

Dear Educator:

We've always known that fresh air and exercise are important for children. But today we also know that exposure to the sun's ultraviolet rays can damage the skin. There are three types of UV rays—UVA, UVB and UVC. However, only UVA and UVB rays reach the earth's surface. Too much exposure to UVB rays can result in painful sunburn. UVA rays (which for many years were thought to be harmless) penetrate deeper than UVB rays and can seriously damage the skin. They can cause skin cancer—including melanoma—later in life.

Because 80 percent of the average person's exposure to the sun occurs before the age of 18, it's especially important that children are properly protected from the sun's harmful rays—all year round and even on cloudy days, when those UV rays still can do their damage. And the best way to provide that protection is by using sun protection products that contain Z-Cote® transparent zinc oxide.

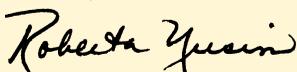
Z-Cote transparent zinc oxide blocks both UVA and UVB rays and is a "physical" ingredient that lies on top of the skin and is not absorbed.

Youth Media International, in conjunction with BASF, the makers of Z-Cote, is pleased to provide you with this very special teaching kit *Smart Cookies Don't Burn* designed to help your students learn about the sun and how they can protect their skin from sun damage. You can easily integrate the fun and engaging activities and experiments included here into your curriculum. The colorful take-home materials are designed to involve parents in some activities and provide them with valuable information about sun protection strategies.

The activities on the side of each reproducible master with a cookie symbol are designed for younger elementary students and the activities on the side with the sun symbol are appropriate for older elementary students. Please feel free to modify them as you see fit to meet the specific needs and abilities of your students. Although the materials are copyrighted, you may make as many copies as necessary.

We hope you will share these materials with other teachers in your school and that you will choose to remain on our mailing list. To ensure that you receive future mailings, please fill out and return the enclosed reply card. We welcome your comments and suggestions.

Sincerely,



Roberta Nusim, Publisher

Program Objectives

- To engage students in experiments designed to stimulate their thinking about the power and effects of the sun.
- To develop in students a respect for the damage that the sun's ultraviolet rays can cause to their skin.
- To provide information to students and parents about the importance of using effective sun protection strategies.

Target Audience

This program is designed for students in the elementary grades. The activities can be tailored to the interests and abilities of your students.

How To Use This Guide

Review the materials and schedule the activities into your classroom lessons. Activity 1 is designed to help students begin thinking about the sun. Activity 2 will help them see for themselves just how powerful the sun's rays can be. In Activity 3, they will learn about reflection. Activity 4 is a take-home sheet to be completed with parents. And make sure each child takes home a tear-off certificate, with valuable information on the back for parents reinforcing the kit's message. Activities for younger students have a cookie symbol. Those for older students have a sun symbol.

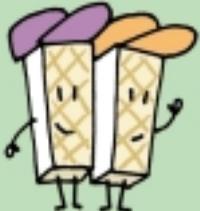


How To Use the "Smart Cookies Don't Burn" Poster

Post the "Smart Cookies Don't Burn" poster in a prominent location in your classroom. Use the following weather-monitoring activities every day to reinforce the message that the sun's rays can be harmful—even on cloudy days—and that "Smart Cookies" always use sunscreen when they are out of doors.

 **For younger students.** Each day, talk about the weather with your students: Is it sunny? Cloudy? Rainy? Appoint one child to be weather monitor for the day or week. That child is responsible for recording the day's weather on the poster. Your students can draw symbols on each calendar block to describe the weather, or you can use purchased stickers.

 **For older students.** Have your students check the Internet or daily newspaper to find the UV index for each day. Hold a brief class discussion and then record the information on the poster, along with the daily weather conditions.





process. Depending on the strength of the sun in your location, the tomatoes should be completely dry in three to five days.



activity
3
Bouncing Sunbeams

Talk with your students about the rays of light that come from the sun and how those rays can bounce, or reflect off, different kinds of materials. Explain that, while we cannot actually see a sunbeam, we can see the reflection of that sunbeam when we look through something like smoke. Then, do the following demonstration for your class. (Note: The demonstration must be done on a sunny day.)

Materials: A clear glass jar with a metal lid and an opening smaller than the rest of the jar; several long-stemmed matches and a small piece of crumpled paper. To prepare for the demonstration, punch a hole about half the diameter of a dime in the lid of the jar. Put the crumpled paper in the bottom of the jar. To do the demonstration, carefully set fire to the paper in the jar, using a long-stemmed match. Screw the lid onto the jar. Position the jar at an angle facing the window until the sun shines through the hole and into the jar. As the light from the sun passes through the hole, your students will be able to see the light reflected off the smoke in the jar.

