



# SUMMER!

## FUN ACTIVITY BOOK



**TWEENS**



On TV. Online. Statewide. VISIT [MichiganLearning.org](http://MichiganLearning.org)

# SPECIAL THANKS TO OUR MICHIGAN LEARNING CHANNEL PARTNERSHIPS:

## Content Partners:

826Michgian  
American Chemical Society  
Ann Arbor District Library  
Battle Creek Symphony Orchestra  
Career Girls  
Chris Anderson Science Around Cincy  
City Opera House  
CODE.org  
Colorado Springs Conservatory  
Detroit Institute of Arts  
Detroit Zoo  
Grand Rapids Ballet  
Huron-Clinton Metroparks  
Illustrative Mathematics  
INPACT at Home  
Kinetic Affect  
LearningSciencelsFun  
Library of Congress  
Little Kids Rock  
Lucky Cat Productions  
MAISA Literacy Essentials  
Michigan Architectural Foundation  
Michigan DNR  
Michigan EGLE  
Michigan Humanities Council  
Midland Center for the Arts  
Mindful Practices  
Mr. E in the D  
MSU Extension  
NASA  
North Carolina  
Department of Public Instruction  
Positive Impact for Life  
SchoolKit  
Roadtrip Nation

SciGirls  
Signing Time  
SIS4Teachers  
Speak It Forward  
Square One Education Network  
STEM Greenhouse  
Story Pirates  
Storycorps  
The Diatribe  
Traverse City Area Public Schools  
United States Air Force  
WORLD Channel  
YouCubed

## Local PBS Stations

WKAR - East Lansing  
Detroit Public Television  
WCMU - Mount Pleasant  
WDCQ - Saginaw  
WGVU - Grand Rapids  
WNIT - South Bend  
WNMU - Marquette

## Partner PBS Stations

PBS  
PBS Books  
PBS Kids  
APT (Alabama Public Television)  
LPB (Louisiana Public Broadcasting)  
PBS SoCal  
PBSNC  
TPT (Twin Cities PBS)  
WCMU  
WHRO  
WIMAGE  
WNET (New York Public Media)  
WQED  
WUCF

**WATCH on the Michigan Learning Channel  
or stream the channel at [MichiganLearning.org](https://MichiganLearning.org)**



Visit [MichiganLearning.org](https://MichiganLearning.org) and follow  
@MichLearning on social media to find out more.



### **DEAR GROWN-UPS,**

Summer is full of opportunities to play and learn and we want to make it easy to find inspiring, kid-friendly activities! That's why we've worked with PBS stations and content creators from across the country to bundle up some of our favorite activities into one, easy-to-carry-anywhere book. We hope you and your kids will use this to inspire learning all summer long!

Here are a few quick tips to keep your kids excited about learning this summer:

- **ASK LOTS OF QUESTIONS.** Encourage your kids to participate in conversations by asking them questions like: Why do you think that happened? What will happen next?
- **ENCOURAGE KIDS TO SEARCH FOR ANSWERS.** When your children ask you "why?" see if you can work together to figure out what they need to know or do to find the answer.
- **TRY SOMETHING NEW.** Summer is a great time to try new things like reading a new kind of book, tasting a new food or exploring a new park.
- **JUST HAVE FUN.** Summertime only comes along once a year, so be sure to take the time to relax and have fun while you're learning.
- **BUILD LASTING, POSITIVE MEMORIES THAT WILL LAST A LIFETIME!**

### **HOW TO USE THIS BOOK**

- Keep in mind that this book spans multiple grade levels. Your child won't be using every single page, but choosing a few lessons each week. The goal is to keep kids' brains engaged with a taste of reading, writing, math, art, science, and physical activity every week.
- The grade levels are merely guides to get you started. We recommend starting with the grade that your child just completed and adjusting as needed. Don't be shy about using a different grade level or just picking and choosing lessons that look interesting. This has been a tough year for our children and we want your child to feel proud and confident.
- This book aligns with the content on the Michigan Learning Channel, which can be used on live tv or on demand. There are about 2-3 hours a week of video lessons, plus lots of activities in this book that don't use a screen. We recommend getting outside everyday, reading everyday and having enjoyable moments together as a family!
- This book is designed to use for 8 weeks of summer. We suggest spreading it out over a few days each week and finding a time that works for your family. If you have older children they may do better in the evenings.
- As you go through the weeks, you will find each week has a theme and a link to videos that go with the activities. You can find all the video lessons, plus interactive virtual events and more at [www.michiganlearning.org/summer](http://www.michiganlearning.org/summer).

How do the students in your life use the Michigan Learning Channel? We would love your feedback! Feel free to contact us at [mlc@dptv.org](mailto:mlc@dptv.org).

