From the Bookshelf to the Backyard,

BOOKS MAKE SUMMER FUN!

CAMP WORKMAN

EST 1974

Celebrate Summer with
Hands-on Camp Activities for
Kids in Your Library!

SUMMER IS A GREAT TIME TO BRING KIDS INTO YOUR LIBRARY FOR SOME HANDS-ON FUN. WITH CAMP WORKMAN, WE PROVIDE EVERYTHING YOU NEED TO HOST CUSTOMIZED EVENTS.

The Camp Workman program helps turn your library into a fun-filled summer camp using interactive activities pulled from our top-selling arts & crafts, nature, and science titles for kids. Use those activities to plan an event that will bring kids and their parents into the library. Your Camp Workman event is entirely customizable—you can host a one-hour activity session or plan a summer-long series of events across a range of categories. To get the word out to your patrons, we'll provide you with special assets to promote your Camp Workman event in the library and on social media.

Here's how it works:

1. Review the selection of Camp Workman activities at *bit.ly/campworkmankit* to see the range of available downloadable activities. Decide on a theme, or variety of themes, you'd like to focus on for your camp event. Workman has downloadable activities for these popular themes:

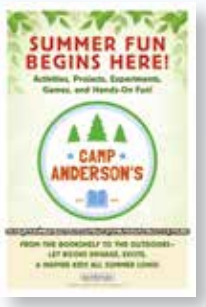
- STEM
- Arts & Crafts
- Nature
- Fun & Games

2. Design your camp program by choosing one of the options below:

- Host a hands-on, one-time camp event around one camp theme (like Arts & Crafts or STEM) or a few themes.
- Or consider hosting a series of events! Some libraries have offered short camp events every day for a week; some have held camp events once a week all summer long. Each event could be tied to a different camp theme or specific book and activity, or each event could encompass several camp themes.

3. Order your books and let us know you're participating.

- You can see all the books that are part of the Camp Workman promotion in Edelweiss at bit.ly/campworkman.
- Let us know that you're planning to host a Camp Workman event by emailing moira@workman.com or caitlinrubinstein@workman.com.
- As soon as we know you're signed up to host an event, you'll receive:
  - A display easel personalized with your library name in the Camp Workman logo.
  - A digital version of the personalized easel for sharing on your social media accounts as well as your newsletter and website.
  - A camp diploma for attendees.



4. Create your display and promote your event:

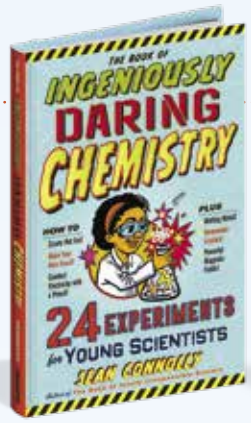
- We suggest creating a camp-themed display to highlight the books you'll be featuring in your program and other titles about nature, summer fun, STEM, or Arts & Crafts. Your display can include the personalized easel we'll create for you as well as any extras like bandannas, camping gear, even a campfire fashioned out of paper towel roll "logs" and red tissue paper.
- Share the personalized digital easel with your followers on your social media channels and newsletter.

5. Need help? Contact Moira Kerrigan (moira@workman.com) to talk about how to personalize Camp Workman for your library.

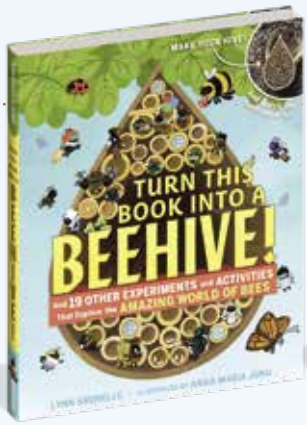
HOST A STEM CAMP!

Bring science to life with hands-on experiments exploring science, technology, engineering, and math. Example activities include:

- Reenact the sinking of the *Titanic* with an ice cube tray and a tub of water.
- Play a game that shows how bees "point" to flowers.
- Make a tornado in a Mason jar.



THE BOOK OF INGENIOUSLY DARING CHEMISTRY
978-0-7611-8010-4
$14.95



TURN THIS BOOK INTO A BEEHIVE!
978-1-5235-0141-0
$19.95

MASON JAR SCIENCE
978-1-61212-986-0
$14.95

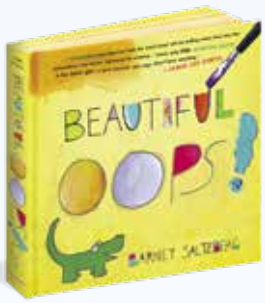
HOST AN ARTS & CRAFTS CAMP!

Help your campers explore their artistic side with classic (and not-so-classic) camp arts & crafts activities. Example activities include:

- Fold origami into the shape of your favorite Star Wars™ characters
- Sew a pillow
- Make "oops art" by turning "mistakes" into art!

STAR WARS™ ORIGAMI
978-0-7611-6943-7
$16.95

SEWING SCHOOL
978-1-60342-578-0
$18.95



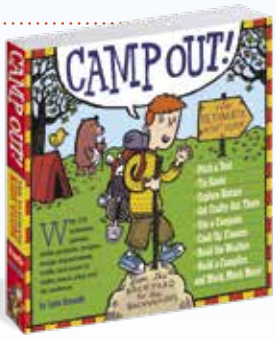
BEAUTIFUL OOPS!
978-0-7611-5728-1
$15.95

HOST A NATURE CAMP!

Bring nature indoors, or bring your campers outside with activities that teach them about plant and animal life. Example activities include:

- Learn the basics of bird language
- Create a plant pressing
- Observe bugs and their habits in the wild (or in a container)

PUT ON YOUR OWL EYES
978-1-63586-022-1
$16.95



CAMP OUT!
978-0-7611-4122-8
$13.95

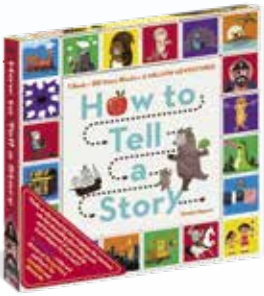
THE BUG BOOK & BUG BOTTLE
978-0-7611-4889-0
$18.95

JUST FOR FUN!

Get kids up and moving and getting to know each other. Example activities include:

- Fold and fly paper airplanes
- Play a storytelling game
- Learn a magic trick

POCKET FLYERS PAPER AIRPLANE BOOK
978-1-5235-0204-2
$9.95



HOW TO TELL A STORY
978-0-7611-8457-7
$19.95

BIG MAGIC FOR LITTLE HANDS
978-0-7611-8009-8
$19.95

HAPPY SUMMER!

CAMP WORKMAN
EST 1974

Make someone's day. Leave a nice note for someone who needs it, without the person knowing it's from you. Write your rough draft here.

EXCERPTED FROM
Strong Is the New Pretty: A Guided Journal for Girls
ISBN: 978-1-5235-0550-0
WORKMAN • workman.com

CAMP WORKMAN

EST 1974

MY LEAST FAVORITE FOOD IS .....

.....

THE SONG THAT GETS STUCK IN MY HEAD IS .....

.....

.....

I DON'T THINK .....

.....

IS FAIR AND I AM GOING TO .....

.....

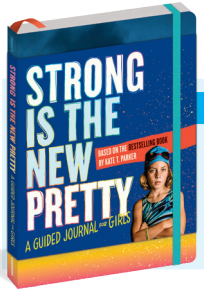
.....

.....

.....ABOUT IT.

SIGNED, ...

.....



EXCERPTED FROM

Strong Is the New Pretty: A Guided Journal for Girls

ISBN: 978-1-5235-0550-0

WORKMAN • workman.com

CAMP WORKMAN

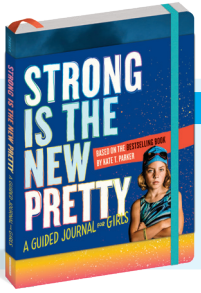
EST 1974

Use your voice! Think about something that you think is unfair or could be better in your school, town, city, state, or country. Write your notes here, and then send a letter to your school board, mayor, congressperson, senator, or the president to ask that it be changed.

MY NAME IS

I WOULD LIKE TO CHANGE

I DON'T LIKE IT BECAUSE



EXCERPTED FROM

Strong Is the New Pretty: A Guided Journal for Girls

ISBN: 978-1-5235-0550-0

WORKMAN • workman.com

CAMP WORKMAN
EST 1974

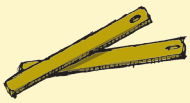
This activity requires using components from a copy of Potato Chip Science.

Potato Battery

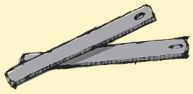
Getting a Charge Out of Spuds

FIELD: ELECTRONICS
CONCEPT: ELECTROCHEMISTRY

MATERIALS



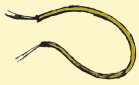
2 copper electrodes*



2 zinc electrodes*

2 potatoes
(the bigger, the better)

Clock*



Wire connector*

Sound chip*

Chip tube

*Comes packaged in a copy of *Potato Chip Science*

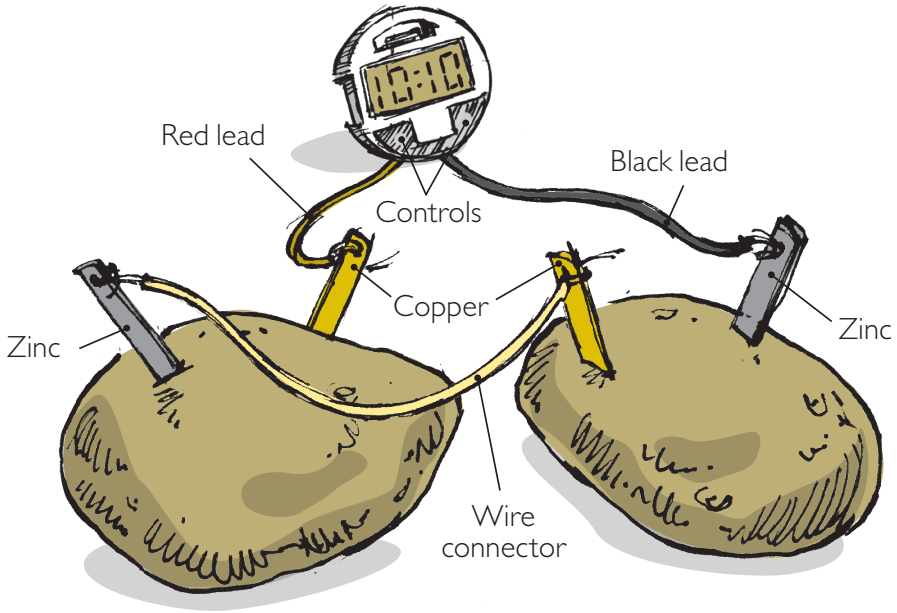
METHOD – To Make a Tater Clock

1. Jab one copper electrode and one zinc electrode into each potato. Keep the copper and zinc far away from each other.

2. Attach the clock leads (wires) to the electrodes in the following manner: Twist the red (positive) lead around the copper electrode of the first potato, and twist the black (negative) lead around the zinc electrode of the second potato.

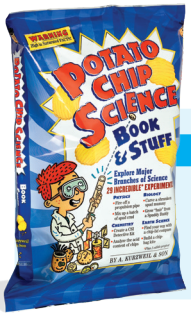
3. Complete the electrical circuit by twisting the exposed ends of the wire connector around the two unconnected electrodes.

4. Set the time using the two clock controls.



CHIP CHALLENGE

Try powering a clock off a couple of lemons. Can you find other fruits that will keep your clock ticking?



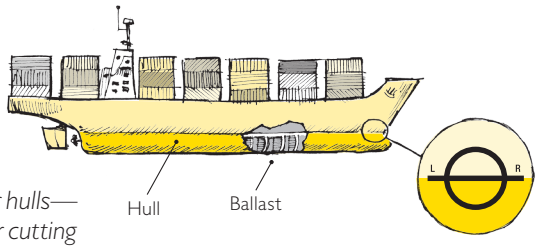
EXCERPTED FROM
Potato Chip Science
ISBN: 978-0-7611-4825-8
WORKMAN • workman.com

CAMP WORKMAN
EST 1974

FIELD: HYDRODYNAMICS
CONCEPT: BUOYANCY

Chip-Ship Challenge

How Many Pennies Can You Float Inside a Chip Bag?



All oceangoing cargo ships display a "load line" on their hulls—a circle with a horizontal bar cutting through it. If the bar drops beneath the water, the crew knows the ship is overloaded.

METHOD

1. Load a cargo of 50 pennies inside your empty chip bag "boat." Make sure they're evenly distributed.

2. Fill the bucket with at least 5 inches of water. Gently lower the bag of pennies into the water. What happened to the bag? (It sank, didn't it?)

3. Remove the bag and empty it. Repeat step 1, only this time place the chip lid flat on top of the pennies so it holds the bag open. Gently lower the bag into the water. This time, watch it float.

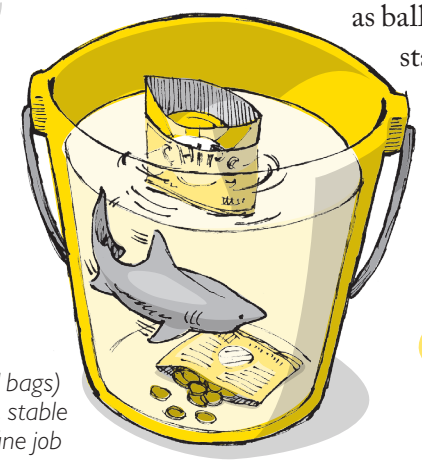
4. Leaving the bag in the water, add more pennies on top of the lid. See how much cargo you can load into your chip ship before it sinks.

MEANING

The chip ship, like all cargo vessels, is designed to carry as much weight as possible. What keeps a boat from sinking? Buoyancy—the upward force that liquids and gases exert on objects.

The more water the hull of the ship displaces (pushes aside), the more buoyant the vessel. The more buoyant the vessel, the more cargo it can carry.

Positioning a lid on top of the pennies broadens the hull of your chip ship, which increases the volume inside the vessel and the amount of water displaced outside. The pennies at the bottom of the chip ship also serve as ballast—weight that improves stability. If properly designed, your chip ship can carry cargo more than 100 times its own weight.

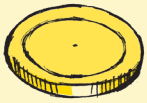


Boats (and bags) with broad, stable hulls do a fine job of carrying cargo.

MATERIALS

100 pennies (plus a few extras)

Small (1-ounce) chip bag



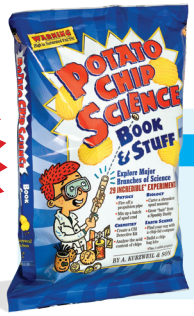
Chip lid

Bucket of water

Use the chip lid from a copy of *Potato Chip Science* or provide your own Pringles-type plastic lid

CHIP CHALLENGE

Can you make a chip ship that holds more than 100 pennies? (Hint: Try keeping the bag open with cotton swabs or toothpicks.)