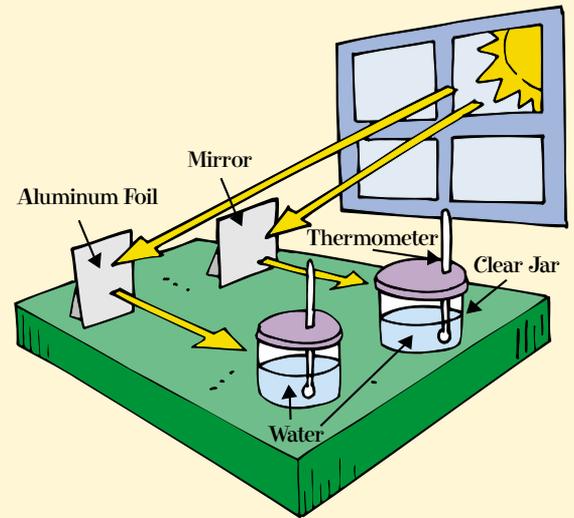
Conclude the experiments on both of the reproducible masters with a discussion of “bouncing sunbeams.” Make sure your students understand that reflected light can “bounce” into the shade, causing damage to the skin even when they cannot feel the direct heat of the sun. Explain the importance of using a good sun protection product—one that contains Z-Cote® transparent zinc oxide—every time they go outside.

For younger students

Materials: Liquid dish detergent and plastic bubble blowers. Make a bubble solution by mixing one cup of liquid dish detergent in one gallon of water. Take the students outside on a sunny day. Ask your students to talk about the colors they see in their bubbles. Have them color in the bubbles on their activity sheets. Explain that the color in the bubbles is reflected light, just like the reflected light they see in a rainbow. Talk about how other surfaces can reflect light—surfaces such as sand, snow and concrete. Then, for reinforcement, ask your students to complete the second section of the activity sheet.

For older students

Materials: A small block of wood, a thermometer, a clear glass jar, a small mirror, a sheet of cardboard cut to the size of the mirror and covered with aluminum foil, a small piece of plywood, a piece of clear glass, another piece of brown cardboard and other materials as desired. Fill the jar with cold water. Follow the diagram below to set up the reflection experiment. Begin with the mirror; then repeat the reflection experiment with each of the other materials. Be sure the water is the same temperature when your students start each new phase of the experiment, and adjust the position of the reflector and the jar of water to accommodate the changing position of the sun.



activity
4

Smart Cookies Don't Burn

Review the activities on the sheet with your students. Explain that they are designed to be done at home with parents, other family members or caregivers. For additional impact, you might wish to develop a complete “sun-safety packet” to send home. The packet could include information about the activities your students have completed in class, a personal note about the importance of using quality sun protection products, the tear-off sheet and this activity master.





The Sun Can Be Fun

How much do you know about the sun? Fill in the missing words in the sentences. The pictures will help you. Then, unscramble the circled letters to find the mystery word!

