

Sample Science Learning Plan

Big Idea/ Topic

Shadows

Standard Alignment

S2E2. Obtain, evaluate, and communicate information to develop an understanding of the patterns of the sun and the moon and the sun’s effect on Earth.

- a. Plan and carry out an investigation to determine the effect of the position of the sun in relation to a fixed object on Earth at various times of the day.
- b. Design and build a structure that demonstrates how shadows change throughout the day.
- c. Represent data in tables and/or graphs of the length of the day and night to recognize the change in seasons.
- d. Use data from personal observations to describe, illustrate, and predict how the appearance of the moon changes over time in a pattern. (Clarification statement: Students are not required to know the names of the phases of the moon or understand the tilt of the Earth.)

S2P1. Obtain, evaluate, and communicate information about the properties of matter and changes that occur in objects.

- a. Construct an explanation for how structures made from small pieces (linking cubes, building blocks) can be disassembled and then rearranged to make new and different structures.

Crosscutting Concepts: Patterns, Scale, Proportion, and Quantity

Connections to Other Content Areas:

ELAGSE2RI1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

ELAGSE2RI3 Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.

ELAGSE2RI10 By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 2-3 text complexity band proficiently, with scaffolding as needed at the high end of the range.

ELAGSE2W3 Write narratives in which they recount a well-elaborated event or short sequence of events, include details to describe actions, thoughts, and feelings, use temporal words to signal event order, and provide a sense of closure.

ELAGSE2SL3 Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue.

ELAGSE2L5 Demonstrate understanding of word relationships and nuances in word meanings. a. Identify real-life connections between words and their use (e.g., describe foods that are spicy or juicy).

MGSE2.MD.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.



MGSE2.MD.4 Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard-length unit.

MGSE2.MD.7 Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.

MGSE2.MD.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simply put-together, take-apart, and compare problems.

Instructional Design

This start up segment will focus on the length of day and night and how that changes seasonally and throughout the year. During this segment, students will look at changes in the sun's position by watching how shadows change throughout the day. Students will record in their notebook or journal things the appearance of stars and the changes of the moon over time.

Phenomena: Shadows

Use the handout [Parent Letter](#) or write your own to inform parents about the instructional segment and materials they can gather for their child to successfully participate in the activities and investigations.

Part 1 What is a shadow?

Engage

Ask students if they have noticed the shapes of shadows make on the ground around them when they are outside. Discuss what phenomena they have seen. Ask them if they have seen shadows in their house or only outside in the sunshine. Have them draw what they think is happening to show the light source and the shadow made by the item blocking the light path.

This can give you a formative assessment of how students understand what causes shadows.

Ask them to brainstorm a list of all of the light sources that can cause shadows. When they mention each source, explain the safety of not staring into a light source directly and to NEVER stare at the sun.

Ask them to make a general rule with what is necessary to have a shadow.

Ask if they can change the size of a shadow. Guide them by showing them how you can make a shadow larger or smaller by moving a flashlight closer to an object or farther away from the object.

Remind students that dark is the absence of light so that if the light is blocked, they can see the dark where there is no light—a shadow.

Plugged: The teacher demonstrates or records a video of making shadows using a flashlight and a flat plain background to give students an example of how to make shadows change size and explaining light source, object blocking the light, and resulting shadow. Help students realize that shadows can change size by changing the angle or nearness of the light source. Have students answer questions on an interactive platform or complete the handouts [Making Shadows](#) so that you can give feedback.

Unplugged: Provide students with the handout [Making Shadows](#) in their worksheet packet.



Explore and Elaborate

Encourage students to explore making shadows using light sources (such as flashlights, lamps, sunshine, etc.) and objects (blocks, animal figures, trees, other people, pets, etc.) Show student how to make shadows with a light source and their hands. A handout: [Hand Shadow Puppets](#) is included to give students ideas. Challenge them to try other ideas and role play a skit using their hand puppets as characters.

Have them draw what they observe reminding them to include the light source and the object as well as the resulting shadow.

Plugged: Have students' video their hand puppet skits and upload them to share with the class website. They can photograph their shadows and challenge others to guess what was blocking the light.

Unplugged: Provide students with the [Hand Shadow Puppets](#) handout in their worksheet packet.

Explain

Ask students what causes shadows and listen for their explanations to check for understanding. Listen for common misconceptions such as

- The shadow is pushed out by the light.
- Shadows are everywhere all of the time regardless of light or dark.
- A shadow always stays the same size or are always the size of the object making the shadow.
- Shadows are objects that can be moved.

Evaluate

Have students write or draw the parts necessary in making a shadow.

Part 2 How my shadow changes during the day and through the year

Engage

Share pictures of shadows such as in the [PowerPoint Shadows](#) or [Pictures of Shadows handout](#). Ask them to tell you what is blocking the light. Have them explain their thinking about the time of day the shadow was made: morning, noon, or afternoon.

When students begin to show understanding of the relationship between sunlight, time of day and shadow, build on that understanding to have them investigate making shadows during different times of the day.