**Michigan Learning Channel Team**  
**MichiganLearning.org**



# Dates and Themes

**The summer program runs from June 20 to August 14, 2022.**

Each week has a set of lessons, plus additional programs, activities, and field trips based on the weekly theme.

## **Take Flight (June 20-26):**

From planes and kites to butterflies and birds, discover the fables and physics of things that fly.

## **Under Water (June 27-July 3):**

Dive deep into oceans, rivers, and our own Great Lakes to discover what it takes to live beneath the waves.

## **Heroes (July 4-10):**

Celebrate our nation's birthday and the people we call heroes, whether they are veterans, everyday helpers, or the kind who wear capes.

## **Creatures (July 11-17):**

From the prehistoric to the present, learn about the fascinating features of creatures near and far.

## **Engineering (July 18-24):**

Meet the people who design bridges, cars, and video games and learn how to think like an engineer.

## **Great Outdoors (July 25-31):**

Explore the world outside your door and the incredible parks and waters that belong to us all.

## **When I Grow Up (August 1-7):**

All summer we'll learn about different careers—this week, think about all the exciting possibilities in your future!

## **Shoot for the Stars (August 8-14):**

Look up at the night sky and into outer space and meet people who risked everything to follow their dreams.



On TV. Online.  
Statewide.

Learn more about the Michigan Learning Channel at  
**Facebook Live at [fb.me/michlearning](https://fb.me/michlearning)**  
**[www.michiganlearning.org/summer](http://www.michiganlearning.org/summer)**



Follow @MichLearning on social media to find out more.



# Where to Find the Michigan Learning Channel

Find your favorite shows anywhere you go!

## Scan the QR Code:

Scan any of the QR codes in this book to see the accompanying video right on your device.

### On Demand:

Video lessons and activities at [MichiganLearning.org](https://MichiganLearning.org)

Click your grade level for this week's selected lessons

Or, use "Find a Lesson" to search by grade, subject, and educational standard

### On the App:

Find shows on the free PBS app

The PBS App is available for mobile devices, Roku, Apple TV, and on many Smart TVs.

Search for Read Write Roar, Math Might's, Extra Credit, DIY Science Time, Wimee's Words, InPACT at Home, Simple Gift Series, and more great programs.

### On the Livestream:

Watch the 24/7 livestream at [MichiganLearning.org/live-tv](https://MichiganLearning.org/live-tv)

### On TV:

Find us on broadcast television with an antenna

### Coming soon to:

Charter Cable services in Northern Michigan and the Upper Peninsula.  
Visit [MichiganLearning.org/Schedule](https://MichiganLearning.org/Schedule) for details



On TV. Online.  
Statewide.

Learn more about the Michigan Learning Channel at  
**Facebook Live at [fb.me/michlearning](https://fb.me/michlearning)**  
**[www.michiganlearning.org/summer](https://www.michiganlearning.org/summer)**



Follow @MichLearning on social media to find out more.

The Michigan Learning Channel is funded through a grant awarded by the Michigan Department of Education and the U.S. Department of Education.





Serving Schools Statewide  
Through Your Local PBS Stations

**Watch On-Demand at  
MichiganLearning.org**

**f t i @MichLearning**

**The Michigan Learning Channel  
is Available On:**



**WCMU**  
**Alpena** Channel 6.4

**Cadillac**  
Channel 27.4

**Manistee**  
Channel 21.4

**Mt. Pleasant**  
Channel 14.4  
Shelby Shawl  
Shelby.shawl@cmich.edu

**WDCQ**  
**Delta College Public Media**  
Channel 19.5  
Lauren Saj  
laurensaj@delta.edu  
(989) 686-9346

**WGVU**  
**Grand Rapids**  
Channel 35.6

**Kalamazoo**  
Channel 52.6  
Rachel Cain  
cainra@gvsu.edu

**WKAR**  
**WKAR Public Media**  
Channel 23.5  
Summer Godette, M.Ed,  
summer@wkar.org  
(517) 884-4700

**WNMU**  
**WNMU-TV**  
Channel 13.4  
Ellen Doan  
WNMU Public Media  
edoan@nmu.edu  
(906) 227-6765

**WTVS**  
**Detroit Public TV**  
Channel 56.5  
Olivia Misterovich  
omisterovich@dptv.org

**WNIT**  
**Michiana PBS**  
Channel 34.5  
Sheri Robertson  
srobertson@wnit.org  
Cass and Berrien  
counties

**COMING SOON**  
**to Charter Cable in**  
Northern and Mid-Michigan  
and the Upper Peninsula

## Rescan Your TV to watch on Broadcast

Your remote control and TV menus may vary, but the steps are the same. Your TV will scan for all available channels.