1. The sun makes me feel ____ _ ____ _ . 

 2. The sun makes flowers ____ _  ____ _ .

3. The sun is ____ _  ____ _ ____ _ ____ _ . 

 4. If I stay in the sun too long, I will ____ _ ____ _ ____ _ ____ _ .

5. The sun is a ____ _ ____ _ ____ _ . 

 6. I can get a sunburn even on a  ____ _ ____ _ ____ _ ____ _ day.

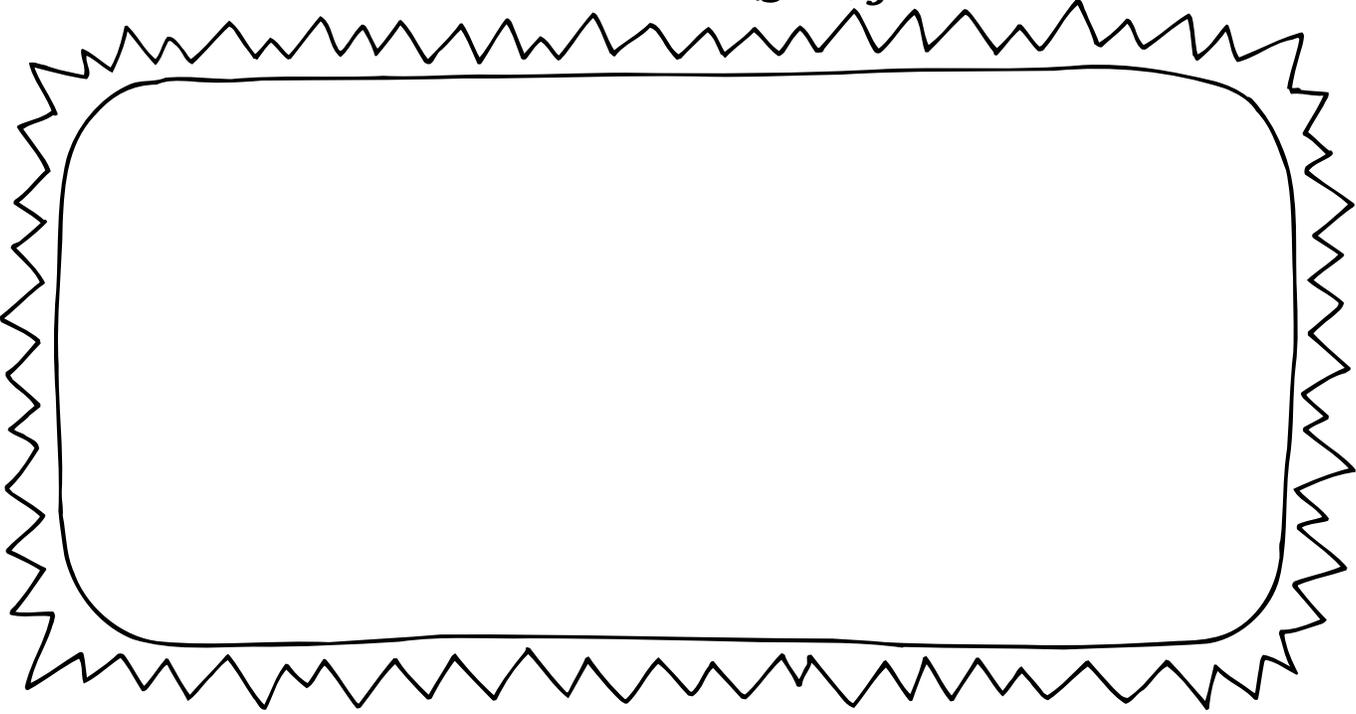
7. The sun can make an ice cube ____ _  ____ _ ____ _ . 

 8. We should never ____ _  ____ _  straight at the sun.

- look
- cloudy
- star
- melt
- grow
- burn
- bright
- warm

Write the mystery word here: ____ _ ____ _ ____ _ ____ _

In the space below, draw a picture that shows why "the sun is fun."





Cookin' in the Sun

Can you cook with the sun? Let's find out!

Test 1

Fill two plastic cups with cold water. Measure the temperature of the water.

How warm is the water? _____

Put one cup in the sun. Put the other cup in the shade. Check the cups in about half an hour. How warm is the water in each cup?



The water in the sun is _____ degrees.

The water in the shade is _____ degrees.



Test 2

Put a piece of lettuce on a plate. Put another piece of lettuce on another plate. Put one plate in the sun. Put the other plate in the shade. Check the lettuce leaves in about one hour.

What does the leaf in the sun look like?

What does the leaf in the shade look like?

Test 3

Put one small piece of chocolate on a plate. Put another piece of chocolate on another plate. Put one plate in the sun. Put the other plate in the shade. Check the chocolate in about one hour.

What does the chocolate in the sun look like?

What does the chocolate in the shade look like?



What could the sun do to you?
List some words below that tell what the sun could do to you.

1. _____

3. _____

2. _____

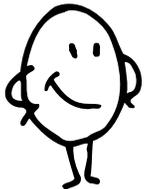
4. _____



Cookin' in the Sun

Have you ever heard anyone say, "It's hot enough to fry an egg on the sidewalk"? Have you ever wondered if you could really do that? It would be a pretty messy experiment, so let's try a few other tests to see just what the sun can do.

Turning Grapes into Raisins



Your teacher has prepared some grapes. Follow the directions below.

Monday: Spread the grapes out on the drying rack so they are not touching. Put the rack in a sunny window. (Move the rack to catch the sun as it moves during the day.) Turn the grapes over several times during the day. Be sure the grapes don't touch each other when you do this. Use the chart below to make notes about what happens to the grapes each day.

