

BACKGROUND FOR TEACHERS

This unit focuses on the first way to be sun safe—limiting your time in the sun by finding shade and avoiding peak sun hours. Choosing to stay in the shade is a way to protect your skin from the sun’s harmful rays. Staying in the shade does not mean that you will not get a sunburn. But, it may keep you from getting sunburned as quickly. You can still get sunburned and damage your skin in the shade because the sun’s rays scatter or reflect off of other surfaces.

Not all shade is created equal. The quality of shade an object provides depends on the size of the object making the shadow, whether sunlight can penetrate the object, and the sun’s position in the sky.

The size of an object and the position of the sun will help to determine the amount of shade that is provided. The larger the shadow that is made, the more shade that is provided. Larger shadows are created by objects earlier and later in the day. When the sun is low in the sky, its rays create longer, more dispersed shade. The sun’s rays are less intense earlier and later in the day since they have to travel farther to reach the ground. A simple way to gauge the size of the shade is to see how many people can utilize the shade at the same time. The more shade provided, the greater the number of people that can utilize it.

The amount of sunlight that passes through an object also determines shade quality. Shade can be classified as dense, scattered, or limited. Dense shade is solid and has few or no patches of sunlight. It is the best type. Objects such as buildings, ramadas, porches, and some types of trees provide solid shade that blocks out most of the sunlight. Scattered shade has some patches of sunlight. Some types of shade cloth and trees block out some of the sunlight. Limited shade has many patches of sunlight and is not a good source of shade to use. Shade cloth made of loosely constructed fabric and some trees allow too much sunlight to pass through. The more sunlight that can pass through an object, the greater the amount of sunlight that is reaching your skin.

As the sun moves higher in the sky, the sun’s rays create shorter, more direct shadows. The sun’s rays have to travel a shorter distance to reach the Earth which makes the sunlight more intense. Peak sun hours, between 10:00 a.m. and 3:00 p.m., are when the sun’s rays are strongest and most damaging to the skin. The sun is more likely to cause sunburn, a tan, freckles, and wrinkles during peak sun hours. If possible, plan outdoor activities in the early morning or late afternoon. If outdoor activities are planned during peak sun hours, encourage use of shaded areas.

Many outdoor areas do not have enough shade. Often, taking your own source of shade—umbrella, tarp, tent—is important.

There are several ways to provide permanent shade sources including planting a tree or building a porch onto an existing building. Trees can be one of the best sources of shade and protection from the sun. Dense shade trees play an important role in helping you practice sun safety because they provide a “green screen,” a physical block which filters out about 80 percent of the sun’s rays. The more dense a tree is—the more leaves it has—the better it will protect. There are two basic types of trees: deciduous and non-deciduous. In the winter months, deciduous trees lose their leaves and provide very little protection from sunlight. During the summer months, deciduous trees are in full bloom and their abundance of leaves helps to protect you from the sun’s rays. Deciduous trees only provide shade during certain parts of the year. In contrast, non-deciduous trees provide year-round shade and protection from the sun’s rays.

UNIT OVERVIEW

This unit focuses on limiting time in the sun to protect the skin from the sun’s harmful rays. Students (1) learn about staying indoors, avoiding peak sun hours, and using shade as ways to prevent damage to the skin, and (2) compare the quality and availability of shade at school.

HEALTH BEHAVIOR OUTCOMES

Upon completion of this unit, students will:

- Reduce the amount of time they spend in the sun unprotected, especially between the peak sun hours of 10:00 a.m. and 3:00 p.m.
- Increase their use of shade.

VOCABULARY

- **Peak Sun Hours:** the times of the day when the sun’s rays are strongest. The sun is strongest between the hours of 10:00 a.m. and 3:00 p.m.
- **Ramada:** a building that has a roof but no walls and is used to make shade.
- **Shade:** shelter from the sun’s rays; anything that keeps the sun from shining on us.
- **Shadow:** the shade made when sunlight shines on an object.
- **Sun Safety:** taking care of your skin by protecting it from too much sun.