Collect their drawings and data to refer to during different times of the year. Have them collect data to compare how their shadow length and direction change during the year as well as time of day.

Plugged: Provide students with an uploaded file of the power point. Encourage students to make their own presentation of shadow pictures. Have students upload their drawings and/or pictures on the class website. Make folders for these drawings so that students can see how the shadows change during Fall, Winter, and Spring.

Unplugged: Provide students with the handout in their worksheet packet. Schedule a time to collect work from students and scan their drawings into the class website.



Explore

Have students go out three times at 2- or 3-hour intervals during the day. Tell them to stand somewhere that they can see their shadow. Have them stand in the same spot each time (They can mark it with a rock or traced line), write down the time of the shadow check and then measure or photograph the shadow showing the size. If they have sidewalk chalk, they can trace their outline on a driveway, parking lot, or sidewalk showing how it changes throughout the day.

A recipe for Sidewalk Chalk: with [plaster of paris](#) or [cornstarch](#).

A recording sheet with instructions is provided: [Shadows During the Day](#).

Plugged: Students can research different recipes of sidewalk chalk. Remind them to document their shadows during the day with the photographs, measurements, or tracing. They can take photos to share to the class website. Have them complete the handout and share their measurements.

Unplugged: Provide students with the handout [Shadows During the Day](#).

Explain

Have students make a shadow using a fixed light source and a movable object such as a block, a shape cut out of paper, or their hand. Have them change the angle or position of the object, shape, or their hand to show that the shadow can change size according to where the light's path is blocked.

Have students build a structure using paper, cardboard, or other materials. A handout [Build a Shadow Structure](#) is included. Have them draw or photograph the structure and tell or draw what they think the shadow will look like early in the morning, in the middle of the day, and late in the afternoon. Check to see that the students understand how the position and length of the shadow changes according to the sun's position in the sky. Encourage them to go out and check their explanation and correct any misunderstanding.

Have them change the shape of their structure and ask them to explain if the shadow will change and how.

Discuss what they observe and relate it to the position of the sun in the sky and the size of their shadow.

Ask: When was your shadow the longest? When was it the shortest?

Caution: Remind students to never look directly at the sun.

Plugged: Have students share pictures of their structure and its shadow on the class website.

Unplugged: Include the [Build a Shadow Structure](#) handout in the worksheet packet and have students use the handout to record their information.

Elaborate

Remind students that they learned the cycle of dawn, day, twilight, and night in kindergarten. Begin to lead students to understand that the sun does not go away, but that the Earth spins away from the light.

Activity:

Have students imagine this cycle by putting a tack or mark on a ball to pinpoint where they live. The ball simulates Earth. Have them spin the ball slowly to see how the tack or mark turns away from them as it goes around. Then have them use a light source to show how the light stays in one place (the sun) but the ball turns



around (the Earth). This is a difficult concept introduced here so do not dwell on it or expect them to use the vocabulary. It is the beginning of understanding that will be a foundation for understanding the rotation of the Earth, the seasons and moon phases in later grades. No need to go into great detail or depth at this time. Just an introduction to this concept will help their understanding in the future.

To check for understanding ask: If the sun sets and the sun rises, is it really moving? (*No*) What is moving? (*the Earth*) Why don't we see the sun at night? (*The Earth is turning.*)

Teachers note: These are difficult concepts to understand since we talk about the sun moving across the sky in daily conversations. Put a [Picture of the Sun](#) on one wall and have them face it and turn slowly noting where the sun's light would be at each quarter of a turn. Have them model the location of the sun and Earth at dawn, morning, noon, afternoon, twilight, and night.

Plugged: Provide students with a video demonstration and have them imagine a place in their room where the sun would be (a window or picture on the wall) and have them turn around where they are. Provide students with the handout [The Earth Turns and the Sun Stays Still](#). Have them share pictures of their practice rotating.

Unplugged: Provide students with the handout [The Earth Turns and the Sun Stays Still](#) in the worksheet practice.

Evaluate

That the Earth rotates is not assessed in second grade. Second graders focus on the observations of how the light changes throughout the day. Included is a Handout [Shadows on a Flagpole](#). Have students explain in drawing, writing, or both how the shadow will change according to the position of the sun in the sky.

Part 3 Day versus Night

Engage:

Does the sun have a predictable pattern? The teacher will read aloud or show a video of a book about the sun and how the day changes into night as the Earth turns such as [What Makes Night and Day?](#) by Franklyn Branley which is also featured in You Tube videos.

Activities:

Have students draw pictures to show the sequence of where the sun is seen in the sky throughout the day (morning, noon, afternoon) so they see the predictable pattern.