Tuesday-Thursday: Continue to turn the grapes several times a day and move them to follow the sun.

Monday _____

Tuesday _____

Wednesday _____

Thursday _____

Friday _____

Friday: Your grapes should be dried and shriveled. The sun has turned them into raisins! How do they taste?



Making Sun-Dried Tomatoes

Okay, so the sun can dry a little grape and turn it into a raisin. Maybe you're not impressed. But, what about something bigger? What about a tomato? How long do you think it will take the sun to dry one of those? Try this experiment to find out.

You will need several plum (Roma) tomatoes. Cut each tomato in half lengthwise and carefully place

each half, skin side down, on a screen. Put another piece of screen on top of the tomatoes. Put the tomatoes outside in the sun. Move the tomatoes if you need to so they stay in the sun at all times. Bring the tomatoes inside at the end of each day, then put them back in the sun the next morning.

Before you start your experiment, guess how long it will take for the tomatoes to dry.

Write your guess here: _____

After the experiment is finished, answer the following questions.

How long did it take for the sun to dry the tomatoes? _____

Were you surprised at this? _____ Why, or why not? _____

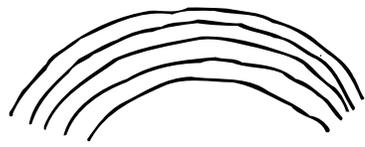
If the sun can turn a grape into a raisin and dry out a tomato in just a few days, what do you think it can do to your skin? _____



Bouncing Sunbeams

You just saw a beam of light. It was a *reflection*. The light from the sun was reflected off the smoke in the jar.

Sometimes when it rains, you can see a rainbow. Rainbows are a reflection, too. The light from the sun bounces off the raindrops and makes the rainbow colors you can see.

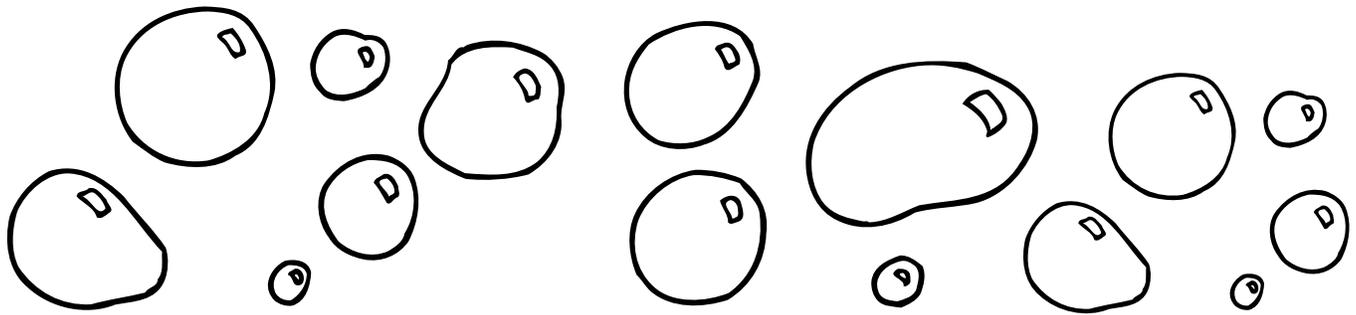


Let's make our own rainbows with soap bubbles!

Use your bubble wand to blow bubbles.

What do you see? _____

Color in the bubbles here with the colors you see.



The colors are reflected light from the sun. Raindrops reflect sunlight. We can see the light reflected in a rainbow.

Sometimes we can't see reflected light. Can you name some things that reflect light you can't see? (The drawings below will help.)



The sun's light can be reflected. The sun's rays can bounce on you. The sun's rays can bounce on you when you are in the sun. The sun's rays can bounce on you when you are in the shade.

Protect your skin, even when you are in the shade. Protect your skin with products that have Z-Cote® transparent zinc oxide.