TV sets connected to cable, satellite or other pay TV providers do not need to scan.

### How to Scan

1. Press menu on your remote control.
2. Select setup.
3. Choose antenna then channel scan or auto tune.



# WEEKDAY SUMMER SCHEDULE

TIME	GRADE	WHAT'S ON
5AM	<b>Preschool - Kindergarten</b>	Let's Learn
6AM		PBS Kids shows
6:30AM		Wimee's Words, Simple Gifts Series
7AM		Let's Learn
8AM		Read, Write, ROAR! (Kindergarten)
8:30AM		Math Might's (Kindergarten)
9AM	<b>1st - 3rd Grade</b>	Read, Write, ROAR! (1st Grade)
9:30AM		Math Might's (1st Grade)
10AM		Read, Write, ROAR! (2nd Grade)
10:30AM		Math Might's (2nd Grade)
11AM		Read, Write, ROAR! (3rd Grade)
11:30AM		Math Might's (3rd Grade)
12PM		Live From the City Opera House: It's Storytime
12:30PM		PBS Kids shows
1PM	<b>4th - 6th Grade</b>	Extra Credit
1:30PM		Math & Movement
2PM		Story Pirates
2:30PM		DIY Science Time, SciGirls
3PM		Curious Crew
3:30PM	<b>1st - 3rd Grade</b>	Cyberchase, Into the Outdoors
4PM		Read, Write, ROAR! (2nd & 3rd Grade)
4:30PM		Math Might's (2nd & 3rd Grade)
5PM	<b>Preschool - Kindergarten</b>	Read, Write, ROAR! (Kindergarten & 1st Grade)
5:30PM		Math Might's (Kindergarten & 1st Grade)
6PM		Let's Learn
7PM	<b>4th - 6th Grade</b>	Extra Credit
7:30PM		Math & Movement
8PM		Story Pirates
8:30PM		DIY Science Time, SciGirls
9PM 5AM	<b>6th - 12th Grade</b>	Nature, NOVA, American Experience, Ken Burns and other PBS programming

**Details at [MichiganLearning.org/schedule](https://MichiganLearning.org/schedule)**

rev 02/22

**WATCH on the Michigan Learning Channel.**  
Episodes are available on-demand or stream the channel at  
**[MichiganLearning.org/summer](https://MichiganLearning.org/summer)**

Visit [MichiganLearning.org](https://MichiganLearning.org)  
and follow [@MichLearning](https://twitter.com/MichLearning)  
on social media to find out more.





# Learn at Home with PBS KIDS

**Schedule Begins October 4, 2021**

Explore reading, math, science, life lessons, and more on the PBS KIDS 24/7 channel and live stream!  
The TV schedule below offers you and your child a chance to learn anytime alongside your friends from PBS KIDS.

TIME (M-F)	SHOW	GRADE	LEARNING GOALS
6/5c am	The Cat in the Hat Knows a Lot About That!	PK-1	Science & Engineering
6:30/5:30c am	Ready Jet Go!	K-2	Science & Engineering
7/6c am	Peg + Cat	PK-K	Math
7:30/6:30c am	Super WHY!	PK-K	Literacy
8/7c am	Daniel Tiger's Neighborhood	PK-K	Social & Emotional Learning
8:30/7:30c am	Daniel Tiger's Neighborhood	PK-K	Social & Emotional Learning
9/8c am	Sesame Street	PK-K	Literacy, Math, Social & Emotional Learning
9:30/8:30c am	Elinor Wonders Why	PK-K	Science & Engineering
10/9c am	Clifford the Big Red Dog	PK-K	Social & Emotional Learning, Literacy
10:30/9:30c am	Dinosaur Train	PK-K	Science
11/10c am	Let's Go Luna!	K-2	Social Studies
11:30/10:30c am	Curious George	PK-K	Math, Science & Engineering
12 pm/11c am	Nature Cat	K-3	Science
12:30 pm/11:30c am	Xavier Riddle and the Secret Museum	K-2	Social & Emotional Learning
1/12c pm	Molly of Denali	K-2	Literacy
1:30/12:30c pm	Hero Elementary	K-2	Science & Engineering
2/1c pm	Cyberchase	1-5	Math & Science
2:30/1:30c pm	Pinkalicious & Peterrific	PK-1	The Arts
3/2c pm	Pinkalicious & Peterrific	PK-1	The Arts
3:30/2:30c pm	Elinor Wonders Why	PK-K	Science & Engineering
4/3c pm	Donkey Hodie	PK-K	Social & Emotional Learning
4:30/3:30c pm	Curious George	PK-K	Math, Science & Engineering
5/4c pm	Alma's Way	K-1	Social & Emotional Learning
5:30/4:30c pm	Xavier Riddle and the Secret Museum	K-2	Social & Emotional Learning
6/5c pm	Molly of Denali	K-2	Literacy
6:30/5:30c pm	Hero Elementary	K-2	Science & Engineering

Access FREE, at-home learning activities, tips, and more on [pbskidsforparents.org](https://pbskidsforparents.org)

PBS KIDS and the PBS KIDS logo are registered trademarks of Public Broadcasting Service. Used with permission.





