

Kent
District
Library



Summer WONDER

JOIN THE
30-Day
CHALLENGE

JUNE 1 – AUGUST 13

Join Curi for
STEAM projects,
outdoor fun
and more!

kdl.org/summer

STORYWALK®



Find Curi in new
Kent County Parks
locations for 2022!



Make a **SPLASH** with this year's **Summer Wonder 30-Day Challenge!** It's **FREE** and includes adventures and prizes for **ALL AGES**. KDL has teamed up with Kent County Parks along with many other community organizations to offer StoryWalk in the Park and fun STEAM activities to do at home. KDL is the perfect place to keep summer learning alive and **GROWING**.

HOW TO COMPLETE YOUR 30-DAY CHALLENGE

1. Decide if you want to track your goals on a paper log or online at kdl.beanstack.org.
2. Start tracking your progress. It's a 30-day challenge for all ages. Do one activity per day. There's a variety of ways to complete your challenge depending on your age.
3. The earliest you can complete your challenge is July 1. Stop in to your local branch to claim your completer prize and be entered in a drawing for some other cool prizes.
4. If you meet your 30-day challenge, you can complete an additional 15 days of activities to be entered in a drawing for a bonus \$250 Meijer gift card.

Workbook Contents

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Sponsors:



Curi

Summer Wonder Guide

Cover artwork by Anthony Carpenter | artosaurus@triton.net



30-Day Challenge Tracking Log

For all ages

Mark off a box (one per day) when you complete an age-based activity listed on page 4. When you meet your 30-day challenge, stop in to your local branch starting July 1 and turn in your completed log to receive a special prize. All logs are due by Saturday, August 13.

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

All-Star Readers

If you complete your goal and would like to keep going, we will give you an All-Star log, available starting July 1. After an additional 15 days of activities, you will qualify to be entered in a drawing for a bonus \$250 Meijer gift card. All-Star logs are due by Saturday, August 13.

For all ages.

Completer information:

Name (first) _____ (last) _____

Age _____ Phone _____ Library Branch _____

Email _____

School (if applicable) _____

Grade in the fall (if applicable) _____

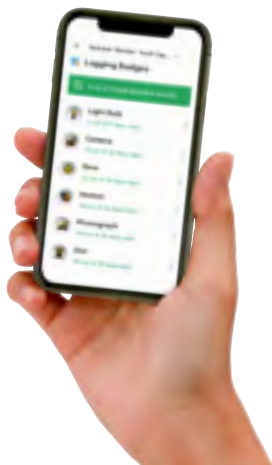
PRIZES

Everyone who completes the 30-Day Challenge will receive a prize. Birth through age 17 will get to pick out a free book. Adults will receive a 60" umbrella while supplies last. All completers will be entered in a drawing for a gift basket and one of 16 \$250 Meijer gift cards. Limit one prize per person. **Details at kdl.org/summer.**

Ways to complete your 30-Day Challenge

For a full list of suggestions, visit kdl.org/summer.

Little Readers | Birth through age 4



As a parent, you are your child's first, best teacher. The Kent County Success Basics are five fun, easy and powerful ways to help your child grow. Do one activity per day for 30 days. More suggestions listed on page 8.

- **Read:** Point to words and pictures as you read.
- **Talk:** Go for a walk and point to objects you see; sing the ABCs.
- **Love:** Snuggle, rock and have quiet time.
- **Play:** Blow bubbles; roll a ball back and forth.
- **Count:** Count fingers and toes; look for shapes at the store.



Online participation powered by



Youth | Ages 5-10

These are the ages when kids need access to books and reading the most. KDL wants to make sure that kids do not lose ground in the reading gains they've made over the school year. All of these activities will keep your child's brain active and count toward completing the 30-Day Challenge. Do one activity per day for 30 days.

- **Read** for at least 20 minutes. Choose from books, magazines, graphic novels, comics and more.
- **Write** a story, letter or journal entry, or check out one of the writing prompts on page 9 or at kdl.org/summer.
- **Listen** to an audiobook or have a book read to you.
- **Do** one of the awesome and easy STEAM activities beginning on page 12 or at kdl.org/summer.



Teens and Adults | Ages 11 & Up

KDL's Summer Wonder is for everyone – accept the challenge! Make these activities part of your summer routine. Do one activity per day for 30 days. For more activity ideas, go to page 10.