Day and Night

1. Review the vocabulary (sunrise, day, noon, sunset, night, spin, turn).
2. Darken room and turn on lamp. Explain that the lamp represents the Sun.
3. Ask a student to be the Earth. Place the [Wrap-around Map](#) around the student so that your town is on his/her chest. Make sure he or she can be seen by all students.
4. Mark your town with a sticker and ask students to focus on it as the Earth turns.
5. Have student begin with his/her back to the lamp (night). Ask students if they think it is day or night in their town.
6. Have student turn slowly in a counterclockwise fashion, until his/her left arm is pointed to the Sun. Ask students if they think it is sunrise or still night.
7. Student continues the counterclockwise rotation until he/she faces the Sun directly. Ask students what time it is now in their town. Students can see that it is noon, the middle of the day, when we get the most light from the Sun. You may need to prompt with additional questions.



8. Ask student to turn a little more. Have him/her stop when his/her right arm is pointed toward the Sun. Ask students what time of day it is. They should be able to tell you that it is sunset.
9. Complete the day/night cycle by having the student return to his/her original position, with his/her back to the Sun. Students should be able to tell you that is midnight.
10. Ask students to notice what time of day it is on the other side of Earth (student's back is facing the Sun and it is noon). Explain that one half of the Earth is always light while the other is dark. Emphasize that it is the Earth's own shadow that makes the night side of the Earth dark.
11. Repeat this demonstration. Select other student volunteers so that students will get a chance to view the day and night cycle several times. Explain that it takes 24 hours for the Earth to turn completely.
12. Return to the KWL chart, review students' questions and place any new answers in the final column, What We Learned. If there are still unanswered questions, decide with the class how you will research them further.
13. Distribute [Day and Night](#) work sheets for students to complete.

Have students illustrate their own day in comic strip format using the book as inspiration. Students should describe a day in their life, noting the time of day and the position of the sun in each section. Students may use the recording sheet, [Sunup, Sundown Comic Strip](#).

Plugged: Provide students with the links to the books available on YouTube videos.

Unplugged: Encourage students to check out a book from the media center or local library about the Sun or about shadows. You could read or record the book for them and share over the phone.

Explore:

How can we find out how much daylight we have in a day? Show students a newspaper with the sunrise and sunset times. Students may visit the library media center and use reference materials such as almanacs or local weather websites.

Have students use resources such as weather reports, internet, or newspapers to record the number of hours in the day and night. An example and handout are provided, [Length of Day and Night Chart and Directions](#).

Plugged: Encourage students to watch the weather report on television or internet. Have them listen for the sunrise and sunset information. Have them see if they can figure out the length of day by this information. Have them complete the handout [Length of Day and Night Chart and Directions](#).

Unplugged: In your parent newsletter or student communication, encourage them to watch, listen, or read the weather report and focus on the sunrise and sunset times. Have them see if they can figure out the length of day by this information. Provide students with handout [Length of Day and Night Chart and Directions](#) in the worksheet packet.

Explain:

If students go on a website to view the hours of daylight in each month, the teacher should guide students to find patterns. Second graders are not proficient in rounding up minutes to hours so that information is provided.

Have students could look at a website chart of daylight one month and find the most common number. For example, when looking at January, the students would notice that the most common number is 10. So, there are about 10 hours of daylight in January. Students can then color their graph in to show that January has 10 hours of daylight.



Have students graph the amount of sunlight in each month. Students may use graph paper or the handout [Graphing Day and Night](#).

Elaborate:

Have students look at their graph and determine summer months and winter months. Guide them to generalize that the days are longer in the summer and the nights are longer in the winter. Discuss seasonal changes according to the amount of sunlight and its effect on trees, outside play time, etc.

Evaluate: Some sample assessment items are included in [Shadow Questions](#).

Next Steps

Now that students are more familiar with daylight and sunshine, have them relate the length of day and night to the seasonal changes during the year. They will then turn their focus to the moon and how it is visible in the day or night sky following a pattern. Have students observe and record the pattern by cutting and pasting or drawing pictures of the moon's shape in a Lunar Calendar. Students will also learn more about stars other than the Sun.

Lesson Goals Checklist

Students will

- Investigate shadows and what causes them.
- Design and build a structure that demonstrates how shadows change during the day.
- Plan and carry out an investigation to determine the effect of the position of the sun in relation to a fixed object on earth at various times of the day.
- Represent data related to the length of day and night and recognize the change in the seasons.

Handouts/Supplies

Supplies

- Light source such as flashlight or lamp or window
- Cubes, blocks, sticks, etc. for building shadow structure
- Sidewalk chalk or other means to mark shadows during the day

Handouts

- A Picture of the Sun
- Build a Shadow Structure
- Day and Night
- Dear Parent
- Graphing Day and Night
- Hand Shadow Puppets
- Length of Day and Night Chart and Directions
- Making Shadows
- Pictures of Shadows Handout
- Pictures of Shadows Power Point
- Shadow Questions
- Shadows During the Day



- Shadows on a Flagpole
- Sunup Sundown Comic Strip
- The Earth Turns and the Sun Stays Still

Evidence of Student Success

- Handout [Shadows on a Flagpole](#). Have students explain in drawing, writing, or both how the shadow will change according to the position of the sun in the sky.
- Some sample assessment items are included in [Shadow Questions](#).

