

Summer Resources for Science

Science is my Superpower!



Please spend some time this summer thinking about the world around us by discovering, investigating, reading, writing, and making observations. Remember to always look for evidence and argue like a scientist!

Below are some different science activities you can do with your friends and family indoors and outdoors. Enjoy your summer!

Keep scrolling for book suggestions, science jokes, and some science journal writing prompts.

I Spy STEM Walk/Nature Scavenger Hunt

Take a walk anywhere outdoors. What do you see/hear/smell? Think about and discuss with a family member or friend: How do trees stay alive? How are buildings constructed? What lives outdoors versus indoors and why? What do you notice up in the sky? What technology can be found outdoors?

Snow in the summer? Make fake snow!

Materials:

- 1 cup cornstarch
- 1 cup shaving cream



Instructions:

1. Pour the cup of cornstarch into a large bowl. Use a spoon to scoop the shaving cream on top of it. Stir to mix.
2. When the mixture looks like grated cheese, use your hands to squish the mixture even more.
3. Pretty soon the shaving cream and cornstarch will form a ball, about the same texture as dough.
4. If your mixture is really wet and sticky after mixing, it needs a little more corn starch. If it won't stick together and falls into pieces, add a little more shaving cream.
5. That's it! Try sculpting and making different things such as snowmen, or make a tiny snow fort!

Shadow Tracking



Learn all about the movement of the earth by tracking shadows throughout the day. Stand in the same spot at various times and mark with chalk on the sidewalk how "tall" their shadow is at each hour. Discuss why our shadows shrink and grow and what that teaches us about the movement of the earth.



Earthquake Test

Experiment with foundations by testing various structures on top of different outdoor surfaces (sand, dirt, mud, concrete, water). Challenge: Create a bridge or building using materials you may have (popsicle sticks, toothpicks, Legos or anything found at home), work to figure out how to make it steady. Have a competition to see which structure holds the most weight or withstands an "earthquake."

Water Challenge

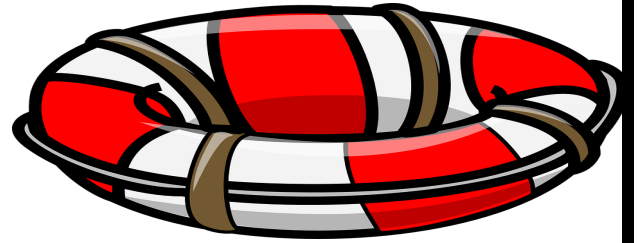
Use water games to solve problems as a team. Try to move a large amount of water from one bucket to another using only a



smaller bucket with large holes in the bottom. Brainstorm strategies for plugging the holes and keeping as much water as possible in the bucket in order to fill up their large bucket quickly. Measure the water and discuss the factors that make them move more or less water.

Sink or Float

What makes some materials sink in water while others float? Make predictions about various materials (a penny, tin foil, a Lego, a plastic cup, a spoon), test them in a container of water and then observe what patterns you noticed. Why do some objects float while others sink?



Tornado in a Bottle

:

You can create your own tornado in a bottle. All you need is two bottles, taped together at each spout so no water can leak out, and some water.



When you whirl the liquid in the top bottle, it creates a vortex as it drains into the bottom bottle. That's because as the water flows down, air must flow up, creating a spiraling tornado.

You can even add glitter, food dye to the bottle to make the tornado even cooler.

Rainbow in a glass:

This experiment takes advantage of density to create a rainbow in a glass. When you add sugar to a liquid, it causes the solution to become more dense. The more sugar you add, the more dense the solution is.

If you have four different solutions that are all different colors and densities, the colors will layer on top of each other – the denser, more sugary solutions will sit on the bottom and the lightest will sit on the top.

Home-made lava lamp:

Alka-seltzer is great if you're suffering from heartburn or an upset stomach. But you probably didn't know that it's also great if you're looking to create your own homemade lava lamp.

Because oil and water have different densities and polarities, when you mix them together, the water sinks to the bottom. When you add food coloring, which is water based, it will sink to the bottom as well.

If you crumble in an alka-seltzer tablet, it reacts with the water, causing colored droplets of water to rise to the top where they then pop, release air, and sink back to the bottom.