- **Read** for at least 20 minutes. Choose from books, magazines, graphic novels, comics and more.
- **Write** a story, letter, journal entry or poem.
- **Listen** to an audiobook or have a book read to you.
- **Do** or explore something new! Visit a new park, try a new recipe or explore a new hobby. More ideas are listed on page 10.

Where's Curi?



Find Curi for a chance to win an “Outdoor Fun” gift basket!

KDL and **Kent County Parks** invite you to go on an outdoor scavenger hunt! We are lucky to have such wonderful parks in Kent County, and here is a fun opportunity to get outdoors and explore (and learn) this summer. Use the clues below to find Curi in seven park sites throughout the county. Can you find all eight Curis? When you find a sign, answer the question in the description below and then go online to **kdl.org/findcuri** to enter for a chance to win an “Outdoor Fun” gift basket.



1

Long Lake Park

13747 Krauskopf Rd. NE, Sparta
(Enter park from 17 Mile Rd.)

This park encompasses the northern two-thirds of Long Lake and offers great opportunities for swimming, fishing and non-motorized boating. From the Sand Beach parking lot, walk to the swimming beach. You will find Curi somewhere along the way. What do you see from Curi's spot?

2

Wahlfield Park

6811 Alpine Ave. NW, Comstock Park
(Corner of Alpine and 8 Mile)

Wahlfield Park features a main recreational area that also serves as a trailhead for its extensive network of trails. Curi loves a playground and loves big boulders. You will find Curi somewhere near both. What can you see from Curi's spot? Notice the many trail loops that allow you to continue on foot or bike.

3

Pickerel Lake Park

6001 Ramsdell Dr. NE, Rockford

Also known as the Fred Meijer Nature Preserve, Pickerel Lake Park offers a scenic mix of natural areas to explore along a branching network of trails. From the parking lot, venture west across the boardwalk at the start of the Lake Trail. Continue on the path until you come across Curi. If Curi continues on, how many boardwalks will Curi cross? (Hint: the map will tell you too).

Note: This park site is a nature preserve; watercraft, swimming, bicycles and dogs are not permitted.

4

Millennium Park

1415 Maynard Ave. SW, Walker

Millennium Park is one of our nation's largest urban parks, with over 1,400 acres of rolling terrain and six miles of Grand River frontage. **There are two Curis located here!**

Curi #1 – Park in the Secchia Meadows parking area. Head toward the Universal Bridge (to the right of the pavilion). You can walk or ride bikes! Curi loves to look out over the water from a favorite spot. Name something specific that you see from this magnificent view.

Curi #2 – Park at the DeVos Boathouse lot on the Recreation Area side of Millennium Park. Take the trail to the left. Wind around the lake until you see a big rock. Take the Hansen Nature trail boardwalk until you come to a fork in the trail. Do you see Curi? Which way did you go?

Fallasburg Park

1124 Fallasburg Park Dr. NE, Lowell

5

This park is a favorite for picnics and other recreational pursuits, and features a covered bridge across the Flat River. Park at the enclosed shelter. Take the paved path on the right down a hill and cross a lovely bridge. You will come to a fork. You can go either way up the hill and find Curi. Name one of the tribes indigenous to this area.



KENT COUNTY PARKS AND TRAILS

Trail Key

Managed by Kent County Parks

- Connector Trail - Completed
- Connector Trail - In Development
- Extended Hiking Trail - Planned

Managed by Other Agencies

- Connector Trail - Completed
- Connector Trail - Planned
- Extended Hiking Trail - Completed
- Extended Hiking Trail - Planned



Open this map on your phone by scanning this QR code with your smartphone camera.



Palmer Park

1275 52nd St. SW, Wyoming

6

Palmer Park offers more than 300 acres of greenspace within the City of Wyoming. Park in one of the lots near the shelter or on the main road. Walk to the end of the road and continue past the roundabout until you see a wonderful creek. Go to the bridge that crosses the creek and find Curi. From the bridge, look down into the creek. Name something you see.

Lepard Nature Preserve

6030 76th St. SE, Caledonia

7

A beautiful natural preserve with hills and bridges featuring excellent opportunities for hiking and exploration. From the parking lot, walk the short trail to the loop start. You will cross two lovely bridges. Hint: If you go left, you will find Curi faster. Once on the loop, pay attention to the interpretive signs. What is the name of the amphibian on the sign where Curi is?