ACTIVITY SYNOPSIS

Setting the Stage

- **2.1 MY TIME OUTDOORS**

Students examine personal behaviors and other factors that affect the amount of sunlight they receive. They distinguish between factors that affect the amount of sunlight they receive and whether they can or cannot control them.

Learning Activities

- **2.2 SURVEY THE SHADE**

Students learn about sources of shade and how the position of the sun affects the amount of shade provided. They compare shade sources at two time points: once during non-peak sun hours and once during peak sun hours. Students use indicators such as size and type to rate the quality and availability of shade at school.

Wrapping It Up

- **2.3 LIMITING YOUR TIME IN THE SUN COMMERCIAL**

A commercial summarizes the concepts learned in this unit including limiting time in the sun, staying in the shade, avoiding peak sun hours, and assessing quality of shade.

Assessing Student Learning, Unit 2

- **2.4 SUN SAFETY IN THREES**

Students select words, in sets of three, that describe different sun safety concepts they have learned in this unit.

Setting the Stage

2.1 MY TIME OUTDOORS

ACTIVITY SYNOPSIS

Students examine personal behaviors and other factors that affect the amount of sunlight they receive. They distinguish between factors that affect the amount of sunlight they receive and whether they can or cannot control them.

LEARNING OUTCOMES

After this activity, students will be able to:

- Identify factors that they can (individual behavior and times of the day) and cannot (weather) control related to the amount of sunlight they receive.
- Identify sources of shade.
- Describe how choices of outdoor activities, time of day, and use of shade affect the amount of sunlight they receive.
- Define peak sun hours.
- List three ways to limit the amount of time spent in the sun.

ACTIVITY

Have students write down all of the outdoor activities they did the previous day on a sheet of paper. Then have them try to estimate how much time (to the closest hour) they spent doing each activity.

1. On the chalkboard, list some of the activities students did.
2. Next to each activity listed, indicate whether it took place in the shade or not.

3. Then read the number of hours students spent outdoors doing the listed activities	MINUTES	HOURS	MINUTES	HOURS
	30	0.5	210	3.5
	60	1.0	240	4.0
	90	1.5	300	5.0
	120	2.0	360	6.0
	150	2.5	420	7.0
	180	3.0	480	8.0

ACTIVITY 2.1

Supplies provided

- Transparency 2.1: My Time Outdoors (page 2.1.1)

Supplies needed

- Chalk, chalkboard
- Paper (1 sheet per student)
- Overhead projector
- Transparency film

Approximate time

- 10 minutes

Preparation

- Make one copy of the transparency on transparency film.

4. Using the tallies, ask students to draw some conclusions about the amount of sunlight they received yesterday. (As a group, did they spend a large amount of time outdoors? Were they involved in many different activities? How often did they utilize shade?) Ask students if they know why they had this classroom discussion and how it relates to protecting the skin from the sun. (This activity is designed to increase awareness regarding the number of outdoor activities they do, the length of time spent outdoors, their use of shade, and their awareness of the need for sun safety.)
5. Continue the discussion by asking which of these things (outdoor activity, time, and use of shade) can you change? (You can choose to change a personal behavior like whether to be outside or to utilize shade.) Sometimes it is difficult to change the times of outdoor activities because they are events that involve many people—soccer games, swim meets, field trips. Discuss the importance of taking personal responsibility for protecting the skin from sunlight as a way to help keep skin healthy. Tell students that they can make a choice to limit the amount of time spent in the sun. They can choose to be sun safe.

Tell students that the easiest way to protect the skin from sunlight—to be sun safe—is to limit the amount of time they spend in the sun. There are three ways to do this: stay indoors, stay in the shade when outdoors, and avoid peak sun hours. Briefly discuss some objects that make shade, such as porches, ramadas, umbrellas, buildings, playground equipment, shadows from buildings, and tents.