Student Learning Supports

The goal for science education in the state of Georgia is as follows: All Students, over multiple years of school, actively engage in science and engineering practices and apply crosscutting concepts to deepen their understanding of the core ideas in these fields.

The learning experiences provided for students should engage them with fundamental questions about the world and with how scientists have investigated and found answers to those questions.

This lesson includes the disciplinary core ideas, science and engineering practices and crosscutting concepts to actively engage students in exploring science concepts with real world topics. As part of the vision we must support the inclusion of all students in science learning.

Some **general** things to consider when planning for students supports include the following;

- Provide positive feedback.
- Keep directions brief and clear.
- Make sure parents and students know schedules, due dates, requirements, expectations, and how assignments/tests are going to be collected.
- Share evaluation results in a timely manner to students and parents.
- Package assignments in a way that students know the sequence, what is required, when it is required, what is available as choice and what is for fun.
- Provide/encourage organizational strategies such as where to work, store work, when and where to turn in assignments, graphic organizers, etc.
- Provide reminders of important dates and requirements.
- Go over notebook and journal ideas and share your entries with students so they can see what you expect.
- Allow dictation and/or text to speech software programs and tools
- Check in with students by phone or online to answer questions, give reminders, and check progress.
- Provide parents with updates on progress and upcoming assignments. Communicate often.
- Provide resources that students can access offline.
- Allow students to give information orally or in drawings.
- Model expectations and demonstrations in video/online/phone.

Some considerations, **specific to this lesson**, are as follows:

- The teacher should consider sentence frames to assist students with any writing assignments that are part of the lesson.



- The teacher should provide students with multiple ways for students to access information. These formats could include videos, images, articles or direct teaching.
- The teacher should provide students with multiple formats to share their knowledge. These formats could include drawing, writing, or verbally explaining.
- The teacher should consider providing students with an instruction sheet for parents about how to upload information to the platform that the class uses. This should allow parents to assist students with uploading and sharing their work on the platform.
- The teacher should consider providing students/parents with a list of times that will help students see changes in their shadow.
- Consider providing students with some images of shadows changing. Then have students describe what they notice about the shadows to give students the opportunity to make observations of multiple types of shadows changing.
- The teacher should have clear and consistent guidelines for discussions and sharing student work in this new environment. This should help students feel more comfortable sharing during class.
- The teacher should consider guiding questions to help students make connections and work through the lesson.
- The teacher should consider read aloud for any articles that are provided. The teacher should be sure to follow district guidelines when contacting students.
- The teacher should be sure to use closed captions for videos that are used within the lesson.
- The teacher should provide students with explicit, clear and chunked instructions.
- The teacher should consider sending home times for sunrise and sunset. This will help students that do not have easy access to weather reports.
- The teacher may need to assist students with graphing.

Engaging Families

- Additional resources to support this segment can be found at GPB: [Georgia Home Classroom](#).
- [Sample Learning Menu Strategies for K-12 Science](#)
- [Science Support for Families During School Closures](#)



Dear Parent,

This instructional segment in science is about how to observe, collect and record data about day and night. Students will use this information to understand the concepts such as

- The Earth turns so it looks like the sun is moving across the sky, but it is actually the Earth turning.
- Shadows need a light source and something blocking the light's path.
- Because the Earth is turning, we see the sun at different angles during the day.
- Shadows change as the sun's angle changes during the day. Sometimes shadows from sunlight are longer than other times during the day.
- The moon is visible at different times during the day and night each month.
- The moon goes through phases during each month. Students do not need to learn the names of these phases. They will just become familiar with the patterns.
- The length of daylight changes during the year. Summer has longer days than winter.

The investigations will involve investigating shadows and recording observations about the sun and the moon. Make sure your child never looks directly at the sun.

It will help to find a specific location (two opposite windows, for example) for your child to observe from each day and evening. Observing from the same locations will help students observe the pattern of the moon rise and set as well as the sun's angle. A materials place (shoe box or tote bag) will help your child locate and store what is needed so you won't have to go searching during the class.

Here are the materials needed for this segment in science:


- Journal or notebook for data collection and recording observations
- Light sources for making shadows such as a lamp, flashlight, or sunshine.
- Wooden or plastic blocks or other materials that your child can use to build a shadow structure.
- A safe place for your child to make shadows outside such as a driveway or sidewalk.
- Sidewalk chalk can help your child trace their shadow during the day to see the changes, but you and your child can decide how to mark the size of the shadow during the day using another method like a rock or stick.
- Measuring tool such as a measuring tape, ruler or yardstick
- Access to the weather report to find out sunrise and sunset times



