



June 2012 – Summer

The longest day of the year comes every summer during the month of June. Learn why summer days are longer and enjoy the warmer weather while doing science projects outside.

Summer Science Projects

Sun Prints

You can make fun pictures by using the sun's power to fade the color from construction paper! This project uses repositionable glue, which you can find in most stores that sell office or school supplies (Elmer's and Scotch brands both make this type of glue). You could also do the project by setting objects on your paper and laying it flat in the sun instead of using the special glue.

What You Will Need:

- Dark colors of construction paper
- Solid objects with interesting shapes that you can trace around (leaves, buttons, coins, and plastic toys work well)
- Pencil
- Scissors
- Repositionable glue (Optional. Made by Elmer's or Scotch brands and available where office or school supplies are sold.)
- Window that gets lots of sunlight
- Tape

What To Do:

1. Trace around your objects on construction paper and cut out each shape. Or, you can draw your own shapes and cut them out. Be creative! You could even draw letters to spell your name.
2. Arrange the paper shapes onto a new sheet of dark-colored construction paper to make a nice design.
3. Use the repositionable glue to stick each shape to your picture. Don't use much glue though, or it will be hard to peel your shapes off later.
4. Turn the shapes towards the window and tape the corners of your picture to the window to hold it in place.
5. Leave your picture in the window for a couple days or until you notice that the color of the construction paper has started to fade. (Compare it to a new piece of the same color of paper to see if it has changed.)

6. When it is quite a bit lighter than it was when you started (it might take up to a week to get light enough; it depends on how many sunny days you have!), untape the picture from the window and peel off the shapes; they should come off pretty easily, but do it slowly to make sure your picture doesn't tear.

What's Happening?

Have you ever left an art project made from construction paper in the sun for too long? If so, you probably noticed that the color started to fade and the paper ended up a lot lighter than it once was. In this project, you covered parts of the paper with paper shapes, and then when you left your picture in the sunlight it started to fade. Since the shapes blocked sunlight from hitting the parts of the paper that they covered, you could see the original color of the paper after you peeled off the shapes! The extra layer of paper from the shapes protected those parts of the paper from the sun's rays that faded the color from the rest of the sheet of paper.

Sunlight contains ultraviolet (or UV) rays - the same rays that will give you a sunburn if you are in the sun for too long without sunscreen on. Those rays cause chemical reactions in the dye that gives construction paper its color. When the paper absorbs the rays of light, a chemical reaction breaks down the dyes so they aren't as bright. UV rays can lighten a lot of things. Some people's hair turns a lighter color when they are in a lot of sunlight. Hanging white laundry outside in the sun to dry can make it look whiter also.

To make prints like this in just a few minutes you can get a [Sunprint Kit](#) that contains special colored paper.

Sidewalk Shadows

Create a design on the sidewalk by tracing shadows! Pick a sunny day to do this project. Make sure to wear sunscreen and a hat to protect your eyes.

What You Will Need:

- Sidewalk chalk
- Large object such as a beach ball, umbrella, or hoop
- Sunny area on sidewalk or pavement

What To Do:

1. Hold your hand out above the sidewalk. Is there a shadow? What does it look like? If there isn't a shadow, make sure you are in a sunny area and try again.
2. Try wiggling your hand to watch your shadow move. What happens if you tilt your hand to one side or the other? Experiment making the shadow grow (get bigger) and shrink (get smaller) by moving it closer to the ground and farther away.
3. Have a friend trace the shadow of your hand with chalk while you hold still.
4. Add more chalk drawings by tracing the shadows of different objects. Set the umbrella on the ground and trace its shadow, or hold the umbrella in the air while someone traces the shadow on the ground with sidewalk chalk. Try it with a beach ball or hoop.

How does the shadow change when you move the object close to the ground or when you move it farther away from the ground?

5. Stand in an open area with direct sunlight and look at your own shadow. What happens if you turn around? Find a way to stand that creates a shadow that you like, then have your friend trace it with the chalk. Offer to trace your friend's shadow.
6. You can make all sorts of pictures using shadows. Try moving your arms and legs in different ways to create an outline on the sidewalk that you would like to have as part of your sidewalk drawing. What if you hold an umbrella or hoop? Color in the shadow picture you made if you like, or leave it as an outline.

What's Happening?

As the sun is overhead, it casts a shadow right onto the ground. Shadows in winter and summer will look different based on where the sun is at in the sky. Shadows in the beginning of the day will also look different than shadows made in the afternoon or evening. Where the sun is in the sky determines what the shadow on the ground looks like.