# LIVE Virtual Events

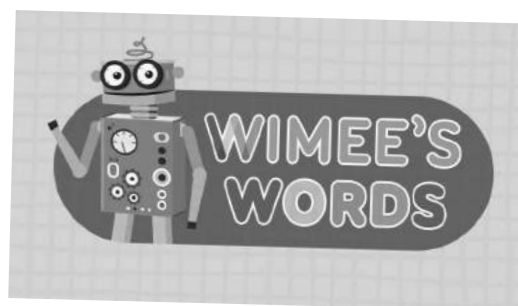
As part of the Summer Program, students can participate in live virtual events via Facebook Live. Events are interactive and presenters will take student suggestions and questions in real time. Recorded versions of these events will also be available online.

Live virtual events will be hosted on the Michigan Learning Channel Facebook page.

## Wimee's Words Live!

Recommended for ages 4-8

Join the loveable robot puppet Wimee and his friends as they discover more about the weekly theme. Wimee needs your help to write stories! Give Wimee your favorite words and ideas in the comments and watch as he incorporates them into stories and songs in real time. Your ideas may even be featured in future episodes of "Wimee's Words" on PBS!



**Wimee's Words Live! with the Michigan Learning Channel**  
**Every Wednesday, June 21-August 9, 4pm**  
**Live on the Michigan Learning Channel Facebook page**

## Great Lakes Now Watch Party with the Belle Isle Aquarium

Recommended for ages 8 and up

The monthly PBS show *Great Lakes Now* explores the water, people, and environmental issues that tie together the whole Great Lakes basin. Once a month, they team up with the Belle Isle Aquarium to take a deep dive into the themes of the show. Students will have the chance to ask questions of the guest scientists and meet fantastic fish and other creatures.



**GREATLAKESNOW**

**Great Lakes Now Watch Party**

**Friday, July 1, 1pm**

**Friday, August 5, 1pm**

**Live on the Michigan Learning Channel Facebook page**



On TV. Online.  
 Statewide.

Learn more about the Michigan Learning Channel at  
**Facebook Live at [fb.me/michlearning](https://fb.me/michlearning)**  
**[www.michiganlearning.org/summer](http://www.michiganlearning.org/summer)**



Follow @MichLearning on social media to find out more.



# Learn Anywhere!

## On Air. Online. On Demand.

Serving students statewide through your local PBS station, the Michigan Learning Channel has everything kids need to build their brains and engage in learning key concepts to succeed in school!



### Preschool

Read, sing, and play with your little one.

#### Wimee's Words

*Join Wimee, the fun, lovable robot that inspires kids to learn through creativity.*

#### Simple Gift Series

*Make music, find something new, and read with Betty the Bookworm.*

#### POP Check

*Mindful practice tools to Pause, Own what we are feeling, and Practice relaxing.*

### Kindergarten to 3rd Grade

Keep kids learning with fun lessons taught by Michigan teachers.

#### Read, Write, Roar

*Kids build literacy skills with engaging ELA lessons.*

#### Math Might

*Build number sense and learn strategies for solving math problems.*

#### InPACT

*Get moving with this home-based physical activity program.*

### 4th to 6th Grade

Short, engaging videos and hands-on lessons keep tweens engaged.

#### Extra Credit

*Creative writing, math, fitness, career exploration, and more!*

#### Curious Crew

*Dr. Rob Stephensen and inquisitive kids take a hands-on approach to scientific exploration.*

#### Story Pirates

*Bite-sized literary lessons with comedians, authors, and teachers.*



VISIT us online to view all shows, learn about events,  
and download activities!

**[www.michiganlearning.org](http://www.michiganlearning.org)**

Follow @michlearning to find out more.



# Learn at Home with PBS KIDS

Play and learn anytime and anywhere with free apps from PBS KIDS! Use the chart below to find the app that aligns to your child's grade, learning goal, and favorite PBS KIDS show - then download it on your on your mobile or tablet device to play online, offline, or anytime.