You can do something similar and observe a chemical reaction with baking soda and vinegar in a cup. Pour vinegar in a cup, then add a large heaping tablespoon of baking soda to the vinegar. Watch what happens!

Write about it: What type of reaction is this? What did you observe?

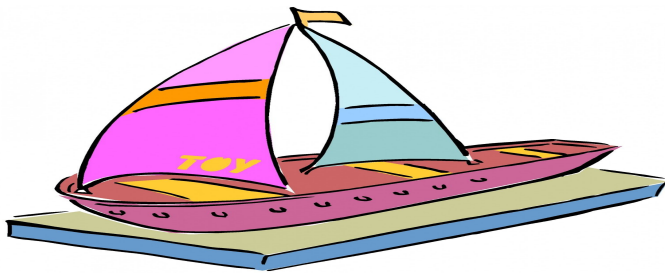
BUILD A BOAT THAT FLOATS

OPTION 1

We have two ways you can go about this challenge! One is to dig into your recyclables (and non-recyclables) and build a boat that floats. Set up a tub of water to test them when everyone is finished. You can take it further by testing their ability to float under weight! Try a soup can. Will your boat float while holding a soup can.

OPTION 2

Try using aluminum foil to build a strong boat that floats. Go ahead and test your boat with added weight too. Remember to pick one type of item like pennies to test the flotation of the boat. Otherwise you will have inaccurate results because you can't compare the results.



Writing: Draw a picture and tell why you think some materials were better than others. What type of materials are better to use?

DESIGN A BRIDGE

This quick STEM activity uses a couple of stacks of books, pennies, paper, and a couple pieces of tape. Challenge your kids to build a paper bridge that spans the gap between two stacks of books. Test the weight of the bridge with pennies.



Challenge yourself to make bridges out of similar sized material like aluminum foil, wax paper, cardstock, or any other materials you have around the house.

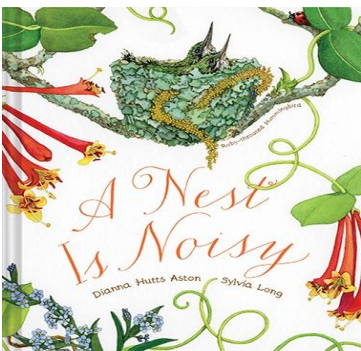
Don't forget to pick up a good science book and read:

Below are some books that have more experiments and ideas for you to explore at home. These are suggested topics. Hopefully the libraries will be open for you to find more.

This is a link that has plenty of other book ideas:

<https://www.geekwrapped.com/science-books-for-kids>

[A Nest Is Noisy](#) by Dianna Hutts Aston/illustrated by Sylvia Long ***Ages 5-8***



You can find nests in the air, in the water, underground, in the mud. ***A Nest Is Noisy***, created by Dianna Hutts Aston and Sylvia Long, is a visually stunning exploration of the diversity of shapes, sizes, locations, and uses of nests. You might know that sea turtles have

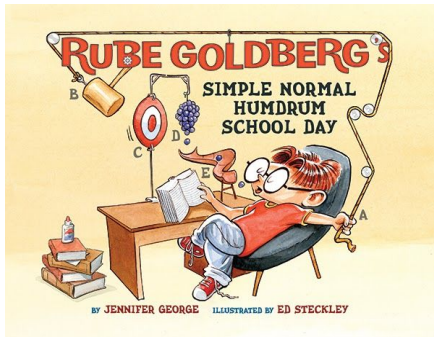
nests, but did you know that army ants make “living nests” called bivouacs? Aston’s engaging and fact-filled prose is accentuated by Sylvia Long’s detailed paintings, which come to life on the page.

Activity

Many scientists keep nature journals where they keep observations and even sketches of the environment they are researching. Get started creating your own **nature journal**, and try your hand at sketching your subjects. Don’t worry if you’re new to sketching—over time, your drawings will become more sophisticated. You can also practice carefully observing and documenting something that interests you (**#ObserveEverything**).