EXCERPTED FROM
Potato Chip Science
ISBN: 978-0-7611-4825-8
WORKMAN • workman.com

CAMP WORKMAN
EST 1974

DEFEAT THE VAMPIRES

CHANCES OF SURVIVAL: YOU'RE DEAD

SURVIVAL STRATEGIES: EXPRESSIONS AND EQUATIONS

DEATH BY: BLOOD LOSS

THE CHALLENGE

You never believed in vampires—until you saw one for yourself. He's new in town, a strange-looking dude, who up until now seems to have been living off of the stray cats in the neighborhood. Problem is, no one else has ever seen him but you. And no one believes you—no one except your best friend, Jamie, who happens to be an expert on vampires. According to Jamie, vampires only come out at night, and they only feed two times a month. Feeding means sucking the blood of a human, and after they're through, that person becomes a vampire, too. One month later, these new vampires will each be capable of turning 2 more people into vampires.

"But how come he only feeds on cats?" you ask Jamie.

"They're just an appetizer," Jamie explains. "At the next full moon, he'll be looking for human blood. The good news is that there's only one vampire in town. How much harm could a single vampire do?"

"A lot!" you answer. "There are 500,000 people living in this town, right? That means, unless we find the vampire before the next full moon, our town will soon be completely taken over by vampires!" Jamie doesn't believe you, so you have to prove it to him.

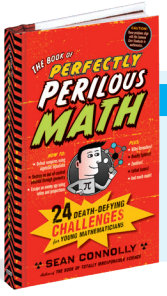
If the vampires feed only on people in your town, approximately how many months will it take for your 500,000-person town to become populated entirely by vampires?

EUCLID'S ADVICE

Remember the power of 3! Things can get out of control pretty quickly when numbers continue to triple. Once you figure out the pattern in which the vampires are increasing, creating an algebraic linear equation may be helpful. You'll need to assign two variables, one to represent the current number of vampires (a value you know), and another to represent the new number of vampires (the value you're solving for). Then, set up a table, or chart, to organize your data.

But first, write down everything you know:

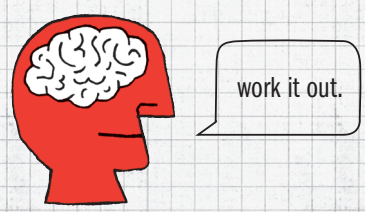
- **There is currently only 1 vampire in town.**
- **There are 500,000 people who live in town.**
- **Every month, 1 vampire feeds on 2 humans, turning both of them into vampires.**

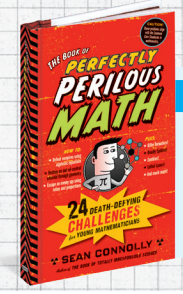


EXCERPTED FROM
The Book of Perfectly Perilous Math
ISBN: 978-0-7611-6374-9
WORKMAN • workman.com

CAMP WORKMAN
EST 1974

WORKSHEET





EXCERPTED FROM
The Book of Perfectly Perilous Math
ISBN: 978-0-7611-6374-9
WORKMAN • workman.com

CAMP WORKMAN
EST 1974

Time Factor: *2–5 minutes*

FRANKENSTEIN'S HAND

HERE'S A "HANDS-ON" DEMONSTRATION of a scientific principle that has cropped up elsewhere in this book: the chemical reaction between a comon acid and an equally familiar base. You can give this experiment something of a Halloween flavor by marking the glove with bones, veins, and screws. You can also add a little ketchup at the bottom of the glove—just to raise the gore factor. Your audience will love the special effects as the hand grows and grows.

You Will Need

- 3 TABLESPOONS VINEGAR
- DRINKING GLASS
- 2 TEASPOONS BAKING SODA
- RUBBER GLOVE

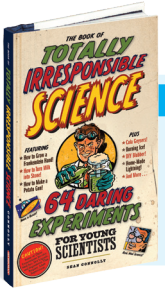
TAKE CARE! **this is a safe experiment with very little risk. make sure that the glove fits tightly on the glass before you do the experiment; if it's loose, try a wider-mouthed glass. you might want to take care that the glove doesn't inflate too much, which could cause it to fly off the glass. and in case you're thinking about having a little fun at your little brother or sister's expense—say, by telling them you found this hand on the sidewalk—don't come running to us if you get in trouble with the parental units!**

METHOD

1. Pour the vinegar into the glass.
2. Add the baking soda to the inside of the glove. Hold the glove by its wrist and shake the powder into the fingers.
3. Carefully attach the glove to the top of the glass as shown so there's no gap.
4. Pull the glove upright by its fingertips and shake gently, allowing the baking soda to drop into the glass.
5. Stand back and watch as Frankenstein's hand begins to come alive.

The Scientific Excuse

Baking soda is a chemical base, which reacts strongly with the acetic acid of the vinegar. One of the by-products of this reaction is carbon dioxide, which increases the pressure inside the glove-glass arrangement. As more gas is produced, the pressure increases further and pushes out the weaker surface (the rubber glove), inflating it gently.



EXCERPTED FROM
The Book of Totally Irresponsible Science
ISBN: 978-0-7611-5020-6
WORKMAN • workman.com

CAMP WORKMAN
EST 1974

Time Factor: *less than 2 minutes*

STRAW THROUGH A POTATO?

WE'VE ALL HEARD ABOUT THE SAVAGE FORCE OF A TORNADO. Its 300 mile-per-hour winds are strong enough to drive a piece of straw clear through a telephone pole. So you can imagine that if you left a drinking straw near a potato as a tornado approached, you might return to find the potato skewered by the straw. But can you imagine getting the same result by hand? Read on, and see how you can do it.

You Will Need

- GARDENING GLOVE (LEFT GLOVE IF YOU'RE RIGHT-HANDED OR VICE VERSA)
- UNCOOKED POTATO
- RIGID (NON-BENDY) DRINKING STRAW

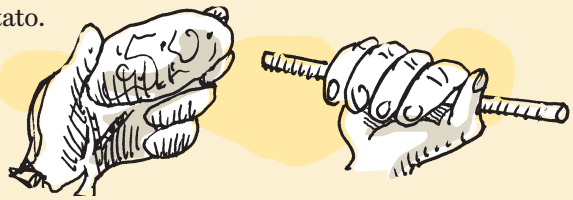
TAKE CARE! **This is a relatively low-risk experiment, although the same combination of strength and sharpness of the straw could lead to a hand injury if your aim isn't up to scratch. (That's why you should use the gardening glove.)**

METHOD

1. Put the glove on one hand.

2. Hold the potato (lengthwise vertically) with the gloved hand, pinching it between your thumb and index finger.

3. Holding the potato steady, pick up the straw (holding it in the middle), and line it up with the potato.

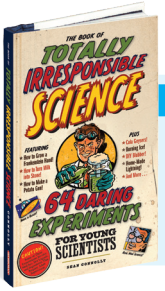


4. Slowly draw the straw back, then stab the straw quickly into the potato.

5. If you're quick enough—and the straw is strong enough—you'll stab it right through the potato.

The Scientific Excuse

The cylindrical shape of the straw gives it surprising strength along its length, although it remains weak and flexible crossways. That strength, coupled with the narrowness and sharpness of its edge, gives the straw a good chance of making it through the potato with ease. Some people might see your thumb over one end of the straw as you push and decide that it's all due to air pressure. That's a nice try, but not the reason—and you can prove it by doing the experiment again with your thumb well away from the open end of the straw.



EXCERPTED FROM
The Book of Totally Irresponsible Science
ISBN: 978-0-7611-5020-6
WORKMAN • workman.com

CAMP WORKMAN
EST 1974

Time Factor: *less than 2 minutes*

DANCING MOTHBALLS

IF THERE'S SUCH A THING AS JUMPING BEANS, WHY CAN'T there also be dancing mothballs? In just a few easy steps, you'll see how easy it is to make them. How in the world is all of this irresponsible? Well, just look at those ingredients and imagine how your kitchen will smell after you mix them. How popular will you be then?

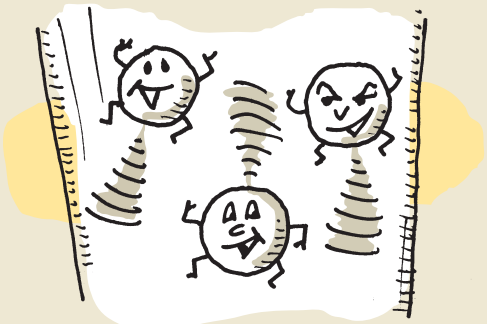
You Will Need

- WIDEMOUTH GLASS JAR OR DRINKING GLASS
- WATER
- 4 TABLESPOONS VINEGAR
- 2 TEASPOONS BAKING SODA
- SEVERAL MOTHBALLS

TAKE CARE! **This is a fairly low-risk experiment. Make sure you discard the liquid and its contents afterward so the next person in the kitchen isn't tempted to drink it!**

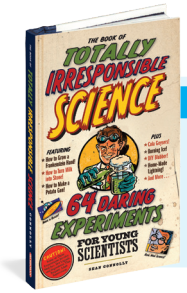
METHOD

1. Fill the jar or glass with water, leaving an inch at the top.
2. Add the vinegar and baking soda and stir gently to combine.
3. Add 2 or 3 mothballs.
4. Watch as the mothballs slowly "dance"—sinking first, then slowly rising, then sinking again.



The Scientific Excuse

The vinegar, baking soda, and water react to release carbon dioxide. The mothballs seem smooth, but in fact they have very rough and uneven surfaces. Carbon dioxide bubbles can lodge on these surfaces. When enough bubbles are attached, the mothballs become less dense than the liquid and rise to the top. At the surface, much of the carbon dioxide is released into the surrounding air, making the mothballs denser once more and allowing them to sink . . . and repeat the process.



EXCERPTED FROM
The Book of Totally Irresponsible Science
ISBN: 978-0-7611-5020-6
WORKMAN • workman.com

CAMP WORKMAN
EST 1974

Time Factor: *less than 2 minutes*

Overcoming GRAVITY

YOU CAN CHOOSE THE LEVEL OF IRRESPONSIBILITY FOR THIS experiment, depending on your nerve. You can try it over a table or a sink—or over the head of a very courageous volunteer. No matter which approach you use, it's always fun to see people's shocked expressions if they've never tried this classic experiment demonstrating air pressure.

You Will Need

- DRINKING GLASS
- WATER
- PLAYING CARD OR POSTCARD
- TOWEL OR TUB (IN CASE OF TROUBLE)

TAKE CARE! **The best objects to cover the rim of the glass are light but firm—so the playing card and postcard are ideal. Anything heavier scores well with firmness but might be a little too heavy for the air pressure to do its trick. Another word of warning to remember: Don't keep the glass and card overturned for too long. If the card becomes soggy, it deforms. That makes it harder for the air pressure to work, so gravity might suddenly win!**

METHOD

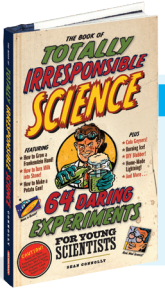
1. Fill the glass three-quarters full with water.

2. Place the card squarely over the mouth of the glass, making sure that there's no gap.
3. Pressing the card to the rim, turn the glass over—over your volunteer's head, if you feel brave!
4. When the glass is upside down, remove your hand from the card.

5. The card should remain attached to the glass and no water should leak out.

The Scientific Excuse

The simple explanation to this experiment is that it all depends on air pressure. The water inside the glass certainly presses down on the card, but what's surprising is the strength of the air pressure working in the opposite direction—greater than the force of gravity, in this case.



EXCERPTED FROM
The Book of Totally Irresponsible Science
ISBN: 978-0-7611-5020-6
WORKMAN • workman.com

CAMP WORKMAN
EST 1974

Newton's Science Friction EXPERIMENT

This experiment is a demonstration of one of the outside forces that acts on moving objects, causing them to slow down and stop: friction. We see it at work whenever we compare, for example, a hockey puck sliding across a skating rink with the same puck sliding across a carpeted floor. But this experiment shows how friction is at work between the pages of a book, and how that force can build up astoundingly. Each overlap is a source of friction, but multiplying that force by 50, 60, or however many overlaps you managed to produce, will increase the force a great deal.

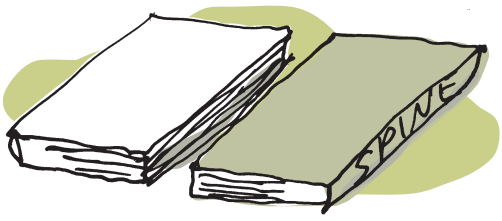
MATERIALS

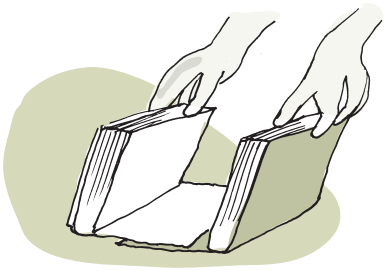
- 2 PAPERBACK BOOKS OF ABOUT THE SAME SIZE AND NUMBER OF PAGES

TAKE CARE!
NO REAL PROBLEMS HERE—JUST DON'T USE SOMEONE'S PRICELESS FIRST EDITION (EVEN IF IT *IS A* PAPERBACK).

1. You're aiming to "lock" the books together by having their pages overlap one another.

2. Put the books on a table, facing each other so that they just touch.



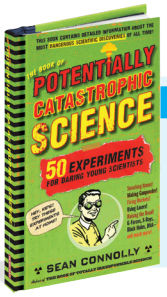


3. Lift each book up by the open-pages side so that the spines stay on the table but edge closer to each other by about 1½ inches.

4. Rifle through the pages with your thumbs (from the back of the book to the front).

5. If you've managed to do this right, the pages of the books will overlap each other by the same 1½ inches.

6. Try to pull the books apart. It seems as though they're locked together.



EXCERPTED FROM
The Book of Potentially Catastrophic Science
ISBN: 978-0-7611-5020-6
WORKMAN • workman.com

CAMP WORKMAN
EST 1974

Gagarin's Balloon Thrust EXPERIMENT

The key to getting a rocket to leave the atmosphere and go into orbit is thrust, the power needed to give it that essential speed. And in order to achieve that sort of power, you need to have a reliable fuel supply—and enough of it.

This experiment uses balloons to help you make the connection between fuel, thrust, length of flight, and the distance covered. Basically, you're the one supplying the fuel (with your breaths), which in turn determines the amount of thrust that your balloon rockets will have. Then you can see the direct relationship between thrust and the length of the flight.

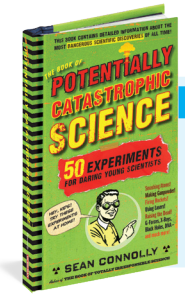
MATERIALS

- BALLOONS OF DIFFERENT SIZES (LIKE THE "PARTY BAG" OF BALLOONS)
- PENCIL
- PAPER
- AT LEAST ONE FRIEND TO HELP
- STOPWATCH OR WATCH WITH A SECOND HAND
- RULER OR TAPE MEASURE
- GRAPH PAPER (OPTIONAL)

TAKE CARE!
THIS EXPERIMENT WORKS BEST IF YOU HAVE A LOT OF ROOM—YOU REALLY DO WANT THE BALLOONS TO COVER A LOT OF DISTANCE. BUT BE CAREFUL IF IT IS TOO WINDY, BECAUSE A SUDDEN GUST COULD THROW YOUR CALCULATIONS OFF.