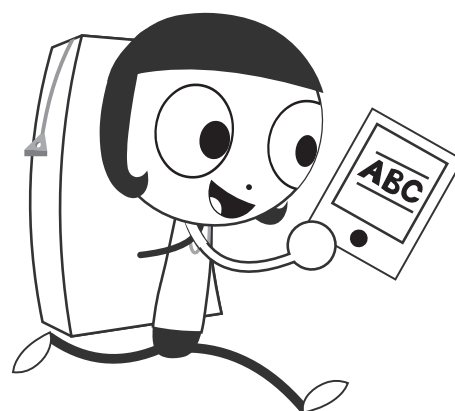


## Apps for Social & Emotional Learning

Daniel Tiger for Parents	PK-K	Social & Emotional Learning
PBS KIDS Games app	K-2	Multiple Learning Goals
PBS KIDS Video app	K-2	Multiple Learning Goals

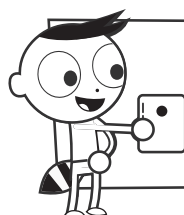
## Apps for Literacy Learning

Dinosaur Train A to Z	PK-K	Literacy, Science
Molly of Denali	K-2	Literacy
PBS KIDS Games app	K-2	Multiple Learning Goals
PBS KIDS Video app	K-2	Multiple Learning Goals



## Apps for STEM Learning (Science, Technology, Engineering & Math)

PBS Parents Play & Learn	PK-K	Literacy, Math	Photo Stuff with Ruff	K-2	Science
Play & Learn Engineering	PK-K	Science and Engineering	Ready Jet Go! Space Explorer	K-2	Science
PBS KIDS Measure Up!	PK-K	Math	Ready Jet Go! Space Scouts	K-2	Science and Engineering
Play & Learn Science	PK-K	Science	Nature Cat's Great Outdoors	K-3	Science
Splash and Bubbles for Parents	PK-K	Science	PBS KIDS ScratchJr	1-2	Coding
Splash and Bubbles Ocean Adventure	PK-K	Science	Outdoor Family Fun with Plum	1-3	Science and Engineering
The Cat in the Hat Builds That!	PK-K	Science and Engineering	Cyberchase Shape Quest	1-5	Math
The Cat in the Hat Invent's	PK-K	Science and Engineering	PBS KIDS Games app	K-2	Multiple Learning Goals
Jet's Bot Builder: Robot Games	K-2	Science and Engineering	PBS KIDS Video app	K-2	Multiple Learning Goals



[pbskids.org/apps](https://pbskids.org/apps)



# Week 4: Creatures
















July 11-17

From the prehistoric to the present, learn about the fascinating features of creatures near and far.

Use the sheet below to mark off this week's activities as you complete them. See if you can get a BINGO!

Playlists this week: [www.michiganlearning.org/creatures](http://www.michiganlearning.org/creatures)



 Watch Math Park	 60 mins. of activity	 Read 20 minutes	Catch a firefly	Make pendulum art (pg. 39)
 Read 20 minutes	 Watch Story Pirates	Watch Extra Credit	Watch DIY Science Time	 60 mins. of activity
 60 mins. of activity	Create a food web (pg. 36)	 HAVE FUN! (Free Space)	Watch InPACT at Home	 Read 20 minutes
Watch DIY Science Time	Watch Extra Credit	 Watch Math Park	 Watch Story Pirates	Play Trail-Tac-Toe (pg. 38)
 Go fishing	 Read 20 minutes	Make elephant toothpaste (pg. 41)	 60 mins. of activity	 Watch Math Park



# All Tangled Up

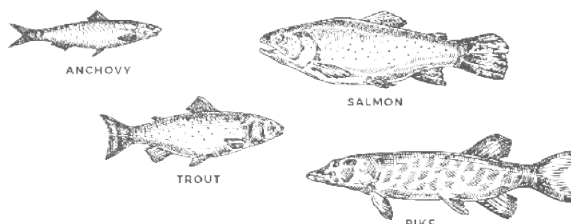
## We're All Connected!

All organisms in an ecosystem depend on each other to survive; when one species starts to decline, multiple species may be affected because of the interconnectedness of life within the system. A food web shows how energy moves through a community and the relationships among the different food chains. Scientists monitor species in an ecosystem to make sure everything is in balance.