New for
2022

STORYWALK®

Walk along, read along! Kent District Library teams up with Kent County Parks to bring you special outdoor StoryWalks to enjoy with your family.

Dwight Lydell Park

4040 Leland Ave. NE, Comstock Park

A

Caledonia Lakeside Park

370 N. Lake St. SE, Caledonia

B

Featured
StoryWalk® titles



One Fox: A Counting Book Thriller
by Kate Read

Explorers of the Wild
by Cale Atkinson

Jayden's Impossible Garden
by Mélina Mangal

My Forest is Green
by Darren Lebeuf

The Hidden Rainbow
by Christie Matheson

Little Readers

Birth – Age 4

**As a parent, you
are your child's
first, best teacher.**

The Kent County Success Basics are five fun, easy and powerful ways to help your child grow smarter.

30-Day Challenge Ideas

READ AND DISCUSS STORIES

Reading turns kids into confident thinkers. Make books a regular part of your relationship from the very beginning. With infants, point at the pictures and speak with excitement. With toddlers, just make it fun.



Read a story and act out movements to some of the action words.

While reading, describe the pictures, talking about colors, shapes and characters

TALK SING AND POINT

Babies learn language from the moment they are born. Respond to their sounds, and later, their words. Connect through eye contact and a loving tone of voice, while pointing to help them know what you are talking about.



Say and do the motions to one of your favorite rhymes.

Make up your own verses for the song, "If You're Happy and You Know It."

LOVE MAXIMIZE LOVE MANAGE STRESS

Babies and toddlers thrive when their world feels loving, safe and predictable. Respond with smiles, words and touch to help them see, hear and feel your love. You will help them develop a sense of security and self-control.



Have your child help you prepare dinner. Spend time outside together. Spread out a blanket and look at the clouds.

PLAY EXPLORE THROUGH MOVEMENT AND PLAY

Babies are like scientists who love making discoveries. Watch to see what interests your child, then encourage their curiosity and help them learn when they play and explore.



Put on a puppet show using stuffed animals or make your own sock puppet. Get out spoons and pots to make a kitchen band.

COUNT GROUP AND COMPARE

Every child's brain is wired for math. Talk about numbers, shapes, patterns and comparisons as you go about your routines together. Watch your child learn to love math.



Help your child clap to the beat as you listen to a song. Count a basket of objects together and sort them into related groups.

Please visit kdl.org/successbasics for more information.



Youth

AGES 5-10

30-Day Challenge Ideas

- Read for at least 20 minutes. Choose from books, magazines, graphic novels, comics and more.
- Write a story, letter or journal entry, or check out one of the writing prompts below.
- Listen to an audiobook, or have a book read to you.
- Do one of the awesome and easy STEAM activities starting on page 12. They can also be found at kdl.org/summer.



Writing Prompts

1. You are planning a meal for the president of the United States. What meal of the day are you serving? What food will you choose? Who will cook the meal? Why did you choose your meal?
2. Design a houseboat just for you. Will you invite anyone to live with you? Where will you float your boat, and what special rooms and features does it have?
3. You are enjoying a day at the beach. Use your senses to describe what you see, hear, touch, feel and taste.
4. One day you are running through the sprinklers at the water park, when suddenly you hear...
5. If you could choose any animal for a pet, what would you choose and why? What would you name your pet? What does your pet eat and drink? Where does your pet sleep?



Teens ^{and} Adults | Ages 11 & Up

30-Day Challenge Ideas

KDL's Summer Wonder is for everyone – accept the challenge! Make these activities part of your summer routine. Do one activity per day for 30 days.