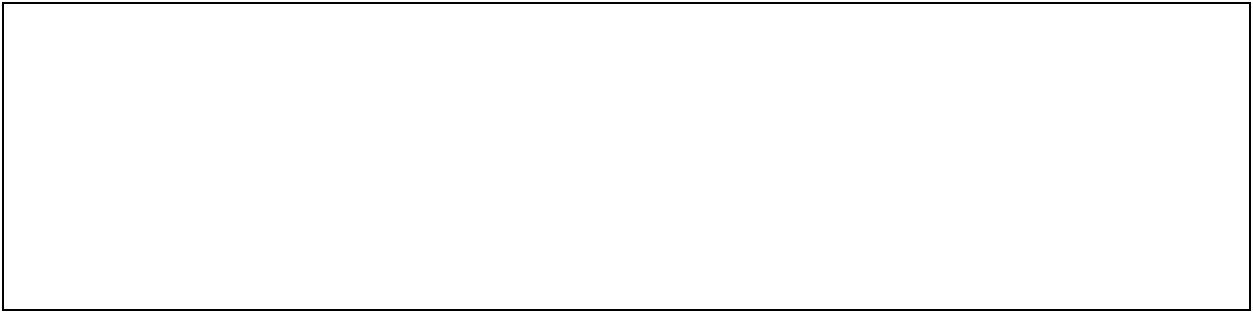
Making Shadows

Safety: *Never look directly at the sun. Do not stare at light sources.*

1. What do you know about making shadows? Draw a picture and explain how a shadow is made.



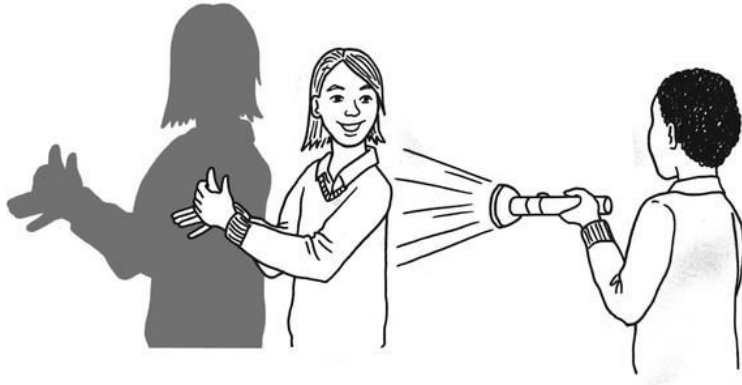
2. Name or draw some light sources that you can use to make shadows.



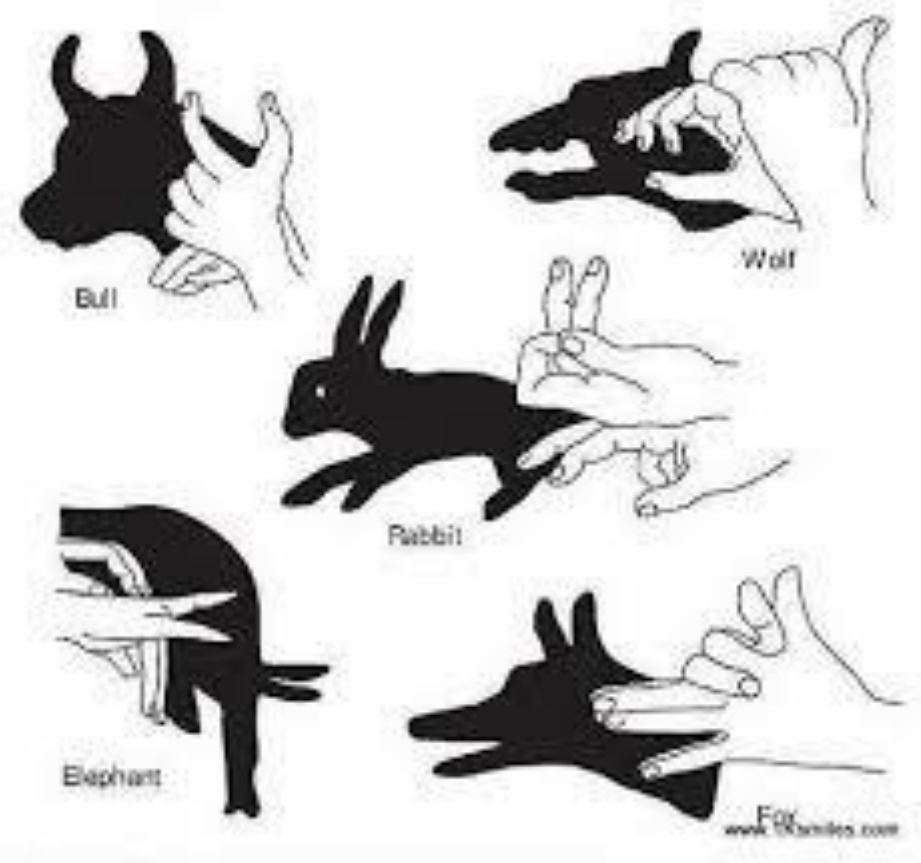
3. Can you make a shadow change size? Explain.



Hand Shadow Puppets



Try some of these or make up your own!