*If you like **A Nest Is Noisy**, there are five more in the series—explorations of **eggs, rocks, seeds, beetles, and butterflies!***

Rube Goldberg’s Simple Normal Humdrum School Day Ages 5-7: by Jennifer George/Illustrated by Ed Steckley



What is the most indirect way to complete a task? Well, that's a

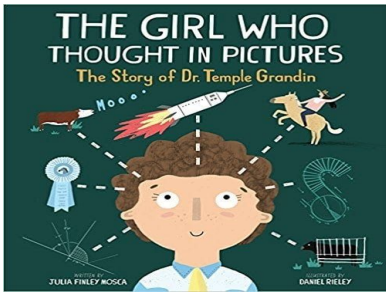
question you might ask yourself while reading **Rube Goldberg's Simple Normal Humdrum School Day**. Jennifer George, granddaughter of the cartoonist/inventor Rube Goldberg, celebrates his zany, invention-themed comics by imagining him as a kid running through an average school day. The illustrations of Ed Steckley bounce and rumble along, allowing readers to follow George's cause and effect descriptions.

Activity

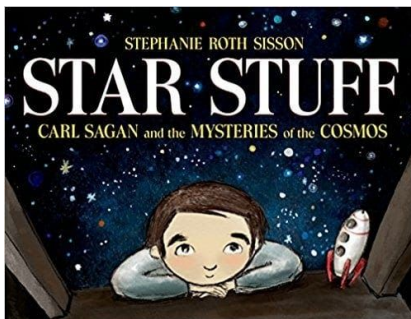
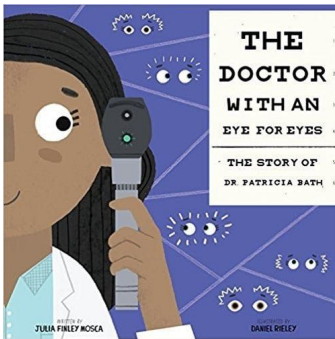
Explore **simple machines** by building Rube Goldberg machines. Identify a task you want to accomplish (e.g. turn on a light, pop a balloon, pour water in a cup). Fill a bin with a variety of materials from around your home (blocks, toy cars, tops, etc.), then use those items to create a machine that completes your task. After your first attempt, try making your machine more complex. Take your tinkering further by **making an art machine**.

Older readers (age 8-12) might enjoy learning about Rube Goldberg machines and the spirit of invention in **Ruby Goldberg's Bright Idea** by Anna Humphrey.

[The Girl Who Thought in Pictures: The Story of Dr. Temple Grandin](#) by Julia Finley Mosca 1-4



[The Doctor With an Eye for Eyes: The Story of Dr. Patricia Bath](#) by Julia Finley Mosca

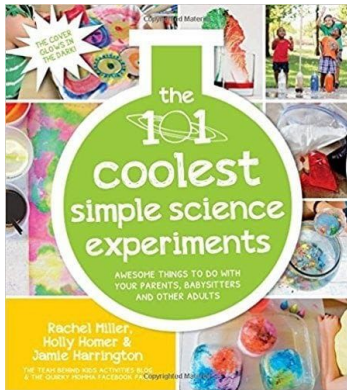


[Star Stuff: Carl Sagan and the Mysteries of the Cosmos](#) by Stephanie Roth Sisson 1-3

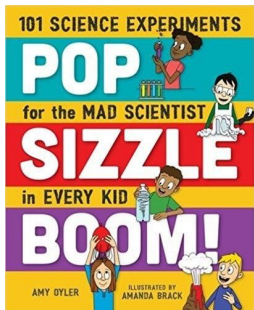
[Awesome Science Experiments for Kids](#) by Crystal Chatterton

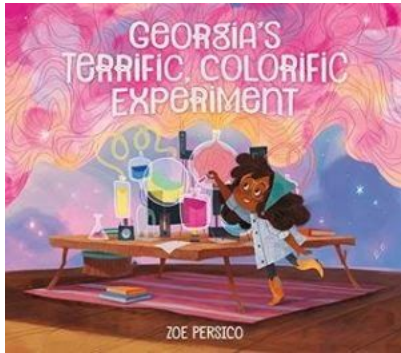


[The 101 Coolest Simple Science Experiments](#) ages 5-12 by Jamie Harrington, Holly Homer, and Rachel Miller