1. Choose about 4 or 5 balloons of different sizes and record them as "1" to "4" (or "5") on your paper. Leave a good bit of space between each balloon entry, because you'll be adding more information.
2. For each balloon entry, mark "Size," "Length of Flight," and "Distance."
3. Blow up a balloon using a series of same-size breaths: Have your friend count those breaths and mark them under "Size."
4. Pinch the balloon shut and take it to the launch site.
5. Have your friend get ready to time the flight from the moment you let go.
6. Keeping the pinched end pointing at you, hold the balloon out and let go.

7. Ask your friend to mark the time under "Length of Flight," and then you can both measure the distance it flew and enter that under "Distance."
8. Repeat steps 3 to 7 for each balloon.
9. See whether you can draw any conclusions between the size of the balloon's fuel supply (the number of breaths) and the time and distance.
10. If you want, you can make charts of these relationships using "Number of Breaths" as the Y axis (the upward-pointing one) and "Length of Flight" and then "Distance" for the horizontal X axis.



EXCERPTED FROM
The Book of Potentially Catastrophic Science
ISBN: 978-0-7611-5020-6
WORKMAN • workman.com

chirping crickets

how can little crickets make such big noise?

What Do You Need?

- *A rubber band*
- *Your Pop Bottle without the top*
- *A playing card or index card*

What Do You Do?

1. Stretch the rubber band over the bottle opening and under the bottom. Make sure the rubber band is tight.

2. Pluck the rubber band with your finger, and with your other hand, touch the rubber band with the edge of the card. You should hear a buzzing sound.

3. Experiment and make different sorts of sound. Saw on the rubber band with your card. Pluck the rubber band with your card.

4. Now hold a different rubber band between your thumb and index finger. Pluck it with the card. What do you notice about the difference in the volume of sound?

What's Going On?

The sound of the rubber band is amplified when it is stretched across the bottle opening. The bottle amplifies sound just like the body of a guitar or violin does.

When crickets chirp, they drag their rough upper wing across their lower wing, much as you scrape the rubber band with the card. For crickets, this action produces a vibration that is amplified by the membranes of the wings.

big idea

make a bottle magnifier.

What Do You Need?

- *A plastic pop bottle*
- *Water*
- *Small printed text*

What Do You Do?

1. Fill the bottle completely with water.

2. Tighten the cap.

3. Hold the bottle sideways directly on top of the text. What do you notice?

4. Move the bottle slowly away from the small print. You'll see the print flip upside down!

What's Going On?

The water turns the bottle into a lens, and a lens can do interesting things. When light passes through a lens, an image can twist, bend, curve, and even turn upside down.

EXCERPTED FROM
Pop Bottle Science
ISBN: 978-0-7611-2980-6
WORKMAN • workman.com

raisin water ballet

watch the dancing raisins do their stuff.

What Do You Need?

- *Your Pop Bottle with the top part removed*
- *Water*
- *Vinegar*
- *Baking soda*
- *10 raisins*

What Do You Do?

1. Fill your Pop Bottle about halfway with water.
2. Pour in 4 tablespoons of vinegar.
3. Add 3 tablespoons of baking soda. (The mixture will begin to fizz.)
4. Drop in the raisins. They may sink initially, but will soon bounce around in the bottle.

What's Going On?

The vinegar and baking soda create carbon dioxide bubbles, the same gas that carbonates soda pop. Bubbles will gather under the raisins until there's enough fizz to raise the raisins to the surface. There, the bubbles burst, and the raisins sink back down.

Have Some Cleaning to Do?

The vinegar and baking soda mixture makes a super cleanser. Try it (without the raisins) on the kitchen or bathroom sink and see.

hard to change

a heat trick

What Do You Need?

- *An index card*
- *Your Pop Bottle with the top removed*
- *A quarter*

What Do You Do?

1. Place the index card on top of your Pop Bottle.
2. Place a quarter on the index card.
3. Flick the card with your finger so that the card flies out from under the quarter. The quarter should fall into the bottle.
4. Now invite someone else to try it. Say that they can have the quarter if they can flick the card and make the quarter fly across the room. Don't tell them exactly how it's done. It's fun to watch them figure it out!

What's Going On?

You demonstrated inertia, a property of all matter. Inertia is matter's tendency to remain at rest (even when the matter is made of billions and billions of moving molecules). The energy source (your moving finger) acted upon the card but not the quarter. This experiment works because an index card is smooth and does not create much friction under the coin.

EXCERPTED FROM
Pop Bottle Science
ISBN: 978-0-7611-2980-6
WORKMAN • workman.com

CAMP WORKMAN

MAGNETIC ATTRACTION—OR NOT

THESE SIMPLE EXPERIMENTS SHOW MAGNETISM IN ACTION BY REVEALING HOW IT AFFECTS THE WORLD AROUND US.

WHAT YOU WILL NEED

- 2 simple bar magnets
- Piece of thin cardboard
- Small jar of iron filings
- Bowl of sand

DO THE DEED

The saying goes that "opposites attract." Regardless of whether this is true for different personalities, it's definitely true for the opposite poles of magnets. But when you try to push the similar poles of a magnet together, they repel.

1 Lay one of the two bar magnets flat on a level table or other smooth surface, with the ends of the magnet facing to your right and left.

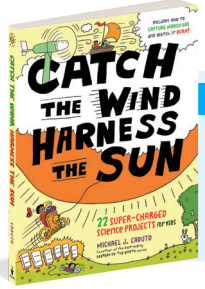
2 Hold the other magnet flat against the table but a few feet from the first magnet.

3 Very slowly, bring one end of the second magnet up toward the first magnet. When the second magnet comes close enough to the first magnet (the distance will depend on the strength of the magnets), it will start to react. If similar poles are facing each other at the point of contact, the first magnet will spin around and away from the end of the second magnet. If opposite poles are facing each other, the first magnet will quickly slide over and stick to the magnet in your hand.

4 Now take the piece of cardboard in hand and hold it level.

5 Place one magnet on top and in the center of the cardboard.

CONTINUED ON NEXT PAGE



EXCERPTED FROM
Catch the Wind, Harness the Sun
ISBN: 978-1-60342-794-4
WORKMAN • workman.com

MAGNETIC ATTRACTION—OR NOT CONTINUED

6 While holding the cardboard with the magnet balanced on top in one hand, take the second magnet and move it around under the cardboard. Watch how the magnet on top reacts.

7 Now place one magnet on a table.

8 Sprinkle a teaspoon of iron filings onto the cardboard and tap the cardboard to spread it out evenly.

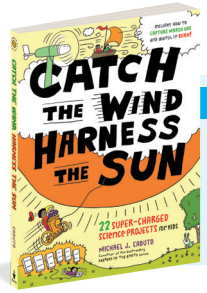
9 Carefully place the cardboard on top of the magnet, with the magnet centered beneath the iron filings.

10 Gently tap the edge of the cardboard, then watch how the iron filings arrange themselves along the magnetic lines.

11 Pick up the cardboard and move the magnet around under the iron filings. How do the iron filings react? Do they react differently at the different poles of the magnet? Why or why not?

12 Hold the magnet and swish one end around in the bowl of sand for a minute or two. When you lift up the end of the magnet, it will have some dark flecks stuck to it. Do these look familiar?

Once you've tried Magnetic Attraction—or Not, think of a way you can harness the power.



EXCERPTED FROM
Catch the Wind, Harness the Sun
ISBN: 978-1-60342-794-4
WORKMAN • workman.com

CAMP WORKMAN
EST 1974

UN-TRUE NORTH

YOU WILL EXPERIENCE A FORCE OF NATURE YOU CANNOT SEE WHEN TRYING UN-TRUE NORTH.

WHAT YOU WILL NEED:

* Piece of thin, bare copper wire about 12 inches (30 cm) long
* 1 size-C battery
* Electrical tape
* Compass
* Small bar magnet

! SAFETY FIRST !

If you are using a new battery, the copper wire and the battery can become very warm. Don't hold the wire in direct contact with your skin for too long, and don't keep both ends of the wire connected to the battery for more than a few minutes.

DO THE DEED

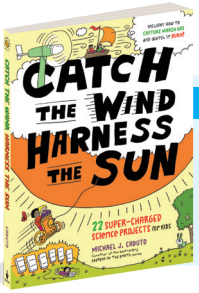
Here is a simple way to detect the magnetic field created by an electrical current.

1

Take the piece of wire and bend it into a U-shape, with the mouth of the U matching the length of the C battery.

2

Use a 2-inch (5 cm) piece of electrical tape to fasten one end of the copper wire firmly against the flat side (negative terminal) of the battery. Now tape the other end of the wire onto the small nub sticking out of the other side of the battery (positive terminal).

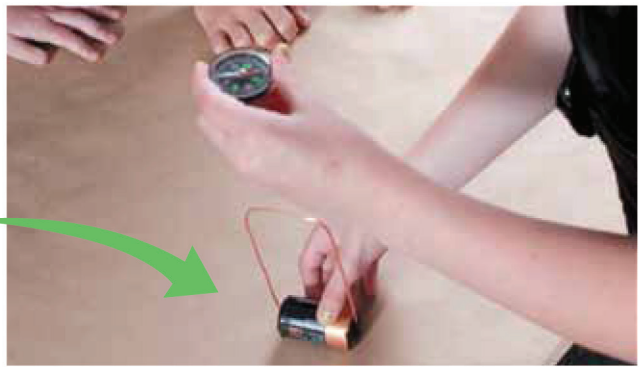


EXCERPTED FROM
Catch the Wind, Harness the Sun
ISBN: 978-1-60342-794-4
WORKMAN • workman.com

UN-TRUE NORTH CONTINUED

3 Hold the compass and notice the position of the needle as it points north.

4 Hold the compass about 12 inches (30cm) above the wire, and then move the battery so the wire is parallel to the compass needle.



5 Gradually bring the compass close to the wire until it is almost touching. Watch the compass needle turn as it reacts to the magnetic field that surrounds the electrical current running through the wire.

6 Raise the compass again. Now turn the battery 180 degrees so that the ends are switched around. This will reverse the direction the current is flowing around the wire loop.

7 Lower the compass toward the wire through which the current is now flowing in the opposite direction from the first time you did this. When the compass needle turns this time, how is it turning differently from the way it turned in Step 5?

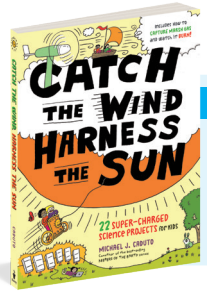
8 Untape the connection on one end of the battery and watch to see if the compass needle changes direction and points back toward the North Pole.

9 Take the small bar magnet in one hand and bring the compass down over it until they are almost touching. How does the compass needle react? Remember which way the North arrow is pointing.

10 Take the magnet away from the compass needle and turn the magnet 180 degrees so that the poles are switched around.

11 Bring the compass toward the magnet again and see which way the North arrow points this time.

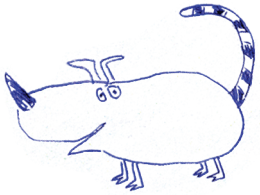
A compass needle moves so, that it lines up with Earth's magnetic field. If brought close to a magnetic field that is stronger in that location, the compass needle will turn and align with that magnetism.



EXCERPTED FROM
Catch the Wind, Harness the Sun
ISBN: 978-1-60342-794-4
WORKMAN • workman.com

SUPPLIES YOU MAY NEED

- glue
- tape
- colored paper or construction paper
- markers
- crayons
- watercolors
- pastels
- paint
- paintbrushes
- scissors (use with supervision)
- googly eyes
- feathers
- cutouts
- glitter
- any other art supplies you have lying around



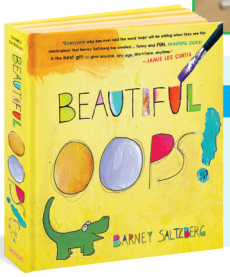
Creative Oops: A 10-Minute Project

INSTRUCTIONS

Start with an "oops"—a piece of paper that has a tear, fold, wrinkle, smear, smudge, or drip. If you don't have any, just make some! For example, splash some liquid watercolors on paper.

Get creative in finding ways to transform your "oops." Use googly eyes to make creatures. Use markers to create a new comic book character. The possibilities are endless, and the lesson is timeless—even mistakes are beautiful.

Source: http://www.craftingconnections.net/the-blog/creative-oops-10-minute-project/



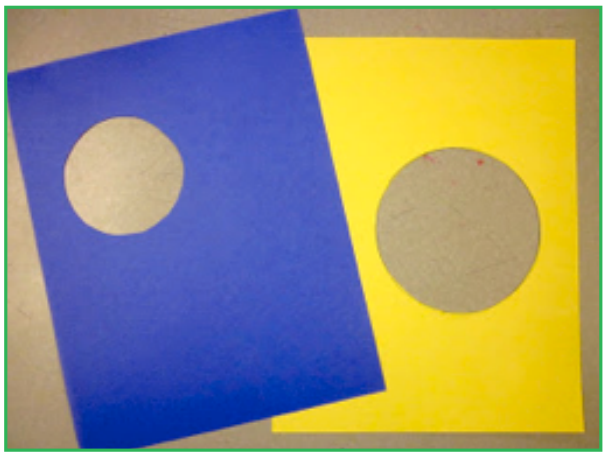
EXCERPTED FROM
Beautiful Oops
ISBN: 978-0-7611-5728-1
WORKMAN • workman.com

The Hole Challenge

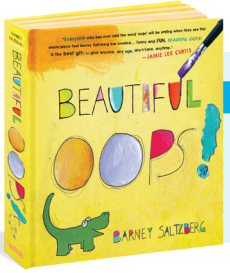
INSTRUCTIONS

Let each student choose a piece of colored paper with a pre-made hole in it.

The challenge is to let kids figure out how to turn this "oops" piece of paper into a work of art. Some ideas include: folding paper to make pop-outs; placing cellophane behind the hole; coloring around the hole; making flaps, shapes, and even stickers.



Source: http://vividlayers.blogspot.com/2012/01/beautiful-oops.html



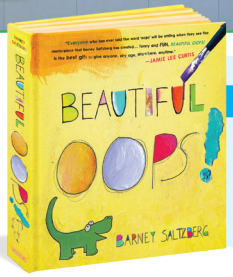
EXCERPTED FROM
Beautiful Oops
ISBN: 978-0-7611-5728-1
WORKMAN • workman.com

Beautiful Oops Bulletin Board

INSTRUCTIONS

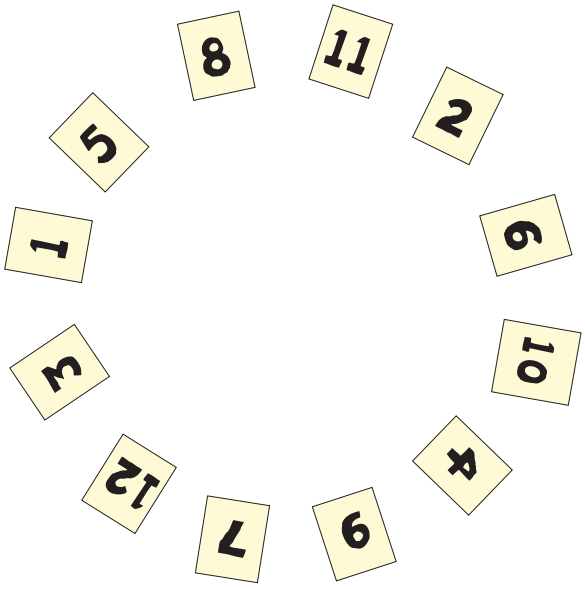
Gather scraps of paper with tears, folds, wrinkles, smears, smudges, and drips from a scrap pile. Ask each student to pick an "oops" page. Students should then use markers, colored pencils, scissors, glue, etc. to modify and create masterpieces. Hang up the works of art on a bulletin board in your classroom/hallway for all to see.