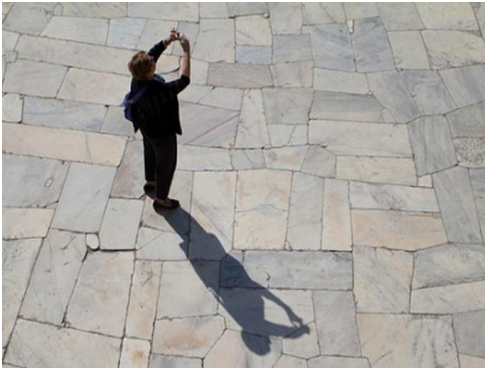




1. Use other materials like blocks, sticks, or paper to make other shadow shapes.
2. On the back of this handout or in your notebook, write or draw a skit featuring your hand puppets as characters in the story.



Pictures of Shadows



- As you look at these pictures, see if you can tell what is blocking the light to make them
- What is necessary to make a good shadow?

Shadows During the Day

- Observe how shadows change during the day.
- You will go outside on a sunny day to look at your shadow three different times: Morning, Middle of the Day, Afternoon.
- Mark where your feet are so you can stand in the same place each time.
- Figure out how you can mark the size of your shadow at that time. Find someone to mark it for you as you stand still or trace around the shadow with sidewalk chalk.
- Measure the length of your shadow using a ruler, yardstick, or measuring tape.
- What day did you choose? _____

Time of Day	Length of Shadow

What did you find out?



Build a Shadow Structure

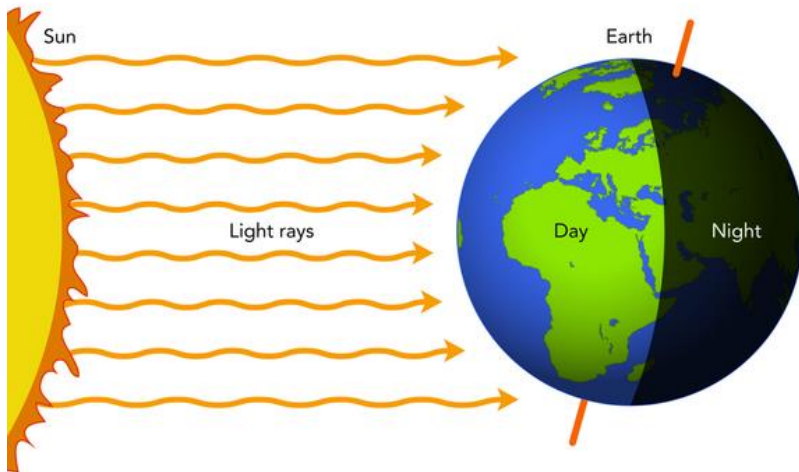
Name _____ Date _____

Directions: How can you measure how shadows change throughout the day? Design a structure to measure the shadows. Use the questions below to help you design your structure.

1. What materials will you need to build your structure?
2. How did the strength of the materials help you in building the structure?
3. Where will you put your shadow structure?
4. Will your structure receive sunlight throughout the day? Record the times that you checked to see.
5. How did the shadows change throughout the day?
6. After you tried the structure and saw the shadow during the day, did you change the design? Explain why or why not.
7. Draw a picture of the structure. Use different colors to show how the shadow changed as the angle of the sun changed by drawing the shadow at three different times of the day.
8. At the bottom of the drawing, label the different colors of the shadows with the times you drew them.



The Earth Turns and the Sun Stays Still



The Earth is like a ball spinning on a stick. The Sun's light shines on the part that is facing it, and we call that daytime. The other side of the ball (Earth) is having night.

Have you ever stood in one spot and spun around in a circle? That is what the Earth is doing all of the time.

Imagine the Sun is at the window in your room. If you are facing the Sun, you would get the full light from it and it would be like noon. If you turn your body a bit, the Sun is still there, but you do not get the full light. That would be like afternoon. If your back is to the Sun, it would be night because you would not see the Sun's light. If you turned a bit more, you would have more sunlight and it would be like dawn and then morning.

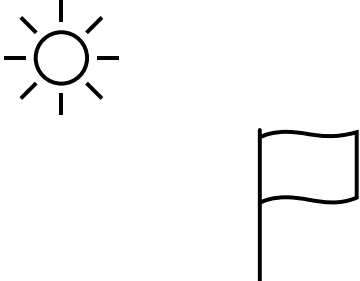
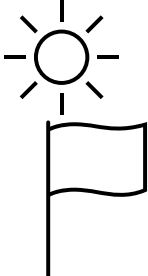
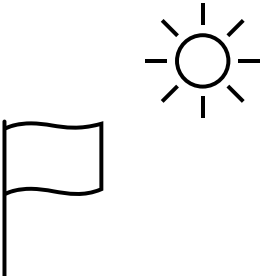
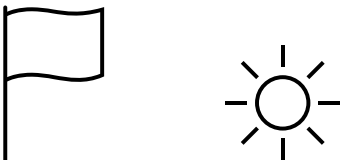
Practice being the Earth and turning to practice morning, noon, afternoon, and night.