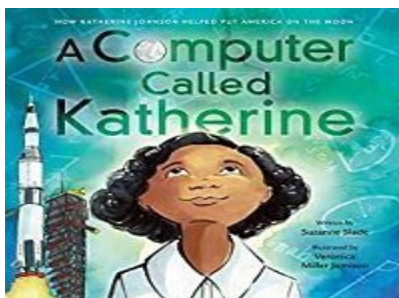
[Pop, Sizzle, Boom!: 101 Science Experiments for the Mad Scientist in Every Kid](#) by Amy Oyler
ages 5-12





[GEORGIA'S TERRIFIC, COLORIFIC EXPERIMENT](#) BY ZOE PERSICO

Georgia wants to become a scientist. And to be a scientist she has to create an experiment. Her family of artists keep giving her advice, but Georgia is convinced that art and science don't mix. After a number of failed recreations of experiments, she learns to listen to her family. She can forge her own path as a scientist, but even science has room for creativity. This is a great primer for the scientific process while reinforcing important lessons, like the many benefits of working together.



[A COMPUTER CALLED KATHERINE](#) BY SUZANNE SLADE,
ILLUSTRATED BY VERONICA MILLER JAMISON

This nonfiction picture book tells the story of Katherine Johnson. As a child, Katherine was a math prodigy but didn't get the same opportunities or respect as her classmates because she was Black and female. She knew this was wrong. And when she grew up, she joined NASA and created computations that helped the first man get to space.

Remember to take care of yourself during the summer!!!

1. Exercise! Physical activity improves overall cardiovascular health for all family members.
2. A healthy diet is one of the most important ways to ensure your heart is working at its best. Use MyPlate as a guide to make sure you are eating a variety of nutritious food from all food groups.
3. Limit highly processed food and drinks, they generally have small amounts of natural nutrients and high amounts of added fat, sugar and salt.
4. Choose water! Water does not have any sugar, unlike sports drinks, fruit flavored beverages and soda!
5. Choose foods with less sodium (salt). Preservatives like salt increase risk of obesity, high blood pressure and heart disease.
6. Laughter is the best medicine. Studies show laughter promotes heart health by decreasing stress hormones, anxiety, artery inflammation and increasing HDL cholesterol. Make sure to have your daily dose of laughter! SEE SOME GOOD JOKES BELOW!!

Cooking is Science also! When cooking we observe lots of different reactions and use many measuring tools. Choose healthy meals to cook at home. Here is an easy snack to make at home!

HEART HEALTHY FRUIT KABOBS

Ingredients:

- Strawberries, pineapples, melons or other fruit of your choice
- Wooden skewers, popsicle sticks or toothpicks

Instructions:

1. Wash and dry fruit
2. Use a heart shaped cookie cutter or a knife to cut fruit into hearts
3. Thread fruit onto skewers, sticks, or toothpicks
4. Enjoy!



Science Jokes:

Need to laugh? Laughing and smiling are good for the soul!!!

How do we know that Saturn was married more than once?

HAHA: Because she has a lot of rings!!

How did the astronaut serve dinner in outer space?

HAHAH: On flying saucers!!

Where is a rabbit's favorite place to eat?

Hahaha: IHOP!!!!

What is a snake's favorite subject?

Hahah: Hisssss-tory!

Let's write!!!! Keeping a journal is a great place to write down your ideas, observations, and notes. You can make lots of observations during the summer. For example,

The following are some writing prompts to get your brains in gear by thinking and jotting!

- **Who is a scientist you admire? Why do you admire them? What qualities do they have that make them special?**
- **Describe how our lives would be different if the lightbulb had never been invented.**
- **“Science, my lad, is made up of mistakes, but they are mistakes which it is useful to make, because they lead little by little to the truth” (Jules Verne). What does this quote mean to you?**
- **Are humans hurting or helping our environment? Support your answer with evidence from your experiences and observations.**
- **Science is all around us, when we do things like cook, ride a bike, or watch TV. Pick a hobby or activity you do at least once a week, and explain how science is involved.**
- **If you could have any summer job, what would it be and why?**
- **Describe a place you want to live but have never visited.**
- **Imagine that you are a whale. Describe what it's like to live in the ocean.**
- **We are in the season of summer! What sights, sounds and smells remind you of the season?**
- **List five things you are so happy that were invented. Why?**