## You'll Need

2 Hours

- notecards
- string or yarn
- **optional:** *SciGirls Nature Nurture Journal* (You can download this booklet from [scigirlsconnect.org/groups/kids](http://scigirlsconnect.org/groups/kids)).
- clear tape
- markers
- plain white paper
- colored paper



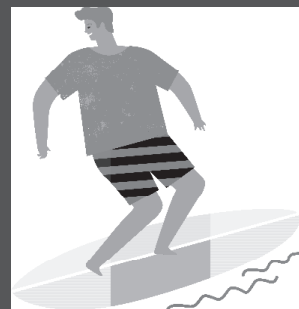
## SMART START:

- ★ **Create** a list of plants or animals within an ecosystem in your area (woodland or temperate forest, wetland, freshwater lake or pond, ocean, rain forest, desert, prairie). Make sure to include producers, herbivores, carnivores, omnivores, decomposers, and scavengers in your list.
- ★ **Explore** your neighborhood to think about all the different kinds of ecosystems you see every day!

SEAFLOOR  
EXPLORER

## Seafloor Explorer

In the Seafloor Explorer project, researchers seek answers to ecologically critical questions about marine biology by studying over 30 million images of the ocean floor. Seafloor Explorer is a part of the Zooniverse network of citizen science projects—projects that use volunteers' contributions to help researchers make scientific discoveries.  
[seafloorexplorer.org](http://seafloorexplorer.org)  
[zooniverse.org](http://zooniverse.org)



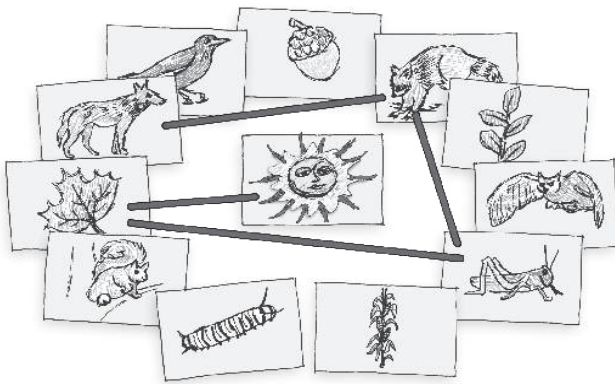


# All Tangled Up

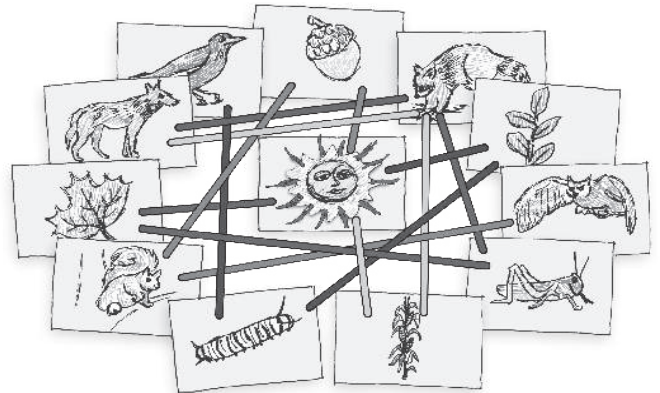
**1. Discuss ecosystems.** An ecosystem is a community of living (plants, animals, and microbes) and nonliving (air, water, and soil) components that interact. Choose an ecosystem that you are familiar with and create a list of all the living things in it. Use the list you generated in the SMART START to guide the discussion.



**2. Create a food web.** Draw each living thing you brainstormed on a separate notecard. Add the card “sun” to your collection, as the sun is the energy source for plants and the nexus for your food web. Put the cards in a circle around the sun card. Using a ball of yarn, begin the first food chain at the sun: The sun passes the yarn to a plant of your choice. The plant then passes it to an animal (herbivore/omnivore) that consumes that plant. The animal passes it to another animal (carnivore/omnivore) that is their predator. Build the chain, ending at the top predator, then cut the string.



**3. Draw conclusions.** Now apply your knowledge of ecosystems to create multiple food chains to form an interactive food web. Start again at the sun. Create multiple food chains until every card has at least one string. (See diagram below.)



# TRAIL-TAC-TOE

## CAN YOU GET THREE IN A ROW?

When you visit a park or take a walk in your neighborhood, draw or write in the items below and tell where you saw them.