Source:
http://artabroad.blogspot.com/2012/08/beginning-with-beautiful-oops.html
http://artabroad.blogspot.com/2012/08/beautiful-oops-bulletin-board.html



EXCERPTED FROM
Beautiful Oops
ISBN: 978-0-7611-5728-1
WORKMAN • workman.com

Musical Oops



INSTRUCTIONS

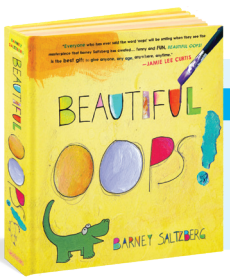
Write numbers on small pieces of paper—one for each student—and place in a circle on the floor. Place matching slips of paper with each number in a hat. Have the children dance around the circle to the song "Beautiful Oops!" (http://bit.ly/1rqA4rF). Stop the music, ask the children to stand on the number closest to them, and pull a slip of paper from the hat. The child standing on the number drawn from the hat leaves the game and chooses a prize from a basket. Continue until all of the children are out of the game, and each child has a prize.

Pass the Drawing

INSTRUCTIONS

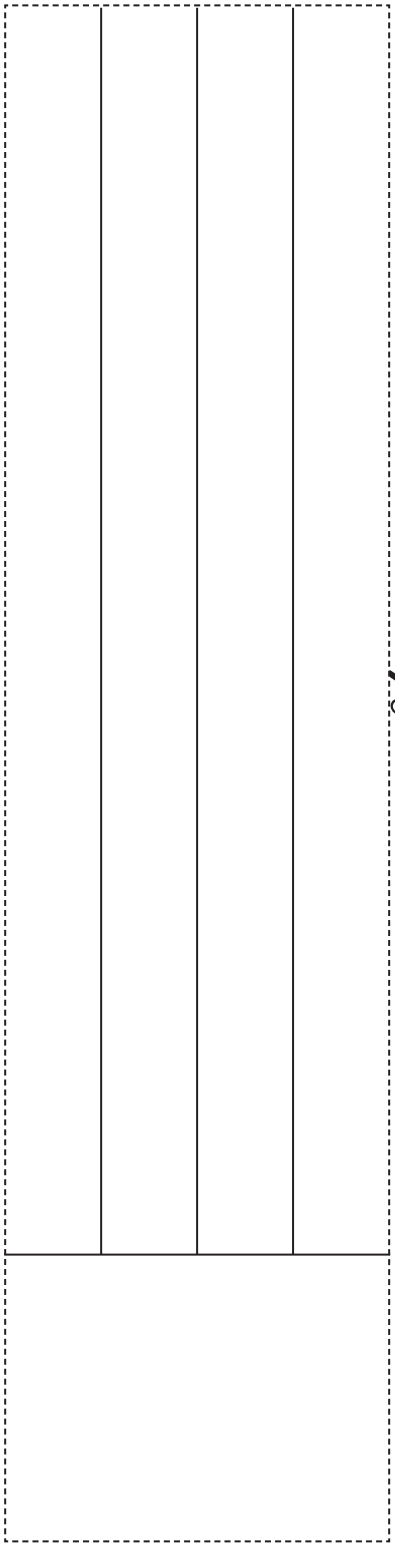
1. Have each child scribble a mistake on purpose (a smear, a dot, a scribble) on a piece of paper.
2. After one minute, have everyone pass his or her drawing to the left.
3. The next person adds onto the drawing to turn it into something amazing.
4. Note: Themes may be suggested at first, like Pass the Lion, Pass the Truck, or Pass the Monster, etc.

Source:
http://artabroad.blogspot.com/2012/08/beginning-with-beautiful-oops.html
http://artabroad.blogspot.com/2012/08/beautiful-oops-bulletin-board.html



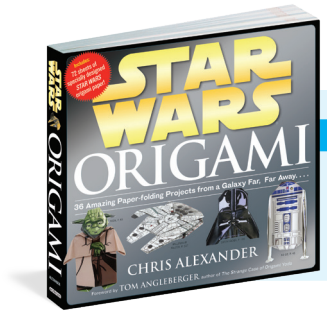
EXCERPTED FROM
Beautiful Oops
ISBN: 978-0-7611-5728-1
WORKMAN • workman.com

Color and fold your own Jedi lightsaber!



Color this, cut it out, and fold it according to the instructions on next page.

Darth Vader's lightsaber

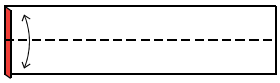


EXCERPTED FROM
Star Wars® Origami
ISBN: 978-0-7611-6943-7
WORKMAN • workman.com

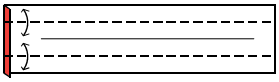
Color and fold your own Jedi lightsaber!

HOW TO FOLD: A BASIC LIGHTSABER

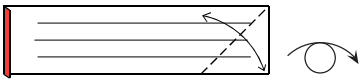
1 *Start with your color picture. Valley fold just enough to form a thin flap.*



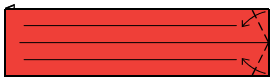
2 *Valley fold and unfold.*



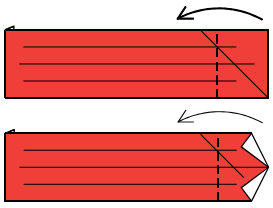
3 *Valley fold and unfold.*



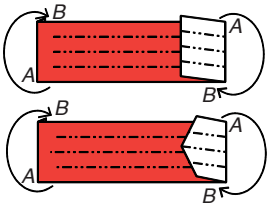
4 *Mark fold. Turn the model over.*

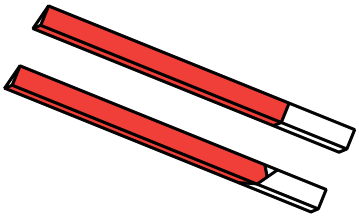


4A **Optional Step:** *To make a hilt with an angled emitter like Luke's, valley fold the corners to touch the creases formed in step 3.*

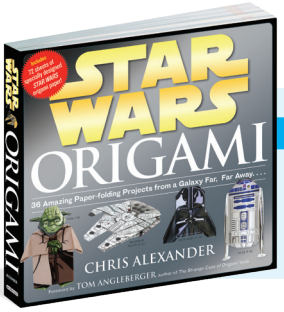


5 *Valley fold.*





6 *Mountain fold the corners A into the pockets B. This will turn the model into a triangular tube.*



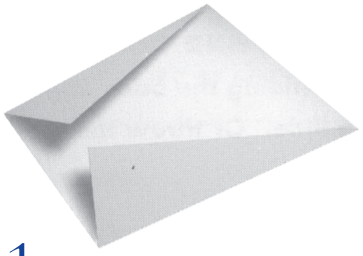
EXCERPTED FROM
Star Wars® Origami
ISBN: 978-0-7611-6943-7
WORKMAN • workman.com

Note: To host this activity, you will need to use a copy of *Kids' Paper Airplane Book*, which includes printed papers to fold. Each book includes 3 of this model—plus more than 40 other planes to fold and fly—as well as tips for holding a paper airplane flying contest and more.

CAMP WORKMAN
EST 1974

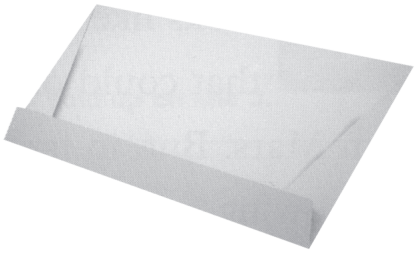
Making the World Record Paper Airplane

Don't forget: Fold in on the dashed blue lines (so you can't see them anymore) and fold away on the dotted red lines (you'll still be able to see them along the outside of the creases). **Folding tip:** This model can get a little bulky in the nose, so make your creases as sharp as possible. You may also find that the paper from folds 1 and 2 bunches up as you make the folds 3 through 10. Make a crease and flatten it down as you go.

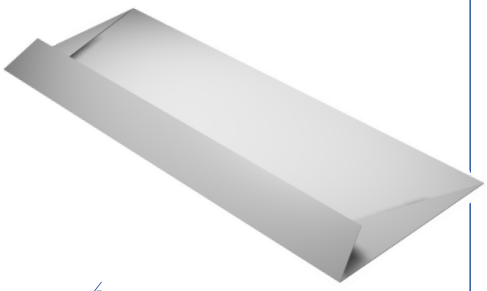


1. **Fold in along lines 1 and 2.**

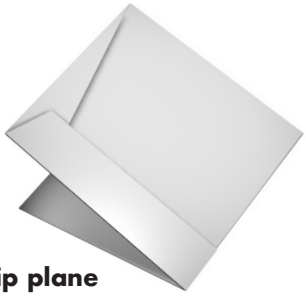
2. **Fold up along line 3 to line 4.**



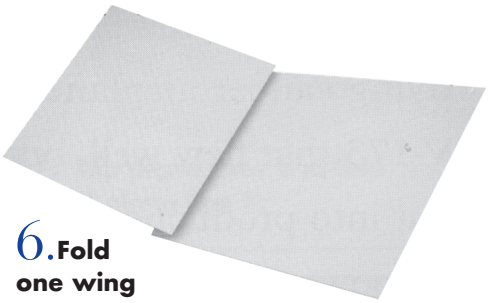
3. **Continue folding up along lines 4 through 9.**



4. **Fold along line 10.**

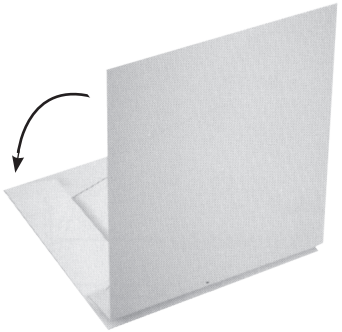


5. **Flip plane over and fold in half along line 11.**

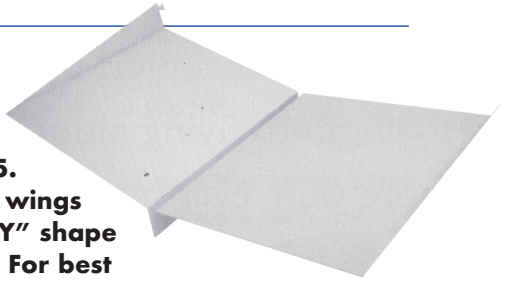


6. **Fold one wing down along line 12.**

7. **Flip the plane over and fold the other wing down along line 13.**



8. **Fold wing tips up along lines 14 and 15. Make sure the wings form a slight "Y" shape with the body. For best flight, add a little up elevator.**



EXCERPTED FROM
Kids' Paper Airplane Book
ISBN: 978-0-7611-0478-0
WORKMAN • workman.com

Note: To host this activity, you will need to use a copy of *Kids' Paper Airplane Book*, which includes printed papers to fold. Each book includes 3 of this model—plus more than 40 other planes to fold and fly—as well as tips for holding a paper airplane flying contest and more.

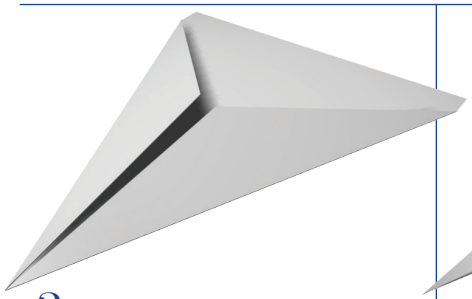
CAMP WORKMAN EST 1974

Making the Slice

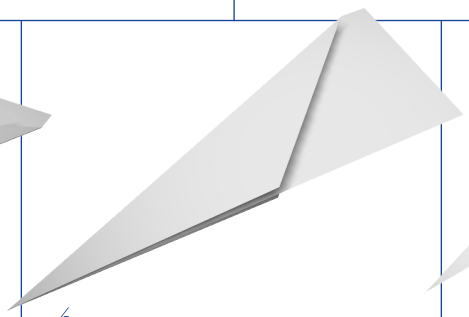
Don't forget: Fold in on the dashed blue lines (so you can't see them anymore) and fold away on the dotted yellow lines (you'll still be able to see them along the outside of the creases).

1. **Fold plane in half along center, line 5, and reopen.**

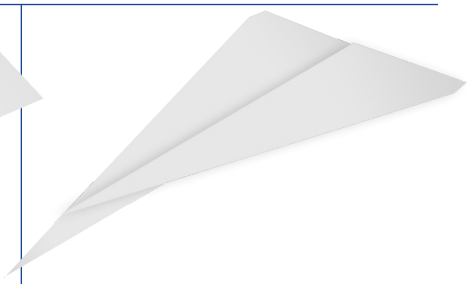
2. **Fold in along lines 1 and 2.**



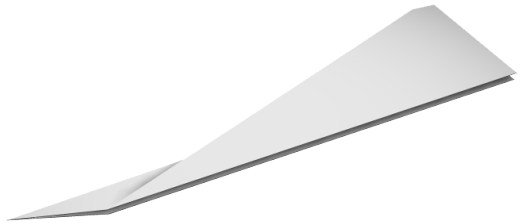
3. **Fold in along lines 3 and 4.**



4. **Fold plane in half along center, line 5.**

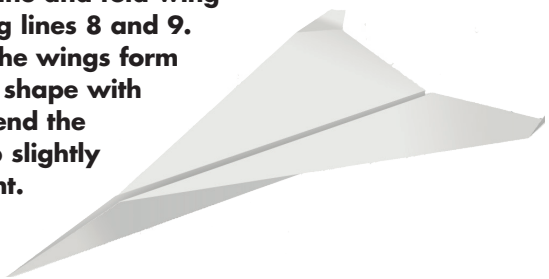


5. **Fold one wing down along line 6.**



6. **Flip plane over and fold the other wing up along line 7.**

7. **Open plane and fold wing tips up along lines 8 and 9. Make sure the wings form a slight "Y" shape with the body. Bend the elevators up slightly for best flight.**



EXCERPTED FROM
Kids' Paper Airplane Book
ISBN: 978-0-7611-0478-0
WORKMAN • workman.com

How to Tell a Story

PLAY THE WHY GAME!

THE WHY GAME

UP TO 10 PLAYERS • 15 MINUTES

SETUP

This is a cooperative game where players try to tell a story and must constantly answer the question "why?"

GAMEPLAY

Roll 20. Do not reroll.

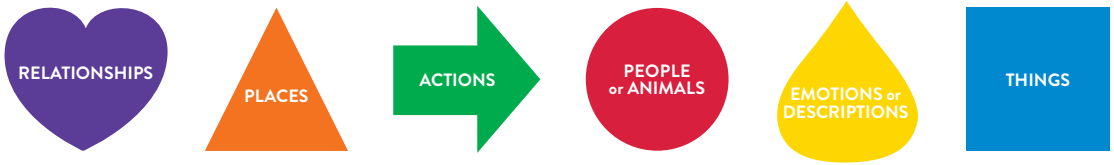
The first player begins the story with "There once was a ● (who was ●)." Then the group asks, "But why?"

