes December, January, and February. This season has the least amount of daylight, the weather is cold, and usually, all the leaves have fallen from the trees.

Now it is your turn - sort the cards into the seasons you think they represent.

PROCEDURE:

Look at the images of weather, trees, clothing, and activities. Sort the images into the correct season.



Summer



Autumn/Fall



Spring



Winter

SEASON SORTING CARDS



		 <p>Windy</p>	
 <p>Rain</p>			
		 <p>Sun</p>	
 <p>Snow</p>			

QUESTIONS

1. Which season is shown in each image?









2. What is one picture you put in the **Spring** category?

I put _____ in the Spring category because

3. What is one picture you put in the **Summer** category?

I put _____ in the Summer category because

4. What is one picture you put in the **Autumn/Fall** category?

I put _____ in the Autumn category because

5. What is one picture you put in the **Winter** category?

I put _____ in the Winter category because

_____.

6. What is your favorite season?

My favorite season is _____ because

_____.

7. Draw a picture of your favorite season.



ADDITIONAL RESOURCES

GLOSSARY

Activity - something you do, such as going to the museum, playing soccer, or walking the dog

Appearance - the way something looks

Autumn/Fall - season of transition between summer and winter; weather gets cooler, days get shorter, and leaves fall from the trees

Clear - describes a sky with very little to no clouds

Clothing - something that is worn to cover the body

Cloud coverage - describes how many clouds are in the sky

Day - time between sunrise and sunset when the Sun moves across the sky; part of the day and night pattern that occurs every 24 hours due to the rotation of the Earth

Hail - type of precipitation that falls from the clouds as balls of ice

Hemisphere - a half of the Earth, such as the Northern Hemisphere or the Southern Hemisphere

Moon - natural object that travels around another natural object, like a planet; our Moon travels around the Earth

Mostly cloudy - cloud coverage term describing a sky with more visible clouds than sunlight

Night - time between sunset and sunrise when the Sun is not visible in the sky; part of the day and night pattern that occurs every 24 hours due to the rotation of the Earth

Overcast - cloud coverage term describing a sky full of clouds

Partly cloudy - cloud coverage term describing a sky with a mix of clouds and sunlight

Pattern - A regular and repeating way something happens; patterns help predict what may happen next

Precipitation - solid or liquid water that falls from the clouds toward the ground; can occur as rain, hail, sleet or snow

Rain - type of precipitation that falls to the ground as drops of liquid water

Reflection - when light bounces off one surface onto another surface

Seasons - yearly pattern caused by the tilt of the Earth as it revolves around the Sun; seasons represent different times in the year that have characteristic changes in weather, amount of daylight, and environmental conditions. There are four seasons each year that repeat in the same pattern.

Sleet - type of precipitation that freezes as it falls towards the ground

Snow - type of precipitation that falls towards the ground as solid ice crystals

Spring - season of transition between winter and summer; weather gets warmer, days get longer and leaves start to grow on trees again

Summer - warmest season of the year; weather is hot, days are the longest and trees have full green leaves

Sun - star at the center of the solar system that provides light and heat energy to Earth; the Sun rises in the east every morning and sets in the west every evening

Temperature - a measurement of how hot or cold something is; measured using a thermometer

Thermometer - a tool used to measure temperature

Transportation - the way in which people move themselves and their belongings from place to place

Weather - current state of the air around us at a specific time and place; a combination of temperature, wind, precipitation, sunlight, and clouds

Winter - coldest season of the year; weather is cold, days are the shortest, and trees typically have no leaves

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ONLINE RESOURCES

PEROT MUSEUM

ASTRONOMICAL SOCIETY OF THE PACIFIC

- [Breakfast Moon](#)

NASA

- [Climate Kids](#)
- [Space Place](#)
 - [All About the Sun](#)
 - [What Are the Moon's Phases?](#)
 - [What Causes the Seasons?](#)

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA)

- [NOAA Education](#)
- [Weather Observations](#)
- [JetStream - An Online School for Weather](#)
- [SEVERE WEATHER 101](#)

PBS LEARNING MEDIA

- [Sky Patterns: Sun, Moon, and Stars](#)
- [What's the Weather](#)

SMITHSONIAN SCIENCE EDUCATION CENTER

- [Storm Smart App](#)
- [Sunlight Arc on the National Mall App](#)

LIVE CAMS

- [Dallas Skyline Live Cam](#)
- [Earth Cam](#)

STEM CARRERS

- [IF/THEN Collection](#)
- [Skype a Scientist](#)

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