<p>What? Where?</p>          <p>Something that could be eaten by an animal</p>	<p>What? Where?</p>          <p>A native prairie grass</p>	<p>What? Where?</p>          <p>An invasive species</p>
<p>What? Where?</p>          <p>Something in nature that is bright red</p>	<p>What? Where?</p>          <p>Somewhere or something that helps keep water clean</p>	<p>What? Where?</p>          <p>An insect home</p>
<p>What? Where?</p>          <p>Something in nature older than you.</p>	<p>What? Where?</p>          <p>A yellow flower</p>	<p>What? Where?</p>          <p>A sign that an animal was here</p>

**METROPARKS.COM**

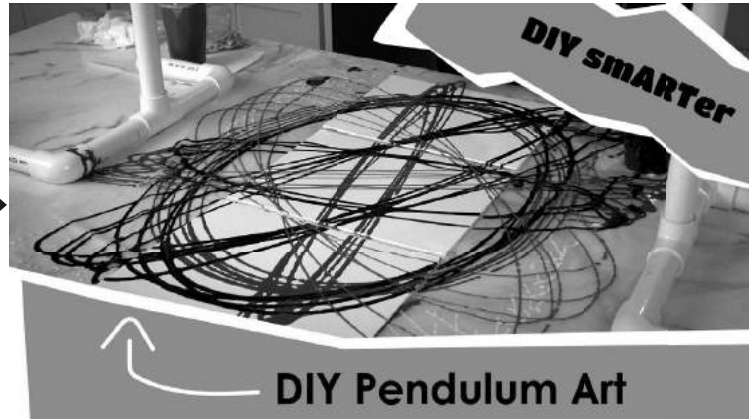
# Pendulum Art



1. Scan the QR code on this sheet to watch the video and follow along with Mister C.



helps you



2. You'll need:

- a. This printout
- b. String
- c. Squeeze bottle or plastic cup for your bob
- d. Scissors
- e. Rubber bands and paperclips
- f. Paint
- g. Paper or canvas for painting

## Discussion Questions:

What might happen if you use a longer or shorter string? How does the period of the pendulum impact your art?

What might happen if you give the condiment bottle a harder or softer push?

Does the type of paint impact the flow or pattern?

## Fun Fact:

Pendulum clocks lose time when it is hot because the heat causes the metal to expand lengthening the rod. This causes the period to increase affecting the ability to keep time.



# DESCRIBE YOUR HERO

What are some words to describe your hero?

What is your hero really **GOOD** at, or what is your hero's **TALENT**?

What is your hero's **WEAKNESS**, or what is your hero **AFRAID** of?

What does your hero like to do on a **NORMAL DAY**, when they don't have a big problem to solve?

# DIY Elephant Toothpaste



## FUN FACT

Seaweed is in our toothpaste! Seaweed acts as a thickening agent that allows toothpaste to be squeezed from its tube!

## MATERIALS

- Yeast
- Dish soap
- Measuring spoons
- Empty plastic bottle
- Cup with warm water
- 3% Hydrogen peroxide

## DIFFICULTY



***Why are chemists great at solving problems?***

*\*Answer on the next page*

## CHEMICAL REACTIONS

Chemical reactions take place when the molecular or ionic structure of a substance is rearranged. When a chemical reaction occurs, a new substance is created and the process is irreversible. Today we will be making elephant toothpaste!

**VISIT**  
**DIYSCIENTIME.ORG**  
FOR MORE SCIENCE FUN!



ALABAMA PUBLIC TELEVISION

Copyright Alabama Public Television and Mister C, LLC 2021



## DIY Elephant Toothpaste

### EXPERIMENT

**Step 1:** Gather materials.

**Step 2:** Place 2 tablespoons of yeast into 3 oz of warm water.

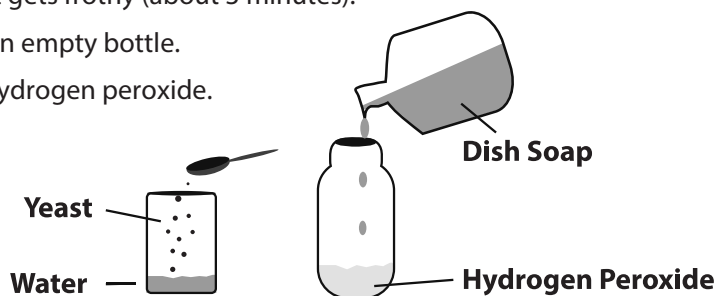
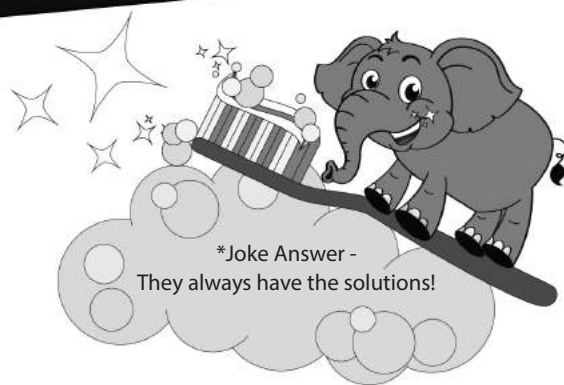
**Step 3:** Mix yeast and warm water, let stand until it gets frothy (about 3 minutes).