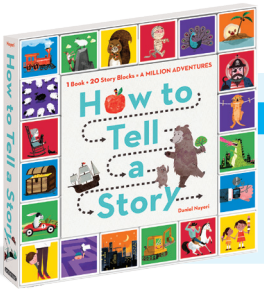
The next player must then choose another block of the remaining 18 and answer the question (using the block) to continue the story. After sufficiently answering the question, the group asks, "But why?"

The next player must then choose a block from the remaining 17 and continue the story.

Play continues until all the blocks are used or neither player can come up with a sufficient answer in the story.

Each color side is associated with a part of speech:





EXCERPTED FROM
How to Tell a Story
ISBN: 978-0-7611-8457-7
WORKMAN • workman.com

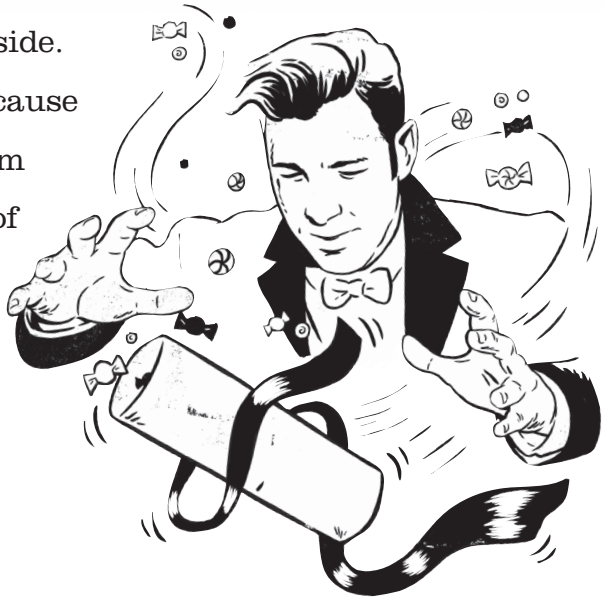
CAMP WORKMAN
EST 1974

1

THE AMAZING TUBE OF MYSTERY

OR DOOM, OR WHATEVER

You hold up an empty tube and wave to your audience through it—clearly nothing inside. Then, you wave your hand over the tube and cause silk streamers and candy to appear . . . all from that same empty tube . . . The Amazing Tube of Mystery . . . or Doom . . . or whatever!



HOW IT WORKS

THE TUBE HAS A SECRET COMPARTMENT YOU CAN ONLY SEE FROM ONE SIDE, AND THAT COMPARTMENT IS FILLED WITH THE THINGS YOU WILL PRODUCE.

What You Need

- ☞ TWO PIECES OF POSTER BOARD (12 X 18 INCHES)
  Make sure both pieces are the same color.
- ☞ SCISSORS
- ☞ MASKING OR CLEAR PACKING TAPE
- ☞ MARKER
- ☞ SILK STREAMERS
  You can actually fill the secret compartment with whatever you like: napkins, popcorn, or even candy. If you're using any loose items, just make sure you use at least one handkerchief or cloth to pack everything tightly.

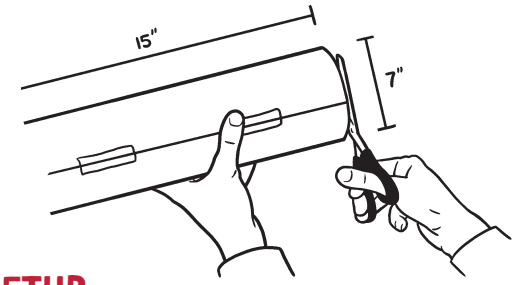
EXCERPTED FROM
Big Magic for Little Hands
ISBN: 978-0-7611-8009-8
WORKMAN • workman.com

CAMP WORKMAN

EST 1974

1

CONTINUED

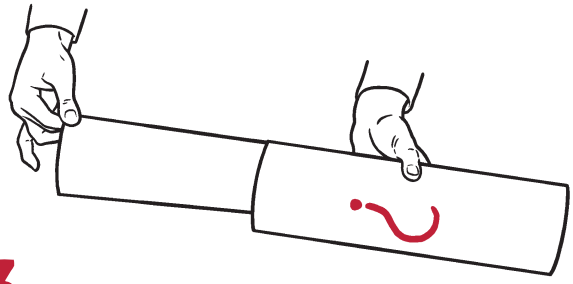


1 SETUP

First make the tube, which is really *two* tubes, one inside the other. For the outer tube, trim the first piece of poster board so you can roll it into a tube about 7 inches wide and 15 inches long. (You can make the tube smaller or wider, depending on how much stuff you want to produce.) Tape the tube along the edge. Trim the second piece of poster board so that it's slightly smaller and more tapered (cone-shaped) than the first: One end of the smaller tube should match the width of the end of the big tube (7 inches), but the other should be about 3 inches across. This is the inner tube. Tape it along the edge.

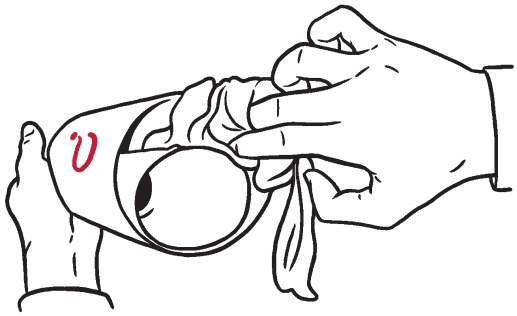
2

Decorate the outside of the outer tube with a question mark and you have a Tube of Mystery; decorate it with dark colors and you have a Tube of Doom. Decorate the tube however you like, really!



3

Insert the inner, tapered tube into the larger outer tube. Line up the wide ends.



4

Stuff the streamers (or other items you wish to produce) into the space between the two tubes. When I perform this effect, I like to use a bunch of thin silk handkerchiefs tied together at the corners.

EXCERPTED FROM
Big Magic for Little Hands
ISBN: 978-0-7611-8009-8
WORKMAN • workman.com

CAMP WORKMAN

EST 1974

1

CONTINUED

5

When the tubes are assembled and the streamers are in place, your gaff is ready. When you show the audience the end of the tube, everything looks normal. From your angle, it looks pretty tricky. (Fortunately, you are the only one who sees the tube from this angle.)

HIDDEN VIEW

6 PERFORMANCE

When you are ready to perform, look through the tube at the audience to show that it's empty. Try to make eye contact with everyone. If you can see the participants looking back at you, you know they can see that the tube is empty. Turn your head left and right, so even the kids on the sides can see.

7

Now hold the tube so the opening is angled straight up and wave your hand over the tube. (You must make the magic motion that "causes" the silks to appear.)

8

Reach inside and slowly pull out the items you stuffed in the tube earlier. If you are using a streamer of silks, hand one end to someone in the front row and then slowly walk backward, allowing the streamer of silks to extend so everyone can see.

SECRET STUFF

Don't ignore step 7. It is, in many ways, the most important step. As magicians, we sometimes get caught up in how an effect works or making sure we do every step properly. But for our audiences, we're making *magic*, and that means that in every effect we have to take the time to actually do some magic. This might be as simple as waving a hand or a wand, or saying a magic word, or it might require us to close our eyes for several seconds of deep concentration. But we must always pretend to do something to make the magic happen.

EXCERPTED FROM
Big Magic for Little Hands
ISBN: 978-0-7611-8009-8
WORKMAN • workman.com

CAMP WORKMAN
EST 1974

2

HANDY CANDY

You are able to find where someone hides a small piece of candy, even when you're blindfolded! This is the perfect stunt to perform at a friend's house, or when you want to amaze your parents' guests. It's also one of the rare effects that can be repeated!

HOW IT WORKS

YOU SECRETLY KNOW HOW EACH MUG IS PLACED ON THE TABLE. WHEN THE PARTICIPANT PLACES THE OBJECT UNDER ONE OF THE MUGS, YOU WILL KNOW WHICH ONE SHE LIFTED BECAUSE IT WILL BE REPLACED ON THE TABLE *SLIGHTLY* DIFFERENTLY FROM THE WAY YOU PLACED IT.

What You Need

- **THREE OR MORE MUGS**
  Use whatever you can find. If you can't find three mugs, use a mug, a cup (one you can't see through), and a bowl.
- **CANDY**
  You just need any small object, so if candy isn't available, borrow a stick of gum, a coin, or another item.
- **BLINDFOLD (OPTIONAL)**
  This is completely optional, but it works best to wear a blindfold in a formal show. If you're performing this impromptu, just have someone cover your eyes, or leave the room while they're hiding the candy.
- **MARKER**

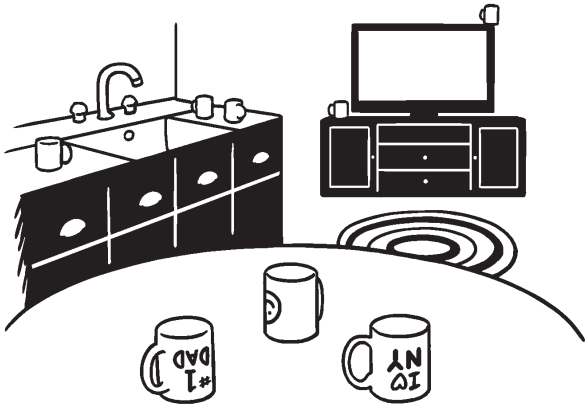
EXCERPTED FROM
Big Magic for Little Hands
ISBN: 978-0-7611-8009-8
WORKMAN • workman.com

CAMP WORKMAN

EST 1974

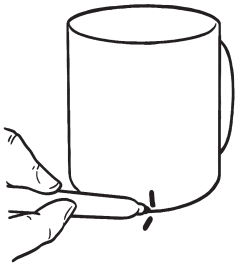
2

CONTINUED



1 SETUP

Set the mugs upside down on a table. Spread them out as much as possible so that there is a lot of empty space between each one. (You can also, for example, place three mugs on the kitchen table, one near the sink, and one on the TV stand.) Note: If you perform this onstage, place a mug on three different small tables, one at stage left, one at center stage, and one at stage right. It's best to space the mugs out because you don't want your participant to touch or move more than one mug.



2 PERFORMANCE

When you perform, you must be able to recognize *exactly* how you placed the mugs on the table. There are several ways to do this: Mugs are best because the handles give an easy marker to look for. For example, I always place the mugs so the handle is pointed at an easy-to-find mark on the table, like a scratch or a knot in the wood. If there's a newspaper on the table, place the mug so the handle points toward a photo or headline you remember. Just don't angle the handles *all* the same way. *Note:* If you perform this onstage, you can be bolder. Make a small dot on the edge of the mug and another small dot on the table, as shown. Then, line up the dots before you start.

SECRET STUFF

Some participants might ignore your directions and not place the candy under any mug (this happens more if you try the effect twice). So if you observe that every mug is exactly how you placed it, you can amaze everyone in the room by turning to the participant and saying, *"Hey there, I thought I told you to place the candy under the mug. I don't think you listened. I sense you still have it!"* That will really surprise everyone, especially the participant.

EXCERPTED FROM
Big Magic for Little Hands
ISBN: 978-0-7611-8009-8
WORKMAN • workman.com

CAMP WORKMAN
EST 1974

2

CONTINUED

3

Say, *"I like candy. A lot. I mean, I REALLY like candy. And to show you just how much I like it, I will allow you to hide this piece of candy under any one of these three mugs. I'll leave the room while you're hiding it. When you have placed it under any mug, call me back in."* Leave the room and allow the participant to follow your instructions.

4

When you return, don't look at the mugs too carefully or someone could figure out the secret. Instead, misdirect their attention by holding your hands above each mug, as if you're "feeling" for where the candy could be. Imagine the candy gives off some kind of energy, and that you can *feel* that energy with your magic powers.

5

Walk past each mug, even if you notice the one the participant chose. After you have examined each one, return to the one she chose and say, *"I sense the candy is here."*

6

Lift up the mug, show the candy, and . . .

7

. . . eat it as your reward!

EXCERPTED FROM
Big Magic for Little Hands
ISBN: 978-0-7611-8009-8
WORKMAN • workman.com

CAMP WORKMAN
EST 1974

3

PANDORA'S BOX

In this stunning show of conjuring, the magician makes his partner appear from an empty box. "Pandora's Box" requires nothing more than a partner, a large box, and a little rehearsal.

HOW IT WORKS

YOUR PARTNER CRAWLS OUT OF AND THEN BACK INTO THE BOX, TIMING IT SO THE AUDIENCE DOESN'T SEE BEFORE HE OR SHE APPEARS.

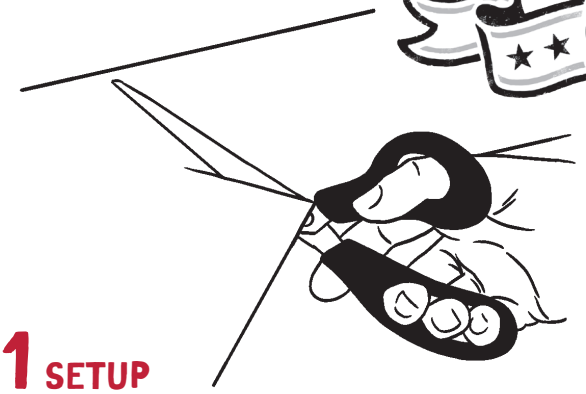
What You Need

- A LARGE BOX (PLUS A CRAFT KNIFE OR SCISSORS, DUCT TAPE, MARKERS, AND A RULER)
  Your partner must be able to both fit in and secretly crawl in and out of the box, so use either a small partner (like a little brother or sister) or a big box.
- A PARTNER
- LIVELY MUSIC (optional)

EXCERPTED FROM
Big Magic for Little Hands
ISBN: 978-0-7611-8009-8
WORKMAN • workman.com

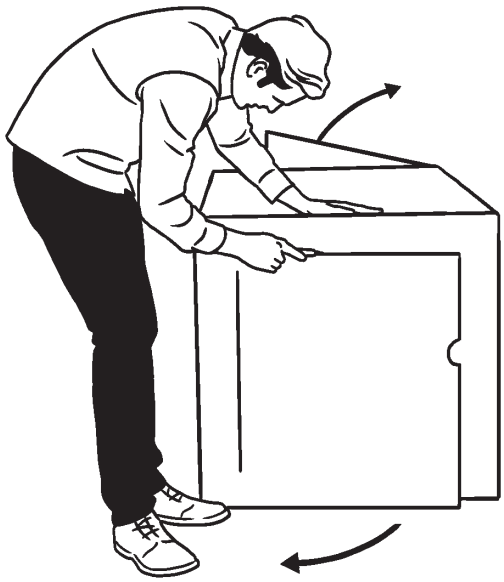
CAMP WORKMAN
EST 1974

3



1 SETUP

Ask an adult to help prepare the box. Cut off the flaps and place the box upside down on your performance surface (the bottom is open).