Display Transparency 2.1: My Time Outdoors. Ask students to explain the pattern of the clocks. (Some clocks read 10:00 a.m. and others read 3:00 p.m.) Introduce the concept of peak sun hours. These are the hours between 10:00 a.m. and 3:00 p.m. This is when the sun's rays are strongest or at the "peak" intensity. Discuss the importance of protecting the skin from the sun, especially during these hours, since it is easier to get a sunburn or damage the skin during these times. Tell students to try to stay indoors or stay in the shade during peak sun hours.

Learning Activities

2.2 SURVEY THE SHADE

ACTIVITY SYNOPSIS

Students learn about sources of shade and how the position of the sun affects the amount of shade provided. They compare shade sources at two time points: once during non-peak sun hours and once during peak sun hours. Students use indicators such as size and type to rate the quality and availability of shade at school.

LEARNING OUTCOMES

After this activity, students will be able to:

- Identify sources of shade and determine which sources provide better protection from the sun's harmful rays.
- Identify characteristics of time, size, and type and how they affect the quality and presence of shade.
- Explain why it is possible to still get a sunburn in the shade.

ACTIVITY

It is best to schedule this activity so there is at least a two-hour difference between the first and second observations. For the most accurate results, complete this activity on the same day to control for daily variations in weather. The observations are most obvious to students when this activity is completed on a sunny day.

Review important things students can do to keep from getting too much sun: stay indoors, use shade, and stay out of the sun during peak sun hours.

Use the following key points to discuss the concept of shade:

- Shade is anything that keeps the sun from shining on you.
- Shade is a shadow from an object, such as a building, ramada or tree.
- Shade helps protect skin from the sun.
- Shade may keep you from getting sunburned as quickly.

ACTIVITY 2.2

Supplies Provided

- Activity Sheet 2.2: Survey the Shade (page 2.2.1)
- UV detector cards

Supplies Needed

- Watch or clock (preferably one for each group)
- Pencils
- Paper

Approximate Time

- 60 minutes

Preparation

- Make two copies of page 2.2.1 for each group of four students.

- Staying in the shade does not mean you will not get a sunburn or damage your skin since some of the sun’s rays still may get through the object and reach your skin.

Tell the students that you have a special tool that measures the sun’s ultraviolet (UV) light, since it is invisible to our eyes. Show the students the UV detector card and point out to them that when it is inside (and not in any sunlight from a window) it tells them that there is no UV light (the detector strip on the card is close to white). Then show the students that when you put the card outside in the sunlight it tells them how much sunlight there is (the detector strip on the card turns a shade of purple). Allow the card to turn back to white and then show the students what happens to the card when it is outside in the shade. The table below describes the reaction of the card to different conditions.

Condition	What you should see on the detector part of the card
No UV light	Close to white
Shaded UV light	Medium purple or “Moderate” or “High” exposure
Full UV light	Dark purple or “Extreme” exposure

*Note: Time of year and time of day may affect UV intensity and UV readings.

Have students brainstorm some things that make shade. (This could include trees, ramadas, porches, playground equipment, umbrellas, tents, awnings, and buildings.) Tell the students that some things make better shade than other things. Tell students that the quality and the presence of shade an object makes depends on three things: (a) the size of the object; (b) the type of shade; and (c) the position of the sun in the sky.

For this activity, divide the class into groups of four students. Each group will need one person to measure the shade (measurer), one person to count as the person measures the shade (counter), one person to record the information (recorder), and one person to report the observations to the class (reporter).

Give each group two copies of Activity Sheet 2.2: Survey the Shade. Each group will measure one source of shade at two different times of day to learn how sunlight and shade change. The first observation should be during non-peak sun hours (before 10:00 a.m.) and the other during peak sun hours (between 10:00 a.m. and 3:00 p.m.).

Have groups follow along on the activity sheet as you provide the directions for completing the activity.