1. When is it daytime?
2. When is it nighttime?

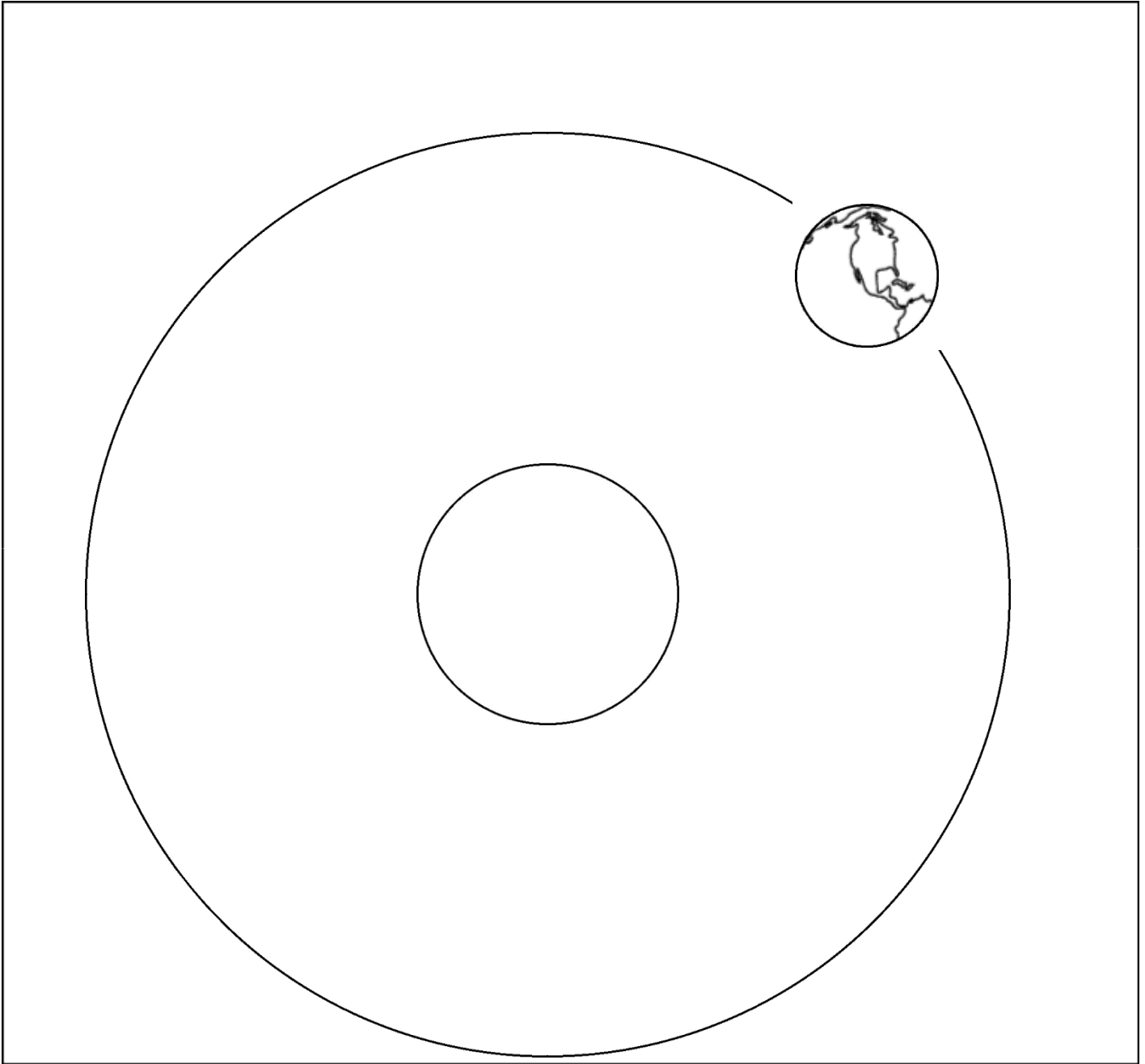
Shadows on Flagpole

Name _____ Date _____

Directions: Look at the picture of the sun and the flagpole. Draw what the shadow of the flag will look like. Record your thinking in the box next to each picture.