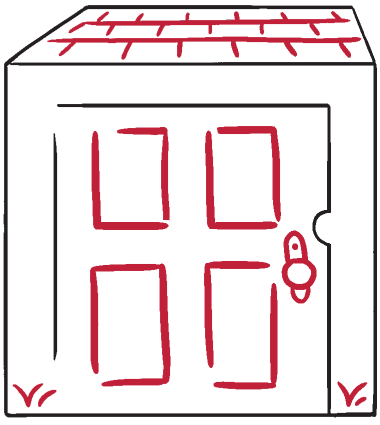


2

Cut two doors on opposite sides of the box, one that opens to the left and one that opens to the right. Make sure the doors are as large as possible and reach the floor. The doors should take up almost the complete side of the box.

3

It's important that when you open the doors, they stay open. Some cardboard is very stiff, causing the doors to spring back to a closed position. (If this is the case, cut off the doors completely and then reattach them, hinging them with duct tape.) We'll call the door that is downstage, nearest the audience, the "front door." The upstage door, away from the audience, will be called the "back door."

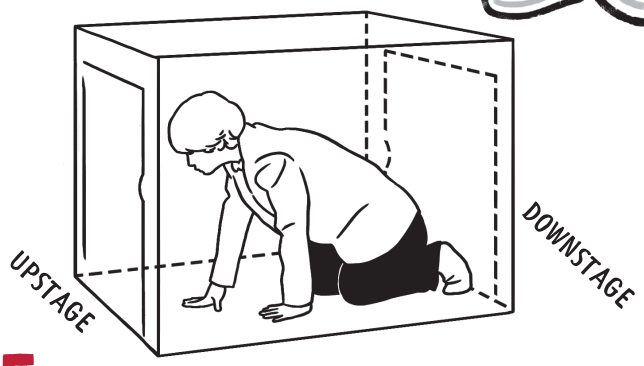


4

If you want to decorate the box, use markers to make it look like a tiny house with doors and a roof, or simply present the illusion as if it's an ordinary box (and actually, it is!).

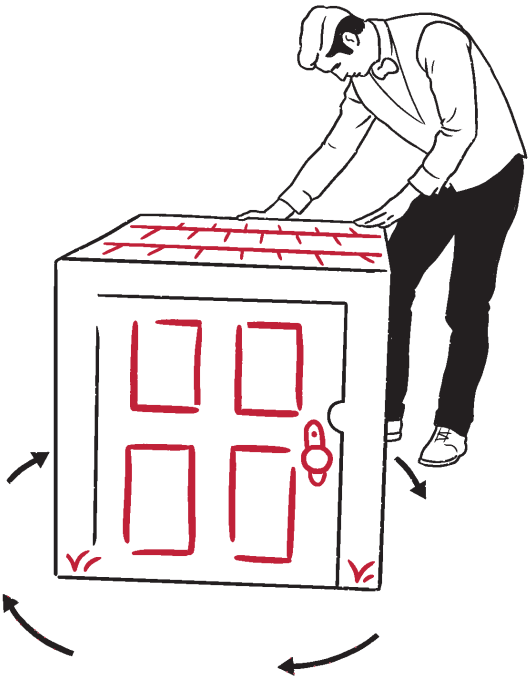
EXCERPTED FROM
Big Magic for Little Hands
ISBN: 978-0-7611-8009-8
WORKMAN • workman.com

3



5 PERFORMANCE

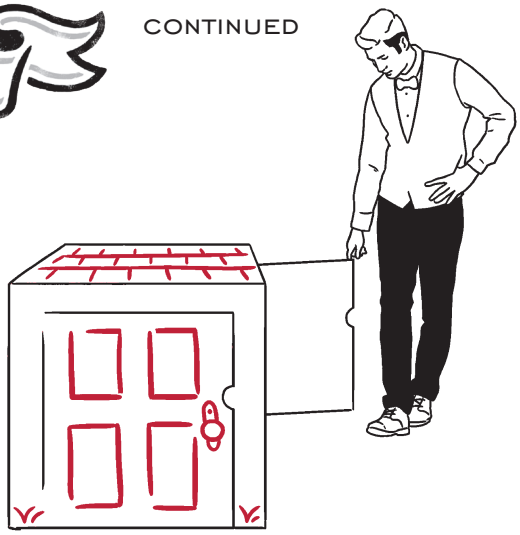
The box begins in the middle of the stage with your partner hidden inside (underneath). He should face the up-stage door, ready to secretly crawl out in a moment.



6

You, the magician, walk out to music and approach the box. Without lifting it, rotate the box all the way around to show off any decorations, as well as the doors in front and behind. Your partner remains perfectly still.

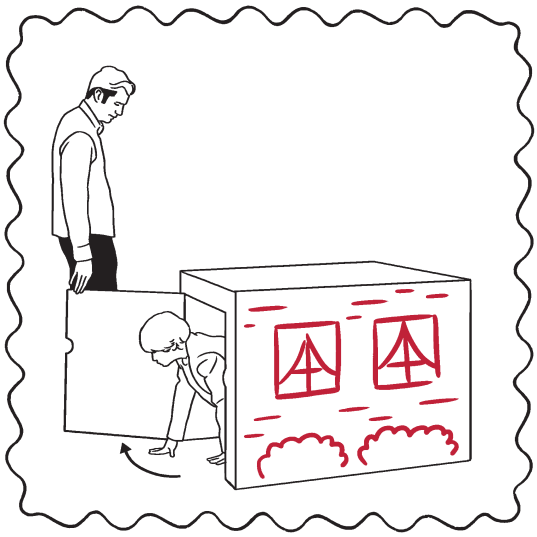
CONTINUED



7

Open the back door first and make sure it stays open. The back of the door will be visible from the audience to the right of the box. It will act as a secret shield.

HIDDEN VIEW



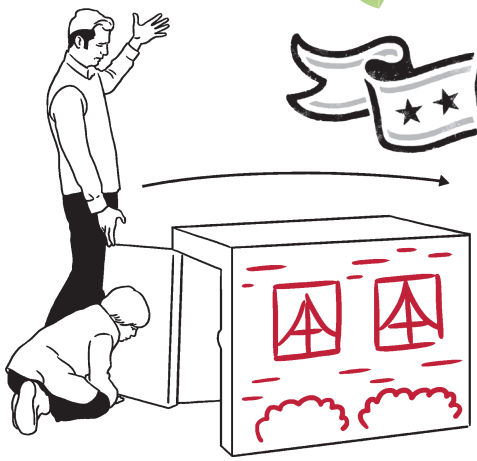
8

Now your partner secretly crawls out of the box and hides behind the back door.

EXCERPTED FROM
Big Magic for Little Hands
ISBN: 978-0-7611-8009-8
WORKMAN • workman.com

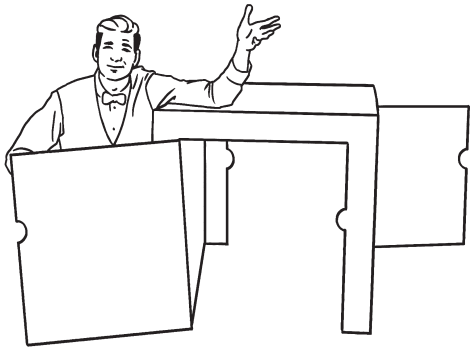
CAMP WORKMAN
EST 1974

3



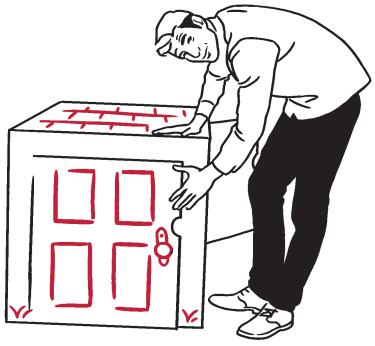
9

While your partner is crawling, you walk slowly around the box and, once your partner is hidden, open the front door.



10

With both doors open, your partner is hiding behind the back door and the audience can now see all the way through the empty box. Nobody's home (. . . yet!).

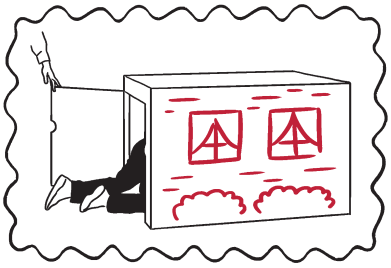


11

Close the front door, and slowly walk around the box to the back.

CONTINUED

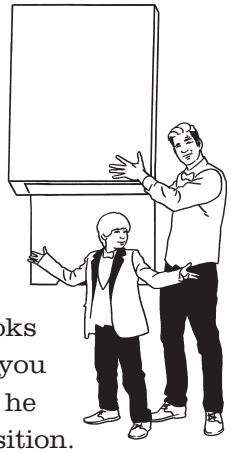
HIDDEN VIEW



12

As soon as the front door is closed, your partner secretly crawls back into the box, and you continue to walk around the box to close the back door.

13



Now, after all that buildup, clap your hands together and lift the box upward quickly. As you do, your partner immediately stands. (When you time it right, it looks as though he appears just as you whisk the box away.) It's as if he materializes in a standing position.

SECRET STUFF

There are endless themes for this illusion. Decorate the box like a doghouse and introduce the effect by explaining that you're upset because your dog went missing. When your partner appears, he could be holding a stuffed animal dog, or dressed in a dog costume, or even holding a real (quiet) dog. If you decorate the box like a dollhouse, you can make a real "live" doll appear!

EXCERPTED FROM
Big Magic for Little Hands
ISBN: 978-0-7611-8009-8
WORKMAN • workman.com

CAMP WORKMAN
EST 1974

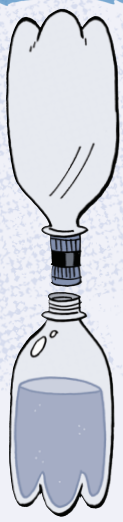
THE VIOLENT VORTEX

YOU WILL NEED

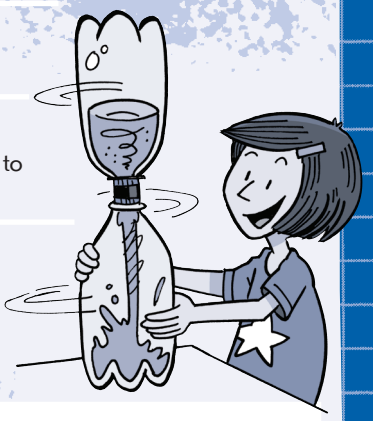
- **2 empty identical soda bottles with caps (large bottles work best)**
- **Adult**
- **Sharp knife**
- **Electrical tape**
- **Water**
- **Food coloring (optional)**

METHOD

1. Remove all the labels from the soda bottles.
2. Remove the bottle caps and ask an adult to use the knife to cut a hole about ½-inch wide in each of them.
3. Tape the bottle caps together tightly, flat side to flat side. Be generous with the tape (about 4 layers).

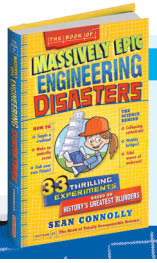


4. Fill one of the bottles about two-thirds full of water. (Add a few drops of food coloring if you want.)
5. Screw the bottle-top combination onto that bottle and then screw the other empty bottle (upside down) onto the bottle top that's pointing up.
6. Turn the combination over, and the water will start to gurgle and drain irregularly, or maybe hardly at all. (You might need to hold the lower bottle to keep it secure.)
7. Pick up the bottle combination and move it in a swirling motion.
8. Carefully place the combination down again with the full bottle on top (it might stand on its own) and you'll see a dramatic whirlpool draining out.



WHAT'S UP?

When the water inside the bottles is still, the combination of surface tension (at the mouth of the top bottle) and air pressure (in the lower bottle) means that very little water flows down. But when you twirl the bottles, the water begins to spin, creating a hole in the middle of the spinning water. The hole allows air to move into the top bottle, which also lets the spinning water flow down into the lower bottle. As the water descends from thicker to narrower sections of the bottle, it begins to spin faster—just like draining a bathtub or a figure skater twirling faster when she draws her arms in near her body. This combination of downward and circular motion is called a vortex.



EXCERPTED FROM
The Book of Massively Epic Engineering Disasters
ISBN: 978-0-7611-8394-5
WORKMAN • workman.com

CAMP WORKMAN

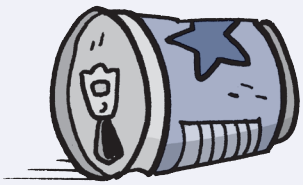
DON'T GIVE ME STATIC

YOU WILL NEED

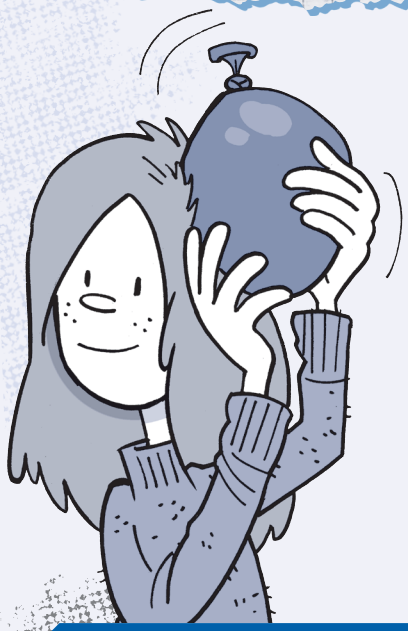
- **1 to 3 friends**
- **1 balloon per person**
- **1 empty soda can per person**
- **Long straight hallway or other open stretch of smooth floor**
- **Wool cloth (optional)**

METHOD

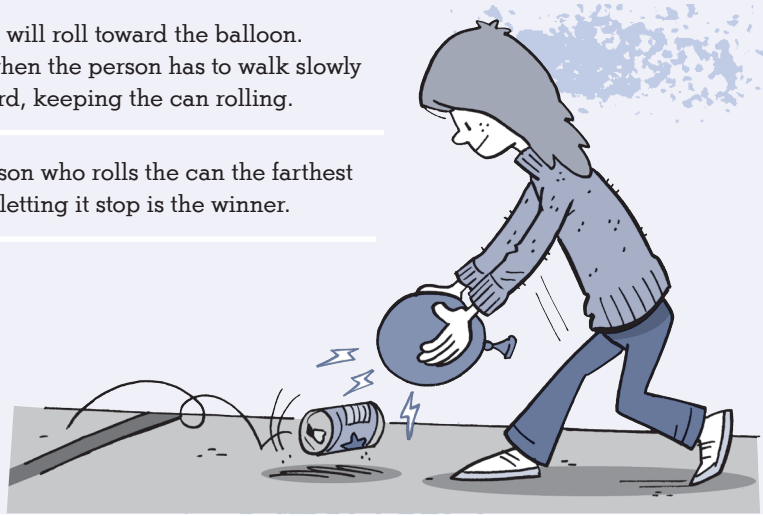
1. Each "player" should blow up a balloon and tie it. Each takes the next steps in turn.
2. Lay the soda can on the floor so that it could roll down the hall.



3. Rub the balloon vigorously against your hair (or wool cloth if your hair is too short).

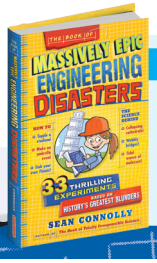


4. Stand in front of the can, facing toward it, and lower the balloon.
5. The can will roll toward the balloon. That's when the person has to walk slowly backward, keeping the can rolling.
6. The person who rolls the can the farthest without letting it stop the winner.



WHAT'S UP?