**Step 4:** Pour 4 ounces of hydrogen peroxide into an empty bottle.

**Step 5:** Squirt 1 tablespoon of dish soap into the hydrogen peroxide.

**Step 6:** Pour your yeast mixture into the bottle.

**Step 7:** Observe what happens!



### WHY IT WORKS

"Elephant toothpaste" is created when a chemical reaction takes place and releases one oxygen atom from the hydrogen peroxide ( $H_2O_2$ ). Hydrogen peroxide decomposes, or breaks down, into water ( $H_2O$ ) and oxygen ( $O_2$ ) naturally over time, but the yeast causes this to occur faster. The yeast has an enzyme in it called catalase. Catalase is a catalyst, something that increases the speed of the reaction. The catalyst is what causes the oxygen to be released quickly to create our "elephant toothpaste." So why did we add soap? We wanted to capture all of the released oxygen (gas) from the chemical reaction!

### EXTEND YOUR LEARNING

- Would the experiment still work if you added more yeast?
- What happens if you don't add the soap?
- Does the shape or the size of the bottle change how the elephant toothpaste flows?

### WORKFORCE CONNECTION

Cosmetologists, people who study the application of beauty treatments, work carefully with chemical reactions on a daily basis to help color people's hair. When someone's hair is bleached, a chemical reaction takes place to change the melanin from brown to a colorless (pale yellow) color. This irreversible process (chemical change) then allows the cosmetologist to apply a new color to the hair.

# MATH PARK

## Equivalent Fractions

Directions: Scan the QR code to watch the video, and then circle the symbol that goes between them.

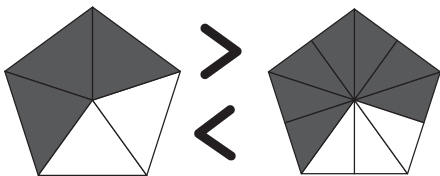
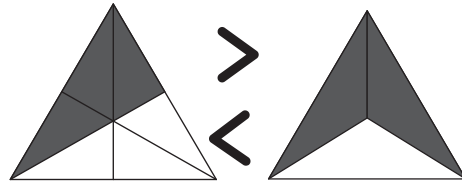


$$\frac{3}{10} > \frac{3}{5}$$

$$\frac{3}{10} < \frac{3}{5}$$

$$\frac{1}{4} > \frac{1}{8}$$

$$\frac{1}{4} < \frac{1}{8}$$

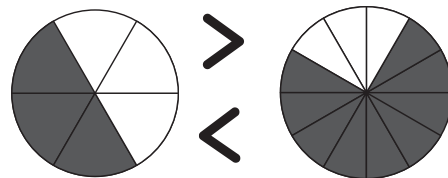


$$\frac{5}{5} > \frac{5}{15}$$

$$\frac{5}{5} < \frac{5}{15}$$

$$\frac{1}{2} > \frac{1}{4}$$

$$\frac{1}{2} < \frac{1}{4}$$



# **SPECIAL THANKS TO OUR MICHIGAN LEARNING CHANNEL FUNDERS:**



Corporation  
for Public  
Broadcasting

**M&MFisher**

Max M. & Marjorie S. Fisher Foundation

THE  
**KRESGE**  
FOUNDATION



W.K.  
KELLOGG  
FOUNDATION™

*A Partner With Communities Where Children Come First*



**The State of Michigan**

**Elaine and Leo Stern  
Foundation**

**The Donald and Mary Kosch  
Foundation**



## **WHAT IS MEET UP AND EAT UP?**

Meet Up and Eat Up provides FREE nutritious meals for children and teens 18 years and younger.

## **HOW DO I SIGN UP?**

No application or sign-up needed, just come and join us!

## **WHERE IS IT?**

To find a location near you

**Visit: [www.michigan.gov/meetupeatup](http://www.michigan.gov/meetupeatup)**

**Call: 211**

**Text: Food to 304-304**

**Mande por texto "Comida" al 304-304**



**SUMMER!**

**FUN ACTIVITY BOOK**

On TV. Online. Statewide.

**WATCH** on the new Michigan Learning Channel  
or stream the channel at [MichiganLearning.org](https://MichiganLearning.org)



Visit [MichiganLearning.org](https://MichiganLearning.org) and follow  
@MichLearning on social media to find out more.

**TWEENS**



The contents of this book were developed under a grant from the U.S. Department of Education. However, those contents do not necessarily represent the policy of the Department of Education, and you should not assume endorsement by the Federal Government. The project is funded by a Ready To Learn grant (PR/Award No. S295A200004, CFDA No. 84.295A) provided by the Department of Education to the Corporation for Public Broadcasting.