Did you know that light travels faster than anything else in the universe? It travels so fast in fact, that while it would take 200 years to reach the sun traveling as fast as a car (60 mph), it only takes light from the sun 8 minutes to reach earth! Light travels in a straight line from the sun to earth. Light doesn't stop, it keeps moving - unless something big gets in its way. Any solid object like the umbrella or your hand will block the light. The light can't move through it, so it goes around it. Below the solid object there is a shadow. A shadow is a space that light didn't hit, because something was in its way. If you like, try casting a shadow with an object that is clear such as a piece of plastic wrap or a glass.



Did you notice that your shadow changed sizes when you moved your hand up and down? The closer to a surface the object is, the bigger the shadow will be! If you hold your hand above your head, the shadow is much smaller than if you hold your hand a few inches from the ground.

Fun Facts

- Did you know that you can tell time by a cricket chirping? Count the number of times a cricket chirps in 15 seconds, then add 37, and you will have a good guess at what the temperature is in degrees Fahrenheit!
- The average American eats 5 1/2 gallons of ice cream each year! The most ice cream is sold in the summer months - June, July, and August.
- Until the 1880s people would tell time using the sun. When telling time this way, noon is always when the sun is directly above you. This means that the time in one town would be a couple minutes later than a town just a few miles away!

Silly Science

- What did one bee say to the other bee during the summer?
 - It's swarm in here, isn't it?
- What does a tree do when it is ready to go home?
 - Leaves.
- What holds the sun up in the sky?
 - Sunbeams.
- What do you get when you cross an elephant and a fish?
 - Swimming trunks!

Way Cool Websites

- Find out more about seasons and see pictures of the earth's tilt:
<http://www.christiananswers.net/kids/edn-seasons.html>
- Listen to many different insect songs (including crickets) at this site:
http://www.musicofnature.org/songsofinsects/iframes/OLG_families.html

Teaching Tips

Summer is the season that comes after spring and before fall. For many people summer is the warmest time of the whole year. During summer sunrise happens earlier and sunset happens later, which gives us more hours of daylight. The longest day of the year happens in the month of June. This day is called the Summer Solstice (say: SOLE-stiss). This year the Summer Solstice is on June 20, 2012. That means that June 20 is the longest day of the whole year!

You might know that it takes one year for the earth to move around the sun one time. As the earth moves around the sun, it is tilted slightly to one side, similar to how a globe looks with the north pole slightly off center. Have you heard of the equator? It is an imaginary line around the middle of the earth that divides earth into two halves, a northern half and a southern half. In summer, the earth is tilted so that the Northern Hemisphere (including the United States, Canada, and parts of Europe) gets the most sun. While it's summer for us, those living in the Southern Hemisphere (including South America and Australia) are experiencing the cold weather of winter. The sun shines directly on the equator all year, so how warm or cold your seasons are depends on how far away you live from the equator. If you live close to the equator, you probably don't experience very big changes in temperature when the seasons change.

The sun gives us warmth and light. Have you ever noticed that it is sometimes cooler in the shade? This is because the sun is not hitting the ground directly. When the sun hits the ground, the ground soaks in the heat. Walking barefoot on sand or pavement can be very painful! That is because that kind of ground soaks in a lot of heat. During summer the days are longer. Longer days mean more sunlight is coming down on us, and more sunlight means more heat, which makes the days warmer.

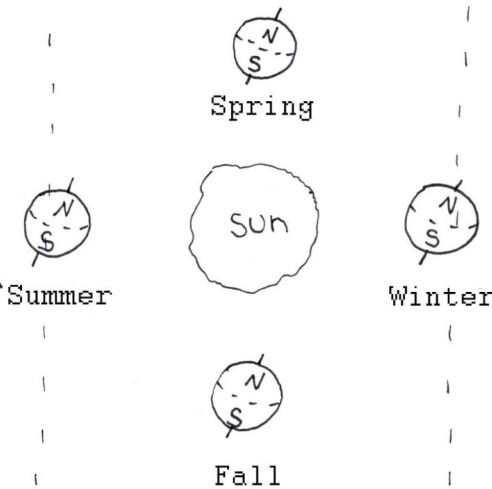
How does the earth ~~move~~ around the sun?

the path that earth follows around the sun is called an orbit

The diameter of the sun is 109 times that of Earth!

Note: earth and sun are not drawn to scale.

The Seasons:



(for the northern hemisphere)