Here you are working with static electricity! Rubbing the balloon against your hair causes electrons (negatively charged particles) to be rubbed off onto the balloon's surface. That gives the balloon a negative charge. The surface of the can is slightly positive, so the opposites attract. The positively charged can then follows the balloon until the can has attracted enough of the balloon's electrons to make the charges equal.



EXCERPTED FROM
The Book of Massively Epic Engineering Disasters
ISBN: 978-0-7611-8394-5
WORKMAN • workman.com

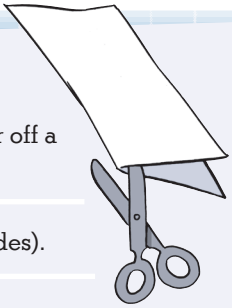
PRESSURE DROP

You can do lots of experiments with fans and leaf blowers to demonstrate the principles that work to provide lift. Or . . . you could do a really simple experiment in the form of a challenge to your friends. It all depends on lift, although in this case the "lift" will be heading down. Confused? Well, things should become clearer once you accept this challenge.

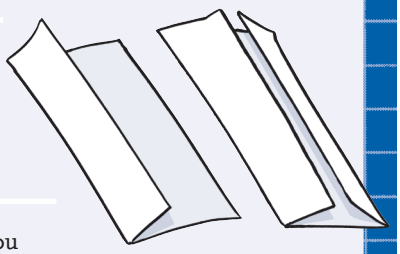
YOU WILL NEED

- **Some friends**
- **Piece of paper**
- **Scissors**
- **Table**

METHOD



1. Tell your friends that you have a challenge: to blow a piece of paper off a table.
2. Fold the paper in half (so the crease is halfway between the long sides).
3. Use the scissors to cut the paper along that crease.

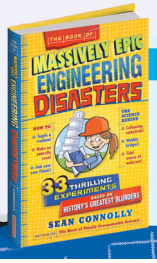


4. Take one of the half pieces and fold it one quarter of the way along the long side.
5. Do the same from the other end and fold the pieces over again so that they meet in the middle.
6. Unfold those flaps and place the paper on the table about a foot in from the edge; you should get it to stand up like a bridge if the flaps are down.

7. Ask a friend to blow along the top of the table to push the paper off. It should flatten against the table rather than be blown off.
8. Now you take a turn blowing, but aim your breath (disguising its direction) just above the paper—it will fly right off!

WHAT'S UP?

When your friend blew, the air molecules sped quickly under the paper. When they pick up speed, they exert less pressure. That means that the air above the paper—which wasn't being blown and still had normal pressure—forced the paper down. And when you blew above the paper, the opposite happened and the paper flew away easily.

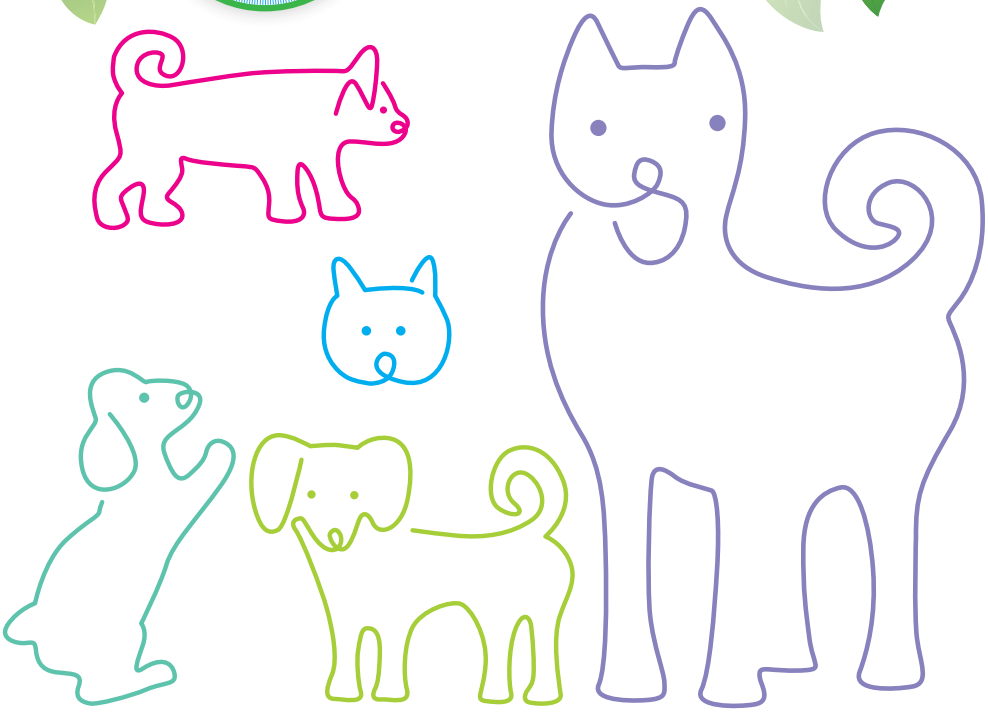


EXCERPTED FROM
The Book of Massively Epic Engineering Disasters
ISBN: 978-0-7611-8394-5
WORKMAN • workman.com

CAMP WORKMAN
EST 1974

SQUIGGLE A DOG

A squiggle is a one-line drawing. When you squiggle, you never lift your pen or pencil from the paper. Grab a pencil, pen, crayon, or marker, and start by tracing the dogs here.



Then, try it again free hand.

EXCERPTED FROM
Squiggle!
ISBN: 978-1-5235-0109-0
WORKMAN • workman.com

CAMP WORKMAN
EST 1974

SQUIGGLE A GIRAFFE

A squiggle is a one-line drawing. When you squiggle, you never lift your pen or pencil from the paper. Grab a pencil, pen, crayon, or marker, and start by tracing the giraffes here.

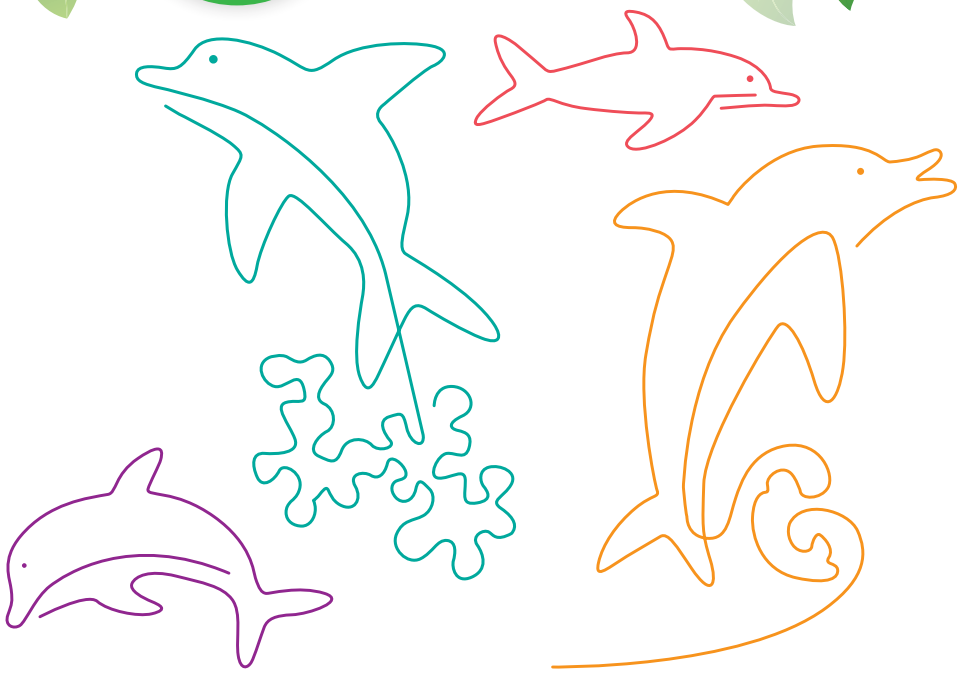
Then, try it again free hand.

EXCERPTED FROM
Squiggle!
ISBN: 978-1-5235-0109-0
WORKMAN • workman.com

CAMP WORKMAN
EST 1974

SQUIGGLE A DOLPHIN

A squiggle is a one-line drawing. When you squiggle, you never lift your pen or pencil from the paper. Grab a pencil, pen, crayon, or marker, and start by tracing the dolphins here.

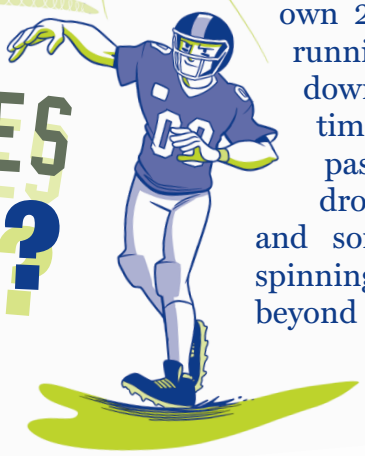


Then, try it again free hand.

EXCERPTED FROM
Squiggle!
ISBN: 978-1-5235-0109-0
WORKMAN • workman.com

CAMP WORKMAN
EST 1974

WHY THROW FORWARD PASSES IN A SPIRAL?



IT'S 3RD AND 10 ON YOUR own 22-yard line with the clock running out, and your team is down by five points. Just enough time for a miracle Hail Mary pass to steal the win! The QB drops back, dodges two tackles, and somehow uncorks a tightly spinning pass that travels well beyond everyone—all except the star wide receiver, who hauls it in and sprints into the end zone for a glorious game-winning touchdown. Just about everything in that miraculous play depended on good luck—dodged tackles, the receivers getting open, the QB spotting them—except for one thing: No one in their right mind would consider throwing a football in anything other than a spiral. So what is it that makes the spiral the ideal throw? After all, baseball pitchers have a whole array of deliveries and grips. It's not rocket science, is it?

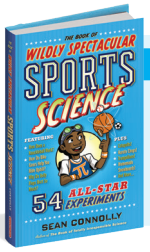
TESTING THE ROTATION

In fact, there *is* a bit of rocket science to explain why spiral passes work so well. Like rockets, planes, and cars, footballs need to cut down drag—the friction caused by air resistance as they move forward. That's why superfast objects like rockets and fighter planes have streamlined designs, with narrow fronts to cut through the air more easily. The football has two pointy ends, and either of them can act like the nose cone of a rocket as it tries to minimize drag. But how does it stay in that position through its entire flight, without drifting into a tumble? Meet a QB's best friend: angular momentum, or the amount of motion of a rotating object. Angular momentum keeps the object spinning along its axis and holds that axis in the same direction. (It's why you stay upright on a bike as long as you're moving—the angular momentum of the spinning wheel works to keep the wheel upright. With less speed, you lose angular momentum and the bike tips.) And as long as that football's spinning, its nose is cutting a drag-beating path through the air. This experiment is a simple way to demonstrate angular momentum in just a few seconds. Think of the pen as the axis (like the imaginary line connecting the pointed ends of the football).

THE LINEUP

- ★ Ballpoint pen
- ★ Large table or smooth floor
- ★ Poster putty
- ★ DVD (or Blu-ray Disc, CD, or video game disc)

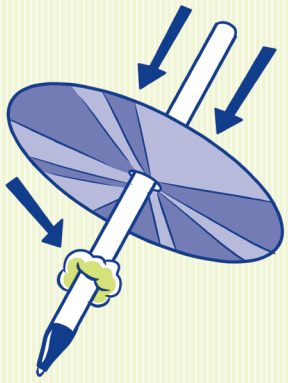
*CONTINUED



EXCERPTED FROM
The Book of Wildly Spectacular Sports Science
ISBN: 978-0-7611-8928-2
WORKMAN • workman.com

PLAY BALL!

1. Hold the pen upright, with its point just touching the table or floor.
2. Give it a spin with a quick twist of your fingers, just as you would set a small top spinning.
3. The pen will tip almost immediately.
4. Soften a piece of poster putty (about the size of a grape) and wrap it around the pen, about an inch up from the point.

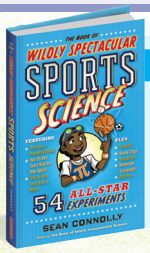


5. Hold the pen just between the point and the putty and slide the DVD down from the other side.
6. Press the DVD onto the putty so that it's even and secure.
7. Repeat Steps 1 and 2—the pen should spin and stay upright.

SLO-MO REPLAY

Angular momentum depends on three elements—mass, velocity, and the object's radius. The radius is the distance from the center of a circle (like a DVD) to the edge of the curve. The pen on its own had too small a radius to create much angular momentum. You couldn't really increase its mass (making it heavier) or its velocity (spinning it much faster), but you were able to increase its radius by adding the DVD.

The football has more mass and a much longer radius than a pen, and quarterbacks practice getting a good spin (velocity) on their throws. It all adds up to angular momentum, which in turn keeps that pointed end facing forward and cutting down drag. Touchdown!



EXCERPTED FROM
The Book of Wildly Spectacular Sports Science
ISBN: 978-0-7611-8928-2
WORKMAN • workman.com

CAMP WORKMAN
EST 1974

WHY DO DISCUS THROWERS Spin Around First?

THE HISTORY OF THE DISCUS GOES

waaaaay back to the original Olympic Games thousands of years ago in ancient Greece. Very few of us today have ever held a discus, but we generally seem to know what to do with it: Throw it! But how? When we throw most things—footballs, baseballs, and even javelins, another field event—it's mainly done in a linear (straight-line) way. You make a short running start and chuck it forward. But discus throwers don't go about their business in anything like a straight line. In fact, they go around and around in a small space before sending it off for a long throw. How can all that spinning motion translate into a straight throw?

DISCUSSING THE DISCUS

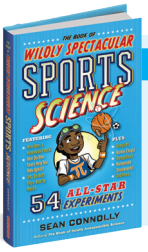
A discus thrower translates his strength into kinetic (movement) energy as he spins around one and a half times. Meanwhile, centripetal force—the force drawing the discus toward the thrower's body—also builds up. Centripetal force pulls objects directly toward the center of their circular motion, which in this case is the thrower himself. When he lets go, the centripetal force stops and the angular (spinning) velocity becomes linear (straight line). The discus flies off in a direction that's a 90-degree turn from the radius (the imaginary line from the center of the discus to its spinning edge). In other words, it goes flying straight off after spinning.

Here's a chance to get a much smaller disk moving with centripetal force. Maybe you'll eventually work your way up to the discus.

THE LINEUP

- ★ Penny
- ★ Party balloon

*CONTINUED

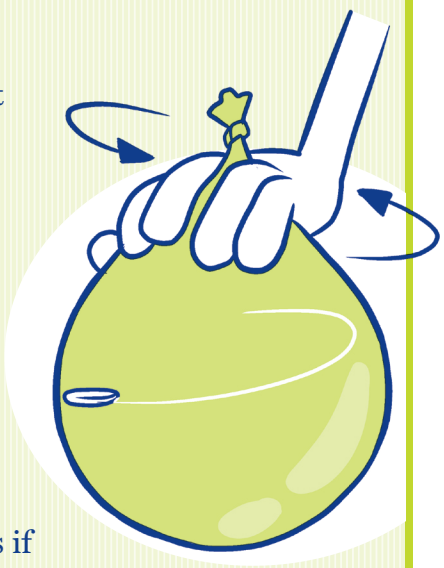


EXCERPTED FROM
The Book of Wildly Spectacular Sports Science
ISBN: 978-0-7611-8928-2
WORKMAN • workman.com

CAMP WORKMAN

PLAY BALL!