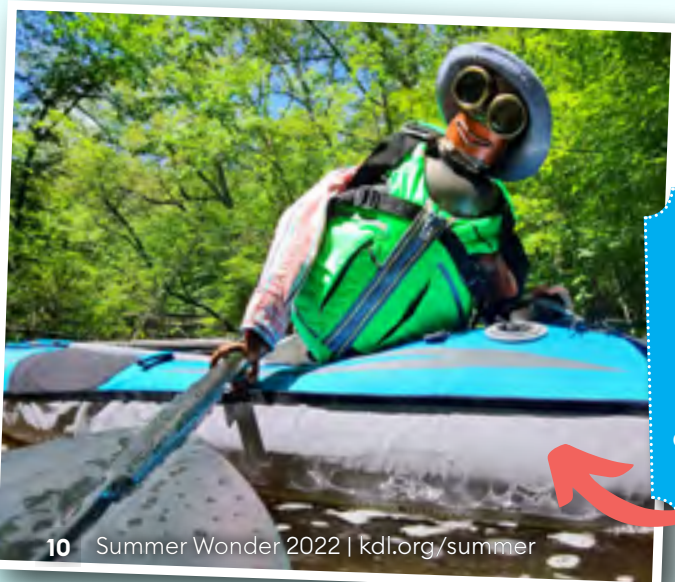
- Read for at least 20 minutes. Choose from books, magazines, graphic novels, comics and more.
- Write a story, letter, journal entry or poem.
- Listen to an audiobook, or have a book read to you.
- Do or explore something new! Visit a new park, try a new recipe or explore a new hobby.



Adult Prize 60" Umbrella
(While supplies last)

More Ideas

1. Make a small gift (card, cookies, etc.) for a neighbor.
2. Plant a native flower in your yard or in a pot to support pollinators.
3. Write a ghost story to tell around a campfire.
4. Set up a bird feeder and observe what birds visit.
5. Practice a new language (Try Rosetta Stone or Mango at kdl.org/online-resources).
6. Make your own summer bucket list.
7. Visit a KDL branch you have never been to before (or haven't seen in a while).
8. Try a mindfulness activity, like meditation or drawing a zentangle.
9. Write and send a letter to someone who could use some encouragement/love.
10. Select a recommendation from our KDL Staff Picks at kdl.org/staff-picks.
11. Play a new board or card game (the library has some for checkout).
12. Repurpose an old item instead of throwing it away.
13. Check out a cookbook and make something new.
14. Hike a nature trail. Check out kentcountyparks.org for suggestions.
15. Watch a movie or listen to a Grammy-winning album from the year you were born.
16. TEENS – Make a film with your friends. You can submit it to the Kent County Teen Film Festival in the winter!
17. Attend one of the programs found on pages 6-11 of the Kaleidoscope issue on the flip-side of this booklet.



BONUS PRIZE!

ENTER TO WIN AN INFLATABLE KAYAK! (These items had previously been in our collection). **Eight lucky adults who choose to be entered into the drawing** will win one inflatable kayak. Visit kdl.org/summer-kayak for more information.

MAKE A SPLASH

Z Z R S B R W S S C D L T U U A M D V H
D R I P T I O O W N D F S J X P H Q Z G
S Y X R C C G R E G I K M O I B F X Y X
D O F Z R E L V T M H B S P L A S H G W
E X P M I E A Q P H U E P H A E B V C K
K D O E V F C I Z L Q J Y Y X L C E H A
Q Y O U E K I Q S I N V G X Z X A O S F
U D L O R A E W S F W B O T T L E K U L
H Z T I E W R Z C N G B Y C W J M T E N
B A I M X X L Z A O V N T P O E X O M W
Y Q D S Y U I P G Z I G V N V S H W Z I
H M E E T R C V C N R I W V K L T M P M
V Y E A R H E R N U S F T Q H H K E K C
A L D D E F B B J R K L H U S O M O A Z
B O P A G F E Q B K J X K M N U Q W J M
U I Y F S S R P P W H S A C B Z M A I S
S B N X H W G Z J Y D G Q N Y T A V Q M
P W O A D P I S U Q J B B T Y R X E E S
P H R A Y N Q M A O K J K Z X A K N A H
D R A I N F I Z Z L P T E E D R I N K G
W E I V O G R K X Q E P K S W N L J D J
A P U L P Q U G W S R C M Q X F B K U V
E K T K G D S C J V U O C E A N L A W P
N F R N B P R A I N I O N T A T M F F S
T S M R L I Q U I D L D E W N T L J C O

GLACIER	ICEBERG	BOTTLE	SPLASH
LIQUID	DRINK	DRAIN	OCEAN
STEAM	RIVER	WAVE	TIDE
SWIM	POOL	RAIN	LAKE
DRIP	SEA	ICE	WET

Answers are on page 15 of the Kaleidoscope on the flip-side of this workbook.