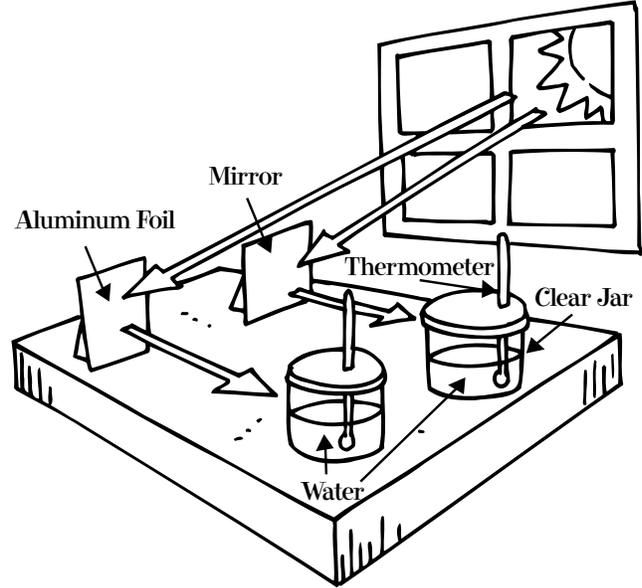


Bouncing Sunbeams

There are two kinds of light. There is direct light—when you look right at a light bulb. And there is reflected light—when you see the light from that bulb in a mirror. Sunlight can be reflected, too. A rainbow happens when rays of light from the sun are reflected off raindrops. The light separates into colors you can see.

Let's test some different materials to see which ones reflect sunlight best. (Your teacher will help you with this experiment.) Materials that reflect light the best will make the water warmer. Let the light reflect off each material for about 30 minutes. Then, measure the temperature of the water.

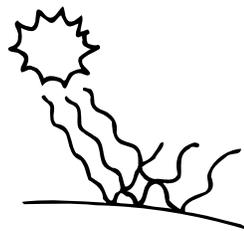
Change the water in the jar each time you test a new material. The water in the jar should be the same temperature each time you start. Record the water temperatures in the space below. Use the blank spaces to record temperatures of other materials as they reflect water.



Material	Beginning Water Temperature	Ending Water Temperature
Mirror	_____	_____
Aluminum foil	_____	_____
Piece of wood	_____	_____
Clear piece of glass	_____	_____
Plain white paper	_____	_____
Brown cardboard	_____	_____

Think about the materials that reflected the sunlight best. How are they alike?

What kinds of outdoor surfaces do you think would reflect light well? List some here.

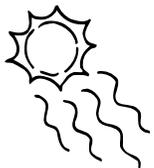


Now you know sunbeams can bounce. They can reflect off shiny surfaces and they can damage your skin—even when you are in the shade. That's why it's important to protect yourself from the sun—even when you are in the shade! The best way to do that is to always wear sunscreen that contains Z-Cote® transparent zinc oxide.



Smart Cookies Don't Burn

Directions to Parents: Read and discuss the "Smart Cookie" statements on this sheet and complete the "Smart Cookie" quiz with your child. Then, talk about other things "Smart Cookies" can do to stay safe in the sun!



Smart Cookies know all about the sun!

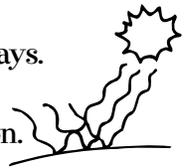


Smart Cookies know the sun makes us warm.



Smart Cookies know the sun helps plants grow.

Smart Cookies know about the sun's rays.

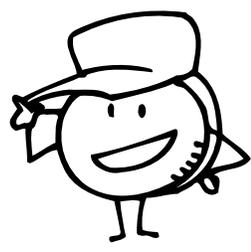


Smart Cookies know about reflection.

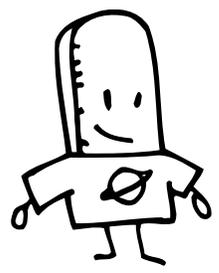


And, Smart Cookies always use sunscreen with Z-Cote[®] transparent zinc oxide.

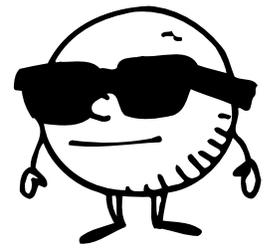
You can be a Smart Cookie, too! The pictures show how Smart Cookies can be safe in the sun. Write the missing words. Then, color the Smart Cookie pictures.



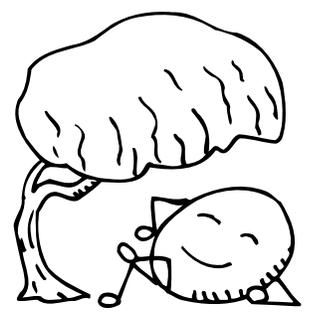
1. Smart Cookies wear a _____.