1. Record the time of day and the shade source. Complete the first section by checking peak sun hours or non-peak sun hours. Record the number of points for time on the space provided.
2. To measure the size of the shade, the measurer's job is to walk toe-to-heel across one length of the shaded area. (Demonstrate the measuring process for students.) The counter's job is to count out loud as the measurer walks across the shaded area. The recorder's job is to write the number of steps on the activity sheet. The reporter's job is to help count and make sure the information is recorded correctly. The group then should complete the statement regarding size of shade on the activity sheet (a little shade, some shade, or a lot of shade) and record the number of points on the space provided. (A "little shade" may be defined as a bush or a sign. "Some shade" may be defined as a small tree. A "lot of shade" may be defined as the side of a building or a large tree.)
3. For the type of shade, all of the group members should assess whether the source provides weak, scattered, or solid shade. ("Weak shade with lots of sun patches" may be defined as a tree with few leaves. "Scattered shade with some sun patches" may be defined as a tree with many leaves. "Solid shade" with no sun may be defined as shade from a building or ramada.)
4. After returning to the classroom, have each group compare the data and determine the quality of shade by adding up the points for time, size and type.
5. Have students grade the shade by using the ABC Grading System based on the total number of points for the source (A=7-8 points; B=5-6 points; C=3-4 points).
6. Repeat the process during peak sun hours. Make sure the groups measure the same source of shade in the same manner as before. (In other words, they should step from horizontally, vertically or diagonally across the shade, however they had done it originally.) Because the sun may be directly overhead during peak sun hours, some shade sources may have disappeared!
7. Have each group's reporter share their observations. Discuss how the size and quality of shade changes during the day and how it affects the amount of sunlight that reaches the skin. Ask students what they learned from this activity. (Less shade is available during peak sun hours. Now they know which shade sources on the school grounds are best. Shade is important to protect the skin from the sun and skin damage—sunburn, freckles, a tan, and wrinkles. They know how to determine the quality of shade provided.)

8. Summarize this activity with these points:

- Weak shade has many patches of sunlight. This means that sunlight still can get to skin and cause damage.
- Scattered shade has some patches of sunlight. This means the sun still can get to skin and cause damage.
- Solid shade has no patches or very few patches of sunlight.
- A large-sized, solid source of shade provides more protection for the skin than a smaller, scattered source of shade.
- The time of the day—peak or non-peak hours—affects the amount of shade available.
- Less shade is available during peak hours (10:00 a.m. to 3:00 p.m.) since the sun is at its highest point in the sky.
- Stay indoors or in the shade during peak sun hours when the sun is strongest and damages skin more quickly.
- Using any kind of shade is better than not using shade to protect the skin from the sun.

Emphasize the importance of students taking responsibility for protecting their skin from the sun by making better choices about being sun safe next time they are outdoors.

Wrapping It Up

2.3 LIMITING YOUR TIME IN THE SUN COMMERCIAL

ACTIVITY SYNOPSIS

A commercial summarizes the concepts learned in this unit including limiting time in the sun, staying in the shade, avoiding peak sun hours, and assessing quality of shade.

ACTIVITY

Present the commercial on **Template 2.3: Limiting Your Time in the Sun** to reinforce the information learned in this unit. You will need to read the lines for both characters or have two students play the parts and read the lines to the class.

ACTIVITY 2.3

Supplies Provided

- Template 2.3: Limiting Your Time in the Sun Commercial (page 2.3.1)

Supplies Needed

- None

Approximate Time

- 10 minutes

Preparation

- Make two copies of Template 2.3 (one for each actor).

Assessing Student Learning, Unit 2

2.4 SUN SAFETY IN THREES

ACTIVITY SYNOPSIS

Students select words, in sets of three, that describe different sun safety concepts they have learned in this unit.

ACTIVITY

Have students complete Assessment 2.4: Sun Safety in Threes as directed.