Be a Fossil Detective

Did you know that Michigan was once covered by ancient seas and glaciers? These oceans and icebergs deposited many kinds of rocks. One of the rock types that is in the Michigan basin is limestone, which is composed of tiny pieces of animal and plant fossils, shell fragments and other fossilized debris. Here is an activity to discover if a rock that you find is limestone.

BE AWARE: Before you start collecting Petoskey stones (or any other natural material), you need to be aware of the collecting rules and regulations where you are. Collecting in national parks is always prohibited, and many state parks also forbid any collecting. One notable exception is Petoskey State Park, just outside Petoskey, where collecting is allowed.

*This activity is
sponsored by*



What you need:

- Rocks
- Piece of Chalk
- Vinegar
- Cups

How to:

1. Find different kinds of rocks in your yard or neighborhood.
2. Put a piece of chalk in one cup and a rock in another cup.
3. With help from your parents, pour vinegar over the chalk and the rock.
4. Is the chalk bubbling or fizzing? Is your rock bubbling or fizzing?
5. How else did your rock change when it was wet?

Fun Fact



Did you know that Michigan's state stone is the Petoskey stone? The Petoskey stone is a fossil from fragments of coral reef that lived in the Michigan seas around 350 million years ago!

What's happening?

When vinegar touches chalk it reacts to the calcium carbonate in the chalk and forms a gas, which creates the bubbles you see. If your rock bubbles or fizzes, it is reacting with the calcium carbonate in the rock (from all the fossils), so you may have found a piece of limestone. What else did you notice about your rock when it was wet? It may be easier to see fossils in a rock when it is wet.

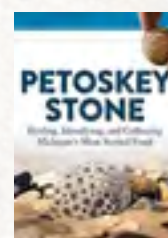
Related Books:



*Weird But True
Know-It-All:
Rocks and Minerals*
by Michael Burgan



*My Book of Rocks
and Minerals:
Things to Find,
Collect, and
Treasure*
by Devin Dennie



*Petoskey Stone:
Finding, Identifying,
and Collecting
Michigan's Most
Storied Fossil*
by Dan R. Lynch

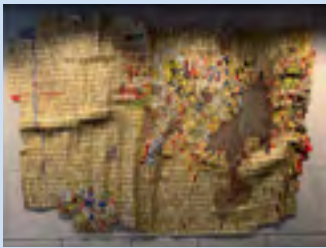
Make Recycled Art

Did you know that the average person in the United States creates five pounds of trash per day? Objects that might be considered trash by some can be used and reinvented as art! Instead of tossing those items into the landfill, this project shows you how to create some beautiful art with them.

What you need:

- One small to medium stick from outside
- Various objects from around your home
- String or yarn
- Scissors

Fun Fact



The artist El Anatsui made art out of recycled beverage containers. He used found material by flattening and connecting each bottle top with copper wire to form large sheets meant to hang vertically. Anatsui's technique developed dramatically through the reformation of individual tops, a practice that allows for extraordinary variation in pattern, color and shape. You can find his piece called *New World Map* on display at Frederik Meijer Gardens.

How to:

1. Go outside and find one sturdy small to medium stick to use as the support for your wall hanging.
2. Tie each end of a long piece of string or yarn to each end of your stick. This is how you will hang up your design.
3. Collect and clean recycled objects from around your home including lids, cans, plastic containers, paperclips, old silverware, broken toys, etc. Be creative!
4. Arrange your composition: Lay your stick and found objects out on a work surface. Consider the different shapes, colors, textures and sizes of your objects and how far from your support stick you want each object to hang. Think about physical balance. For example, where should you hang your heavier objects vs. lighter objects?
5. For each object, cut a piece of string or yarn. We recommend varying the lengths of the strings you cut to add visual interest to your wall hanging.
6. With help from an adult, decide how to hang your objects. Create small holes if needed in your objects and thread the string or yarn through the holes or tie it on. Then tie each object to your base. Hold up your wall hanging. Is it symmetrical or asymmetrical? Do you notice any patterns? If you do not like the way your work of art hangs, try rearranging your objects.
7. Display your new wall hanging to share with friends and family!

This activity is sponsored by

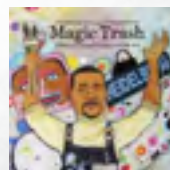




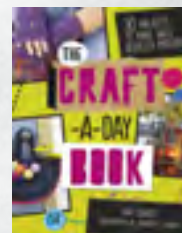
What's happening?