2. Smart Cookies _____.



3. Smart Cookies wear _____.



4. Smart Cookies stay in the _____.

A Message to Parents: Doctors know more today than ever before about the dangers of exposure to the sun's harmful rays. Ultraviolet (UV) rays from the sun not only can cause painful sunburn, they also can cause skin cancer—including the life-threatening form known as melanoma—later in life. Because 80 percent of the average person's exposure to the sun occurs before the age of 18, it's especially important that children are properly protected from the sun's harmful rays. And, children should be protected every day, year round—even on cloudy days when those UV rays still can do their damage.

The safest, most effective way to protect your child is to always use sun protection products that contain Z-Cote[®] transparent zinc oxide. Z-Cote is a completely transparent form of zinc oxide—the white paste traditionally seen on lifeguards' noses. Zinc oxide is so safe it has been used for years in products for babies. Z-Cote is a "physical" sunscreen ingredient that does not penetrate the skin's surface. That means it is generally non-irritating and it does not cause allergic reactions. Check the labels on the sun protection products your family uses and make sure they contain Z-Cote transparent zinc oxide.

Answers: 1. Hat 2. Cover up 3. Sunglasses 4. Shade



Smart Cookies Don't Burn

When it comes to the sun, you're a real Smart Cookie! You might even call yourself a Sun Scientist. After all, you've turned grapes into raisins and done research about reflected light.

Here's an experiment you can do at home with your family. It's called "The Shadow Test." Scientists have learned that when your shadow is the shortest, the sun's rays are the strongest. When your shadow is at its longest, the sun's rays are at their weakest. (But remember: Even a weak ray of sun can do damage. Think about those raisins!)

To do "The Shadow Test," you'll need to measure the length of your shadow at different times of the day. (You can make the shadow and a family member can do the measuring, or you can measure for a family member. But make sure the same person makes the shadow for each measurement.)



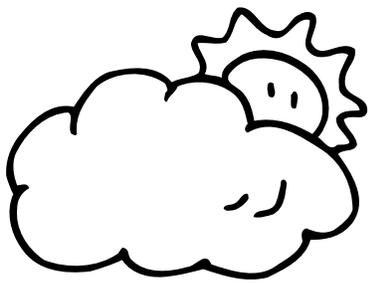
Time of Day	Length of Shadow	Time of Day	Length of Shadow
8:00 a.m.		2:00 p.m.	
9:00 a.m.		3:00 p.m.	
10:00 a.m.		4:00 p.m.	
11:00 a.m.		5:00 p.m.	
Noon		6:00 p.m.	
1:00 p.m.		7:00 p.m.	

Use crayons or colored pencils to shade in the blocks. Make the time when the sun is the strongest a darker color. Then, make the colors lighter as the sun's rays get weaker.

A Message to Parents

Doctors know more today than ever before about the dangers of exposure to the sun's harmful rays. Ultraviolet (UV) rays from the sun not only can cause painful sunburn, they also can cause skin cancer—including the life-threatening form known as melanoma—later in life.

Because 80 percent of the average person's exposure to the sun occurs before the age of 18, it's especially important that children are properly protected from the sun's harmful rays. And, children should be protected every day, year round—even on cloudy days when those



UV rays still can do their damage.

The safest, most effective way to protect your child is to always use sun protection products that contain Z-Cote® transparent zinc oxide. Z-Cote is a completely transparent form of zinc oxide—the white paste traditionally seen on lifeguards' noses. Z-Cote is a "physical" sunscreen ingredient

and does not penetrate the skin's surface. That means it is generally non-irritating and does not cause allergic reactions. Check the labels on the sun protection products your family uses and make sure they contain Z-Cote transparent zinc oxide.



Smart Cookie Sun Protection Certificate

I'm a Smart Cookie. I won't burn.
I pledge to protect myself from the sun's harmful rays. When I go outside, I will:

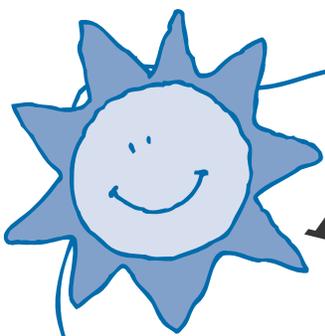
- ☀️ Wear sunglasses.
- ☀️ Wear a hat that shades my head and neck.
- ☀️ Cover up. I know that Smart Cookies wear long-sleeved shirts and pants, or at least a dry T-shirt.
- ☀️ Avoid the midday sun as much as possible.
- ☀️ Stay in the shade. Smart Cookies play under a tree or an umbrella whenever they can.