ACTIVITY 2.4

Supplies Provided

- Assessment 2.4:
Sun Safety in Threes
(pages 2.4.1–2.4.2)

Supplies Needed

- Pencils

Approximate Time

- 20 minutes

Preparation

- Make one copy of each page of the assessment for each student.

UNIT 2 ANSWERS



2.2 SURVEY THE SHADE

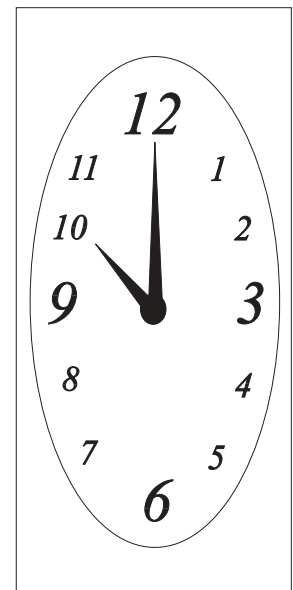
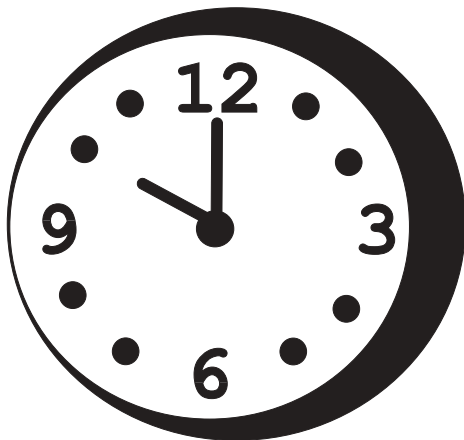
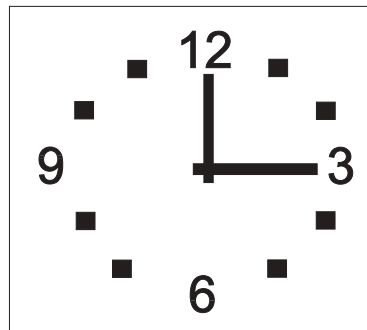
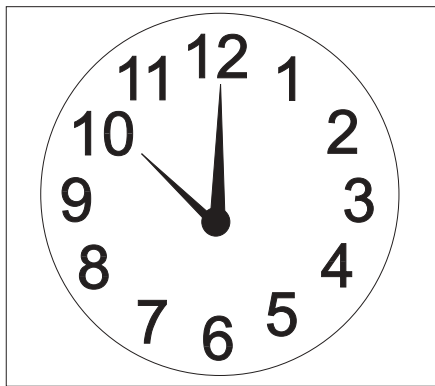
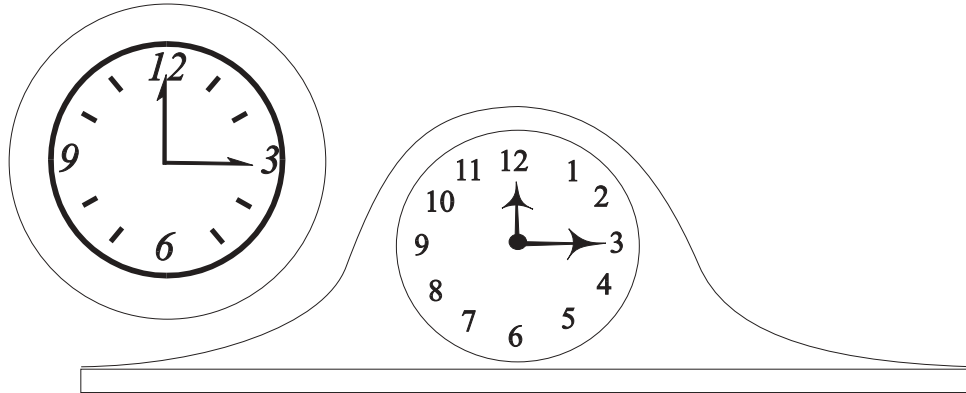
Answers will vary.