When creating a work of art, artists consider visual balance as well as physical balance. Bold colors and larger shapes feel more massive than muted colors and smaller shapes. Symmetrical images use the same shapes and sizes on each side. Asymmetrical images do not match on each side but still feel like there is a similar amount of weight.

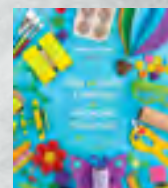
Related Books:



*Magic Trash:
A Story of Tyree
Guyton and His Art*
by J. H. Shapiro



*The Craft-a-Day
Book: 30 Projects to
Make With Recycled
Materials*
by Kari A. Cornell



*Fun and Easy
Crafting With
Recycled Materials:
60 Cool Projects
That Reimagine
Paper Rolls, Egg
Cartons, Jars and
More!* by Kimberly
McLeod

Make a Ping Pong Ball Float

Did you know that the air that you breathe every day is considered a “fluid”? Daniel Bernoulli is a famous scientist who studied fluids, including air. This experiment will show you how air pressure allows an object to fly.



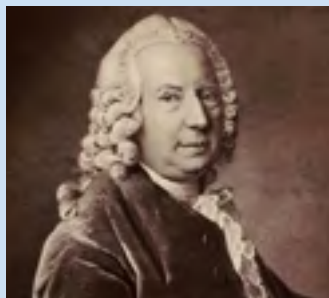
What you need:

- One ping pong ball
- One empty plastic water bottle, juice bottle or soda bottle
- Scissors

How to:

1. Ask an adult to help you cut the bottom 2/3 off a plastic bottle.
2. Place the ping pong ball into the bottle neck.
3. Hold the bottle top above your face and mouth like a funnel.
4. Blow into the bottle to try to blow the ping pong ball out of the bottle.

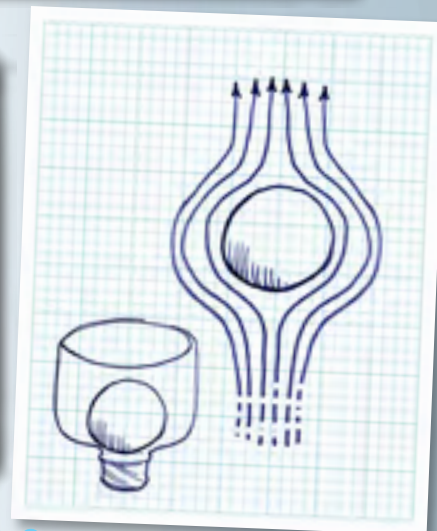
Fun Fact



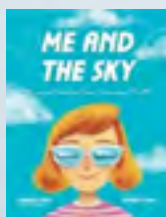
in 1738, a mathematician and scientist named Daniel Bernoulli studied the phenomenon of how air moves around an object. He discovered that as air moves around, it creates different pressures on that object. Faster air means less pressure, and slower air means more pressure.

What's happening?

Bernoulli demonstrated that a stream of air will flow around the spherical shape of the ping pong ball and will trap it inside the stream. If you have enough space, go ahead and swing your arm through the air. You can feel air as you do this because air moves like water. When air flows over an object it creates pressure. If the pressure is higher on the bottom, it will push an object up.



Related Books:



Me and the Sky
by Beverley Bass,
Pioneering Pilot



Planes! (and Other Things That Fly)
by Bryony Davies



Ask a Pilot: A Pilot Answers Kids' Top Questions About Air Travel
by Justin Kelley

This activity is sponsored by



Musical Bottles

Experiment with an instrument made from glass bottles filled with water. As you sharpen your musical skills, you'll be giving concerts for your friends in no time!

What you need:

- Three or more clean glass bottles of the same type and size.

Be careful with the glass.

- Pencil
- Water



How to:

1. Fill three or more bottles with various levels of water. Tap each bottle with a pencil. Try tapping in different spots. How do the bottles sound? Put the bottles in order from lowest sound to highest sound. How much water is there in the bottle with the lowest pitch? How much water is there in the bottle with the highest pitch?
2. Now blow across the mouth of each bottle. How do the bottles sound? Are they still in order from lowest to highest sound?
3. Alternate activity: You may use identical drinking glasses instead, the narrower the better. Be sure they are glass. Use a pencil to tap the glasses to make the sound instead of blowing across them.