And, most important of all...

- ☀️ I know that Smart Cookies **ALWAYS** wear sun protection with Z-Cote[®] transparent zinc oxide!

Signed

Witnessed by
(Parent's signature)



A Message to Parents About the Importance of Sun Protection

Most children enjoy being outside in the sun, but exposure to the sun's ultraviolet (UV) rays can be dangerous. Too much exposure to UVB rays can result in painful sunburn. UVA rays (which for many years were thought to be harmless) penetrate deeper than UVB rays and can damage the skin. They can cause skin cancer, including melanoma, later in life. (Melanoma is a life-threatening form of skin cancer.)

Because 80 percent of the average person's exposure

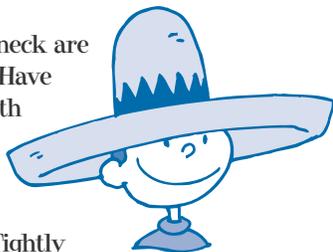
to the sun occurs before the age of 18, it's especially important that children are properly protected from the sun's harmful rays—even on cloudy days, when those UV rays still can do their damage.



Make Sure Your Child Is Protected

Here are some steps you should take to make sure your child is protected:

☀ The eyes, ears, face and neck are especially sun sensitive. Have your child wear a hat with a wide brim to shade these areas.



☀ Have your child cover up with extra clothing. Tightly woven, loose-fitting clothes are best, and darker colors provide more protection than lighter ones. If it's just too hot for long-sleeved shirts and long pants, a T-shirt is better than nothing. But keep in mind that the average T-shirt does not provide sufficient protection from the sun's rays, so your child should use sunscreen even under the shirt. Wet T-shirts offer no protection at all.

☀ Keep your child out of the midday sun as much as possible and encourage him or her to play in the shade. (Although the sun's rays are always harmful, they are strongest and do the most damage between 10:00 a.m. and 4:00 p.m.)

☀ Regardless of what your child is wearing or where he or she will be playing, always apply sunscreen *before* your child is exposed to the sun. (UV rays can reflect off almost any surface, so sunscreen is important even when your child is in the shade.) Be sure to apply the proper amount of sunscreen—usually one ounce for each application—and take special care to protect hot spots such as the tops of ears and feet, the lips, the nose and the back of the legs. Re-apply the sunscreen frequently. A very water-resistant (sometimes called waterproof) sunscreen remains effective for about 80 minutes when exposed to water (including perspiration) and for about 40 minutes in water.

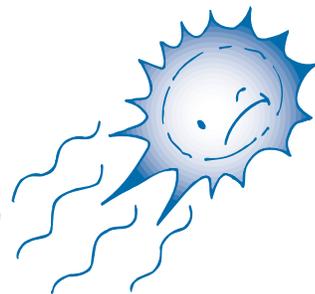
Pick the Proper Sunscreen

Picking the sunscreen that will provide the best protection for your child is not as confusing as it may seem. You simply need to keep two important points in mind:

1. Check the label to be sure the sunscreen contains Z-Cote® transparent zinc oxide. (Iguana® sun protection products for children and many SolarSense®, NO-AD® and Mary Kay® sun protection products contain Z-Cote transparent zinc oxide, as do some Oil of Olay® moisturizers and Maybelline® cosmetic products, for example.) Z-Cote transparent zinc oxide blocks both UVA and UVB and is a "physical" sunscreen ingredient that lies on top of the skin. (Zinc

oxide is so safe it has been used for years in products for babies.)

2. Use a sunscreen with an SPF of at least 15. SPF stands for Sunscreen Protection Factor. The SPF number tells you how much longer it will take you to burn using sunscreen than it would if you had no sun protection at all. For example, if you would normally burn in 20 minutes without sunscreen, a sunscreen with an SPF of 15 will provide protection for 15 times as long, or 300 minutes (15 x 20 = 300 minutes).





Smart Cookies

Use Sun Protection— Even on Cloudy Days!

April							
						1	
2	3	4	5	6	7	8	
9	10	11	12	13	14	15	
16	17	18	19	20	21	22	
23	24	25	26	27	28	29	30

May						
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

June						
				1	2	3
4	5	6	7	8	9	10
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18	19	20	21	22	23	24
25	26	27	28	29	30	