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1. Color the Sun.
2. Color the daytime half of the Earth green and blue.
3. Color the nighttime half of the Earth black

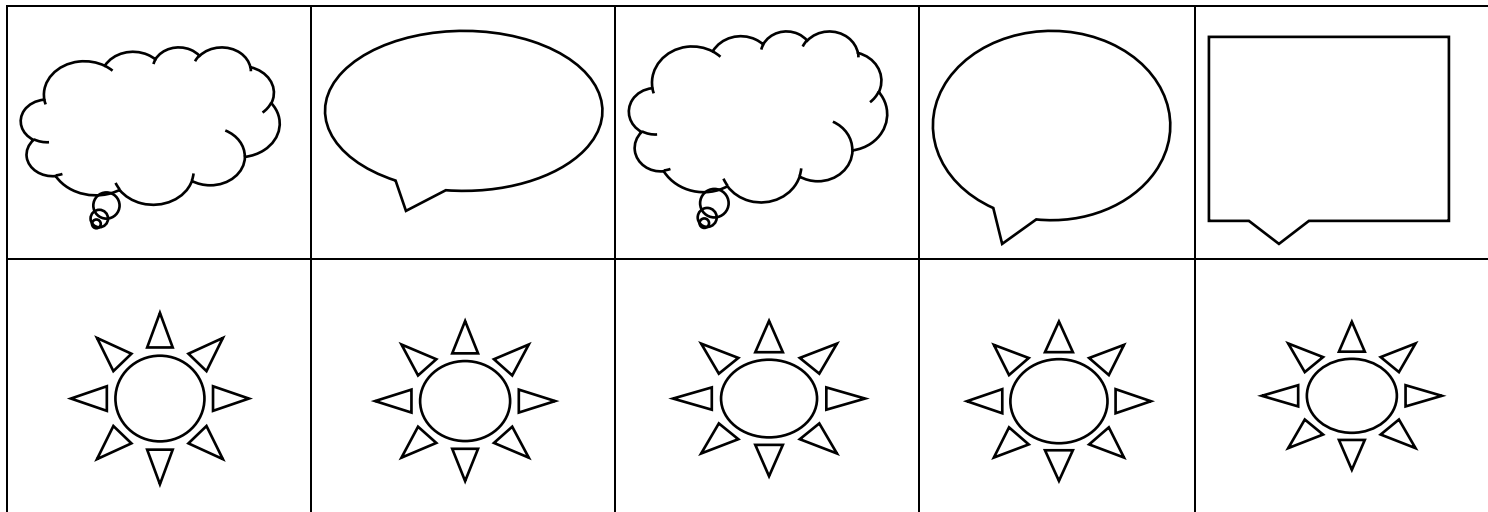


Name _____ Date _____

Sunup Sundown Comic Strip

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Optional: Cut out the pieces below and use them to make your comic strip: Thinking Bubbles and Sun Pictures.



Georgia Department of Education

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Length of Day and Night Chart and Directions

1. The number of hours in the day is provided in the chart below.
2. Subtract the daytime hours from 24 hours to find out the number of nighttime hours. You do not have to show your math on this chart, but January is done for you.
3. Use the handout Graphing Day and Night to color in each month using those numbers. January is done for you.

Hours of Daylight		Hours of Nighttime
Month	Number of Hours	Subtract Daylight hours from 24 hours to get each answer.
January	10	$24 - 10 = 14$ hours
February	11	
March	12	
April	13	
May	13	
June	14	
July	14	
August	13	
September	12	
October	11	
November	10	
December	9	



Graphing Day and Night

January

Number of Hours	Day	Night
15		
14		
13		
12		
11		
10		
9		

February

Number of Hours	Day	Night
15		
14		
13		
12		
11		
10		
9		

March

Number of Hours	Day	Night
15		
14		
13		
12		
11		
10		
9		

April

Number of Hours	Day	Night
15		
14		
13		
12		
11		
10		
9		

May

Number of Hours	Day	Night
15		
14		
13		
12		
11		
10		
9		

June

Number of Hours	Day	Night
15		
14		
13		
12		
11		
10		
9		

July

Number of Hours	Day	Night
15		
14		
13		
12		
11		
10		
9		

August

Number of Hours	Day	Night
15		
14		
13		
12		
11		
10		
9		

September

Number of Hours	Day	Night
15		
14		
13		
12		
11		
10		
9		

October

Number of Hours	Day	Night
15		
14		
13		
12		
11		
10		
9		

November

Number of Hours	Day	Night
15		
14		
13		
12		
11		
10		
9		

December

Number of Hours	Day	Night
15		
14		
13		
12		
11		
10		
9		



Shadow Questions

- When the sun gets higher in the sky, shadows get _____.
 - longer
 - gone
 - shorter
 - darker
- When an object blocks the path of light, what is formed?
 - A problem
 - A fog
 - A reflection
 - A shadow
- When the sun is behind you, your shadow is
 - Behind you
 - In front of you
 - At the side of you
 - Not there
- Why do shadows made by the Sun change size throughout the day?
 - Because the weather changes
 - Because someone moves the objects
 - Because the Earth is spinning, and we see the sun at different angles
 - Because it's magic
- When are shadows the longest?
 - Morning and evening
 - Noon
 - Night
- Look at the picture and tell where the tree's shadow will be.



- The Earth spins around once every day (24 hours). This is
 - Rotation
 - Revolving
 - Orbiting
- Which is NOT a source of light?
 - Sun
 - Ball
 - Flashlight
 - Lamp
- When are the days longest during the year?
 - Winter
 - Summer
 - Spring
 - Fall