What's happening?

Sounds are made by vibrations. When you tap the bottle with a pencil, the water vibrates and produces a note. When you blow across the mouth of a bottle, you will get a different sound because the water is not what is vibrating. Instead, the air in the bottle is vibrating. This is called the “resonating chamber.” Blowing across the mouth of the bottle produces sound waves. If the resonating chamber is large (only a little water in the bottle), the vibrations are slow and the pitch is low. If the resonating chamber is small (bottle is almost full of water), the vibrations are fast and the pitch is high.

Fun Fact



Instruments are made and played all around the world! Did you know there are over 1,500 types of musical instruments? These musical instruments are broken down into six major categories: bowed strings, woodwind, brass, percussion, keyboard and the guitar family.

This activity is sponsored by



Music and How It Works: The Complete Guide for Kids
by Charlie Morland



*The Science of Song:
How and Why We
Make Music*
by Alan Cross



50 Things You Should Know About Music by Rob Baker

Animal Adaptations

Animals have many different adaptations that help them survive. Some features of their bodies help them in the summer and some help them survive the cold winter. What body covering keeps an animal warm the longest? This experiment will demonstrate whether fur, feathers, scales or an extra layer of fat work best for keeping an animal warm.

What you need:

- Four sandwich-sized plastic bags
- One bowl of icy water
- One stopwatch or something that can count seconds
- Bits of scrap paper*
- One thick sock (wool works best)*
- Craft feathers or a mitten with down feathers*
- One cup of butter or shortening*



How to:

1. Prepare a container of icy, cold water and dip your bare hand into the water.
2. Leave your hand in the water until it gets uncomfortably cold. How many seconds can you leave it in the water before it gets too cold? Record your observations on the data table.
3. Put scraps of paper in a plastic bag to imitate scales. Put your hand in the bag. Repeat step two.
4. Put your hand in the sock and cover it with the plastic bag to imitate fur. Repeat step two.
5. Put your hand into the bag with the feathers. Repeat step two.
6. Measure a cup of butter and put it into the plastic bag. Put your hand into the bag. Repeat step 2.

***Don't let water get in the bag!**



Fun Fact



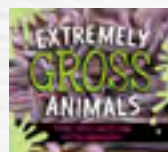
Animals can use a few different strategies to survive the Michigan winter. They can stay active all winter searching for food. They can migrate to a different area of the country where their food source is still plentiful. Or they can hibernate or brumate. Hibernation and brumation are similar strategies where an animal slows down its body functions like breathing and heart rate and goes into a sort of deep sleep. Hibernation is what mammals do; brumation is what amphibians and reptiles do.

Body Covering	Bare Hand	Paper Scraps (Scales)	Wool Sock (Fur)	Feathers	Butter (Fat)
How many seconds can you keep your hand in icy water?					

What's happening?

Animals have developed many adaptations that allow them to thrive. Animals with thick coats of fur and/or feathers and animals with a layer of blubber beneath their skin can tolerate extremely cold conditions. Both the external coat and the insulating fat trap warm air near the body, preventing the heat from escaping.

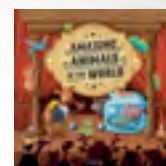
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Extremely Gross Animals: Stinky, Slimy and Strange Animal Adaptations
by Claire Eamer