2.4 SUN SAFETY IN THREES

1.
 - a. Stay indoors.
 - b. Stay in the shade.
 - c. Avoid peak sun hours.
2.
 - a. Ramada
 - b. Tree
 - c. Building
3.
 - a. Size
 - b. Type
 - c. The sun's position in the sky.
4.
 - a. Freckles
 - b. Sunburn
 - c. Tan.
5.
 - a. 10:00 a.m. to 3:00 p.m.
 - b. Sun's rays are strongest.
 - c. Sunlight can cause the most damage.

2.1 MY TIME OUTDOORS

Clocks Transparency



Name: _____

2.2 SURVEY THE SHADE

TIME _____ : _____ SHADE SOURCE _____

1. Time of Day	2. Size of Shade	
<p>a. Peak sun hours (1 point)</p> <p>b. Non-peak sun hours (2 points)</p> <p>Points for time: _____</p>	<p>The shade measures _____ feet across.</p> <p>It makes (circle one):</p> <p>a. a little shade. (1 point) b. some shade. (2 points) c. a lot of shade. (3 points)</p> <p>Points for size: _____</p>	
3. Type of Shade	4. Quality of Shade	
<p>It makes (circle one):</p> <p>a. weak shade with lots of sun patches. (1 point) b. scattered shade with some sun patches. (2 points) c. solid shade with no sun. (3 points)</p> <p>Points for type: _____</p>	<p>1. Time: _____ points</p> <p>2. Size: _____ points</p> <p>3. Type: _____ points</p> <p>Total points: _____</p>	
5. Grade the Shade		
A = 7 - 8 points	B = 5 - 6 points	C = 3-4 points
Best	Good	Fair
The grade of the shade is _____.		

Name: _____

2.3 LIMIT YOUR TIME IN THE SUN COMMERCIAL

Josh: “Is the shade out today?” That may sound funny to some people, but to sun-safe folks, that’s just like asking, “Is the sun out today?”

Natalie: Why is the shade so important?

Josh: Shade helps protect the skin from the sun’s harmful rays. Shade comes in many shapes and sizes. Bushes, umbrellas, trees, playground equipment, ramadas, and even buildings provide shade. The amount of shade these things provide changes throughout the day. Some times of the day, like between 10:00 a.m. and 3:00 p.m., shade is harder to find.

Natalie: When? Between 10:00 a.m. and 3:00 p.m.? Why?

Josh: That’s when the shadows are shorter because the sun is highest in the sky. Between 10 a.m. and 3 p.m., the sun’s rays are strongest and it is easier to damage your skin. But, other times of the day it is easier to find shade.

Natalie: Really? When?

Josh: Shadows are longer earlier in the morning and later in the afternoon, so there is more shade for you to use then.

Natalie: Is all shade the same?

Josh: No. Some types of shade are better than others.

Natalie: What do you mean?

Josh: The best kind of shade is large in size, and solid with little or no patches of sunlight in it. So, join the safety parade and have a shady day!

Name: _____

2.4 SUN SAFETY IN THREES

Choose words and phrases from the box to complete the statements.

1. Three ways you can limit your time in the sun are:

a. _____

b. _____

c. _____

2. Three things that makes shade are:

a. _____

b. _____

c. _____

3. Three things that affect the quality of shade are:

a. _____

b. _____

c. _____

Name: _____

2.4 SUN SAFETY IN THREES

4. Three signs of sun damage are:

a. _____

b. _____

c. _____

5. Three things about peak sun hours are:

a. _____

b. _____

c. _____

stay in the shade	avoid peak sun hours	freckles
sunburn	stay indoors	building
tan	sun's rays are strongest	sunlight causes the most damage
ramada	sun's position in sky	tree
size	10:00 a.m. to 3:00 p.m.	type