Funny Butts, Freaky Beaks and Other Incredible Creature Features
by Alex Morss



Amazing Animals of the World
by Jana Nová

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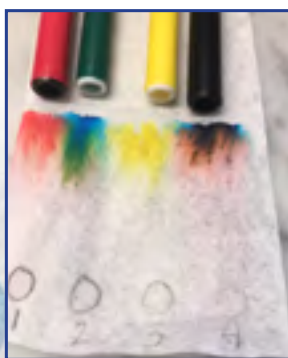
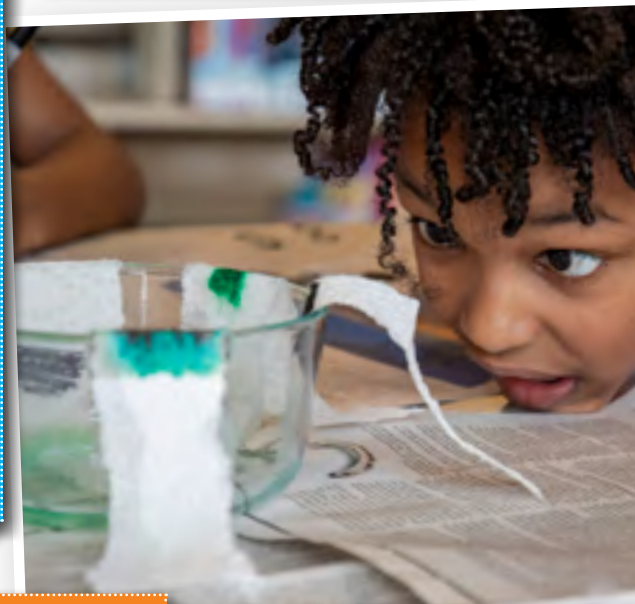
Active

What you need:

- Markers (brown, black and green work best)
- Paper towels
- Water
- Container for water
- Covering for your work surface

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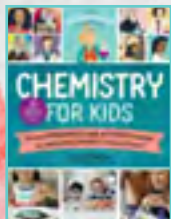
1. Cover your work surface with newspaper, wax paper, etc.
2. Cut long strips about one inch wide from a paper towel. Select a marker and draw a line across the strip about two inches from the bottom.
3. Fill a container with a small amount of water. Place only the white space under the marker line into the water.
4. Drape the rest of the strip over the edge of the dish, with the end resting on your work surface. Watch the color spread as the water is drawn to the dry area of the paper towel. What colors do you see?
5. Repeat the process with other color markers. Do you observe differences in the results?



Paper chromatography is a method used by chemists to separate the parts of a solution. A solvent (such as water) is allowed to absorb up the paper strip. As it absorbs, it takes part of the mixture with it. Parts of the solution separate and become visible as strips of color. While the ink in the colored markers appears to be a single color, they are actually mixtures of several different colored pigments.

Chromatography methods are used by detectives as a powerful tool in forensic science to help solve serious crimes. They can be used to identify chemical compounds that may be present in samples from ink and lipstick to explosives used in bombs.

Related Books: ● ● ● ● ● ● ● ● ● ●



The Awesome Book of Edible Experiments for Kids
by Dr. Kate Biberdorf

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How Far Can You Throw?

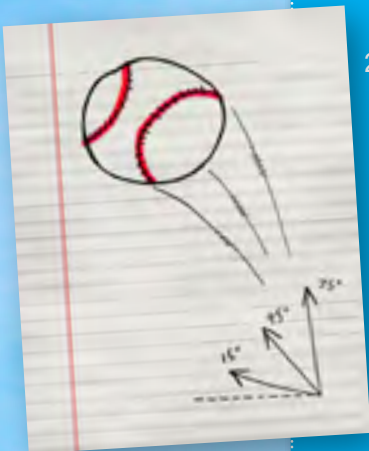
Have you ever wondered how a baseball player knows how to throw a ball so far? There is some science behind these throws, and sometimes it is all about the angle. What type of angle do you think will get the farthest distance – shallow, steep or medium? Try this sports science project to find out!

What you need:

- A ball of your choice (baseball, tennis ball, football, etc.)
- Large open area to throw the ball
- Three each of three different objects to mark where the ball lands on the ground. Ex: *three sticks, three rocks AND three golf balls*
- Someone to help mark your throws

How to:

1. Pick a place to stand in a large, open area. Mark a place on the ground so you know to always throw the ball from that location.
2. Make your throws, throwing three times total at each angle. Remember to try and consistently throw the ball as hard as possible.
 - a. Throw your ball at a “shallow” angle, about 15 degrees – as parallel to the ground as you can. Have your helper mark where the ball lands (with a rock, for example) and repeat this step two more times.
 - b. Repeat the procedure for a “medium” angle (outward and upward) of about 45 degrees three times. Again, have your helper mark where the ball lands, but this time with a different object.
 - c. Finally, repeat the steps at a “steep” angle (up in the air and slightly forward but not straight up) of about 75 degrees three times. Have your helper mark where the ball lands with your final object.
3. Now, analyze the results of your experiment by looking at the markers. Which throws went farthest? What angle do you think is best if you want to throw the ball as far as possible? Try the experiment using different types of balls. Did you get different results?





Fun Fact