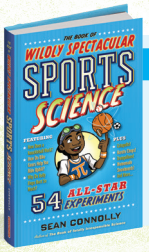
1. Slip the penny into the deflated balloon. Hold the balloon by the neck to make sure that the coin has fallen into the wider part of it.
2. Blow up the balloon and tie it shut (with the coin inside).
3. Hold the balloon with the knot under your palm and your fingers extending down and around it.



4. Turn the balloon upside down so that the knotted end under your palm is pointing up.
5. Move your hand in a circular path so that the coin begins to spin around inside the balloon. You might need to try this a few times if the coin seems to bounce around.
6. Eventually you'll get the coin to spin around smoothly.

SLO-MO REPLAY

The wall of the balloon supplied the centripetal force to keep the coin spinning. The discus thrower's arm does the same job, pulling the discus toward him. If the balloon suddenly popped, the coin would stop spinning and fly off in a straight line, just as the discus does.



EXCERPTED FROM
The Book of Wildly Spectacular Sports Science
ISBN: 978-0-7611-8928-2
WORKMAN • workman.com

CAMP WORKMAN
EST 1974

Why Are Some SWIMMING STROKES FASTER?

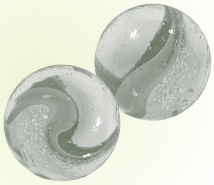
WHEN OLYMPIC SWIMMERS GO for a dip in those massive 50-meter-long pools, they complete laps in times so fast it'll make your head spin. But if you look closely, you'll see real differences between the lap times in the four main competitive strokes: freestyle (also known as front crawl), butterfly, backstroke, and breaststroke. That's because each stroke features a unique balance between propulsion (powering forward) and reducing drag (the friction resistance of water). As with lots of other sports, watching the experts' techniques might help us shave off some lap time of our own.

DON'T LOSE YOUR MARBLES

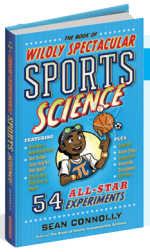
Many factors go into making some strokes faster or slower than others. The rules for each stroke limit swimmers to certain positions and techniques that affect their time. For example, while swimming breaststroke, your arms must stay in the water at all times—which, as you'll see, slows you down. Butterfly limits speed as well by having your chest "plow" through the water like a big old river barge. Here's something else to ponder: The flying fish of the Caribbean, some of the fastest in the world, get a lot of their speed by traveling through the air rather than through water. Could traveling through water really be that much slower? A superquick experiment will help you decide.

THE LINEUP

- ★ One 1-liter soda bottle and one 2-liter soda bottle (both empty)
- ★ Water
- ★ 2 marbles



*CONTINUED



EXCERPTED FROM
The Book of Wildly Spectacular Sports Science
ISBN: 978-0-7611-8928-2
WORKMAN • workman.com

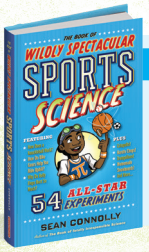
CAMP WORKMAN
EST 1974

PLAY BALL!

1. Fill the smaller bottle with water.
2. Place it next to the empty bottle.
3. Hold a marble over the mouth of each bottle.
4. At the count of three, let go of the marbles at the same time.
5. Note which marble reaches the bottom first.

SLO-MO REPLAY

There you have the proof that water produces much more drag than air. The marble passing through air (the empty bottle, even though it's twice the size) wins easily. So you can see why the breaststroke, which keeps your arms in the water throughout, is the slowest of the main strokes. Your arms need to travel forward against the direction of movement and are slowed by the resistance of the water. The other three racing strokes—freestyle (crawl), butterfly, and backstroke—are all faster because you move your arms back through the air when you've finished your stroke.



EXCERPTED FROM
The Book of Wildly Spectacular Sports Science
ISBN: 978-0-7611-8928-2
WORKMAN • workman.com

CAMP WORKMAN
EST 1974

ICK-SPERIMENT

SOMETHING'S GONNA BLOW!

15 MINUTES

Okay, time for some fizzy fun! You might've seen this experiment before, especially if you've ever made a volcano in science class. But some things, especially frothing, messy chemical reactions, never lose their charm. We'll be mixing good ol' vinegar (an acid) with ever-so-useful baking soda (a base), but tasting each first to really get to know these chemicals personally.

NOTE: NEVER TASTE ACIDS THAT ARE STRONGER THAN VINEGAR OR LEMON JUICE! AND NEVER EAT OR TOUCH BASES unless you are sure they are actual foods. Many chemists once *did* taste tests to identify acids and bases, but you should learn from their STUPIDLY SERIOUS and SOMETIMES DEADLY mistakes. Are we yelling loud enough yet? DO NOT MESS AROUND WITH HOUSEHOLD CHEMICALS! Especially bleach and ammonia—avoid these! PROMISE? Good!

GO FETCH

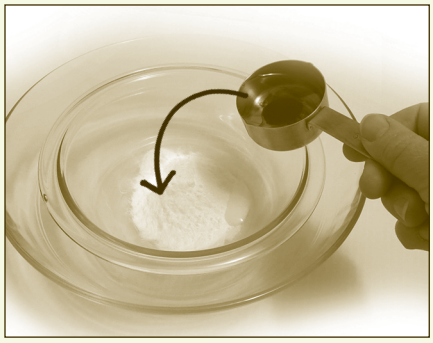
- 2 cups white vinegar
- 2 cups baking soda
- 2 small bowls
- 2 spoons
- 1-cup measuring cup
- 1/4-cup measuring cup
- Small cup or glass
- Large bowl (to catch overflow)
- Food coloring (optional)

1. Place the vinegar and the baking soda into separate bowls. This is one of the few experiments where you have our permission to taste. Dip one spoon in the vinegar and then touch it to your tongue. Now, twy to tawk wit yur mout all puckered up! That's an acid for you. Acids taste sour. They make your mouth get all wrinkly. And vinegar is a very weak acid!

2. Now dip the other spoon in the baking soda and taste. How does it make your mouth feel? Bases taste bitter. Now wet your finger and dip it in the baking soda. Rub your thumb over it. How does it feel? Bases are known to feel slippery. Wash off your fingers and repeat the finger test with the vinegar. Does it feel as slippery?

3. Pour ¼ cup of your baking soda into the small cup or glass, which you have placed inside the larger bowl to contain any overflow. Then pour ¼ cup of vinegar in. If you want to add food coloring, you can add it to either chemical first. What happens when you mix them?

4. What would happen if you added more vinegar now? Make a hypothesis and test it. Here's an example (notice the *if*, *then* words): "*If* I add ½ cup more vinegar, *then* I think it will explode over the bowl." Experiment with different proportions of your *reactants* (ree-ack-tints) (i.e., the vinegar and baking soda) to see which makes the most foam.



WHAT JUST HAPPENED?

A chemical reaction, that's what! In a chemical reaction, the original molecules swap some of their atoms to make something new and different. The vinegar and baking soda actually exchanged atoms and became three totally new chemicals: sodium acetate, carbon dioxide (CO_2), and a little something we like to call water. (You know *that* molecule pretty well, you brilliant chemist, you!) The water is, well, real water: H_2O. The carbon dioxide gas is what created all that foam. It's also the same gas you exhale every day. And the sodium acetate? It's actually a kind of salt—a "sodium salt of acetic acid," to be extra geeky about it. It's a super-amazing chemical with lots of uses, such as:

- A food additive to make things taste better. Check the ingredient list on different brands of salt-and-vinegar chips. (It may be called sodium diacetate.)
- Creating heat packs for winter sports. When you press on a heat pack, the sodium acetate inside turns into a crystal and releases a ton of heat. Ahh, that feels good.

EXCERPTED FROM
Oh, Ick!
ISBN: 978-0-7611-8738-7
WORKMAN • workman.com

CAMP WORKMAN
EST 1974

ICK-TIVITY

FARTING SLIME BAG

15 MINUTES

Fart sounds! So much fun! Slime plus fart sounds? Even better! Here's how to mix up a batch of slime that's not only fun to play with but will also make some pretty distinctive noises as well.

1. Combine ½ cup of glue with ½ cup of warm water in the bowl and stir well with a spoon. If you want your farting slime bag to be a color other than white, add a few drops of food coloring.

2. In the mug, mix 1 teaspoon of borax powder with ¾ cup of warm water.

3. Slowly pour the watery borax into the watery glue, stirring as you pour.

You might not use all of the watery borax. When the mixture gets really gooey and harder to stir, stop pouring and use your hands instead of the spoon to mix everything together until it feels like a ball of slime. You may have some leftover water in the bowl.

4. Remove your slime from the bowl and rinse it and your hands off, because any leftover borax might irritate your skin. Your slime is NOT edible, but now it's totally safe to play with. Enjoy the sheer pleasure of your gooey creation. . . . Stretch it and squeeze it! So icky!

GO FETCH

- Measuring cup
- White glue
- Water
- Bowl
- Spoon
- Food coloring (optional)
- Mug or other container
- Borax powder (available near the laundry detergent in your supermarket)
- Plastic drinking straw

5. The farting fun can now begin! Stick a straw into your slime and blow hard. You'll have better control if you hold the slime in your hands while blowing, and you'll probably get the best results if you stick the straw only about half an inch into the slime. With a little experimenting, you should be able to create a wide variety of dazzling fart noises.

6. Your slime just might become your new best friend. To keep your slimy friend safe and prevent him from drying out, store him in a sealed plastic bag when you're done playing.

WHAT JUST HAPPENED?

All sounds, from twangy banjos to elephant farts, are caused by vibrations. A guitar makes sounds because of vibrating strings. You make sounds when you talk because of vibrating vocal cords in your throat. When you fart (and 'fess up—you DO), intestinal gas rushes out of your rear end, causing noise-producing vibrations of your anal sphincters: the muscles that normally keep the end of your digestive system tightly closed.

Your inflated slime bag makes a farting noise in a similar way. When you blow air into the slime, the air passes by small folds in the slime as it escapes. These folds then vibrate and emit that charming sound we know and love!

FUN FACT!

Pumpernickel means "goblin that breaks wind" in Old German.

EXCERPTED FROM
Oh, Ick!
ISBN: 978-0-7611-8738-7
WORKMAN • workman.com

CAMP WORKMAN
EST 1974

ICK-TIVITY

AN EARTH PARFAIT

20 MINUTES

Alas, there's no way to journey to the center of the Earth, so you can't see its layers. But if you do this ick-tivity, you'll get a good sense of how Earth's layers "float" on top of each other. It's a fun demonstration of density too.

1. Pour ½ cup of dish soap into the glass.

2. Mix ½ cup of water with 1 drop of blue food coloring in a measuring cup.

3. Gently tilt the glass and slowly pour the blue water down the side of the glass so that the water sits on top of the dish soap layer.

4. Gently tilt the glass again and slowly pour 1 cup of vegetable oil down the side and on top of the blue water layer.

5. Mix 1 tablespoon of rubbing alcohol with 4 drops of red food coloring in a measuring cup.

6. By now you're a pro at this: Gently tilt the glass and slowly pour the red alcohol on top of the vegetable oil. It's okay if the different liquids seem to mix a bit. If you let it sit for a while, the boundaries between the four layers in your glass will become more distinct as each liquid settles.

GO FETCH

- Tall clear glass
- Dish soap
- Water
- Food coloring (blue and red)
- Vegetable oil
- Rubbing (isopropyl) alcohol
- Measuring cup

WHAT JUST HAPPENED?

The four layers you see in the glass are like the four layers of the Earth. The red alcohol represents the Earth's crust; the vegetable oil represents the mantle; the blue water represents the outer core; and the dish soap is the inner core. As you know, the Earth's layers aren't all liquid. But they do have different densities. And just like the liquids in the model you made, the Earth's layers are organized by density. The layer with the highest density (the core) is at the center of the Earth, and the least dense layer (the crust) is on the outer edge. This is because, as the Earth was forming and cooling 4.5 billion years ago, the more dense materials sank toward the center, and the lighter materials stayed closer to the surface. It's the same in your model. The densest layer (the dish soap) sank to the bottom while the least dense layer (red alcohol) floated on top.

Not sure what all this talk about density is about? You can think of density as a comparison between an object's mass (how much "stuff" is in it) and its volume (how much space it takes up). (The "stuff" we're talking about is particles of matter like atoms and molecules. And the math to calculate density is mass divided by volume.) Items that are more dense have more matter packed into them. Think of a cotton ball and a similar-size pebble. They are about the same size, but the pebble is much more dense. If you were to weigh a half a cup of each of this experiment's liquids, you would find that the dish soap weighs the most. It has more matter packed into it than the water, oil, and rubbing alcohol do. Hey, that sounds like a cool thing to try!

EXCERPTED FROM
Oh, Ick!
ISBN: 978-0-7611-8738-7
WORKMAN • workman.com

CAMP WORKMAN
EST 1974

ICK-SPERIMENT

15 MINUTES TO MAKE THE MUMMIES & 1 WEEK TO OBSERVE

MEET SALTANKHAMUN

A key step in mummy making involves drying out the dearly departed by packing the body in salt. What's the best preservative to keep a mummy unmoldy? Let's compare some different household chemicals and try to mummify some apple slices. What do you think will work best? Make a prediction, then get to work!

1. Label each plastic cup: *baking soda*, *Epsom salt*, *table salt,* and *control*.

2. Pour enough baking soda into the cup labeled *baking soda* to just cover the bottom. Place an apple slice in and add the rest of the baking soda so the apple is completely covered.

3. Repeat the procedure with Epsom salt, completely covering the apple.

4. Do it once more using table salt to completely cover the third slice.

5. Put the remaining apple slice in the control cup.

GO FETCH

- 4 apple slices of about the same size
- 4 6-ounce clear plastic cups
- Permanent marker to label the cups
- 3/4 cup baking soda
- 3/4 cup Epsom salt (available at any drugstore)
- 3/4 cup table salt

6. Park all four cups where they will be out of the way.

7. What's your hypothesis about what will happen to each slice? Write it down.

8. Wait a week, then take a peek. What happened? Which white sprinkly stuff did the best job at making an apple-mummy?

WHAT JUST HAPPENED?

Not all white powders are created equal. The baking powder was useless in preventing rot. That apple probably looked pretty similar to the control. Epsom salt with its large grains did a better job. But the table salt worked best at keeping Saltankhamun looking fresh as a daisy!

Salt has hygroscopic properties, meaning that it can attract and hold moisture. And, in fact, salt has been used to dry out food for centuries all over the world. In the days before fridges, it was the best way to preserve food. In ancient times salt was worth more than gold in some places! Salt can also draw water out of bacterial cells, which prevents them from reproducing. That stops them from decaying food . . . or mummies, for that matter. Epsom salt is actually not a salt. It is a compound of the elements magnesium and sulfate, but it forms saltlike grains and absorbs some moisture.

EXCERPTED FROM
Oh, Ick!
ISBN: 978-0-7611-8738-7
WORKMAN • workman.com

CAMP WORKMAN
EST 1974

Bug Bottle Activities

Bug projects provide fun ways to interact with the insects you find. Learn how to make and use important tools that help you collect bugs. Put the creatures in your bottle and give them things to do. Or watch insects outside: Follow them to their nests and observe their habits. You can even hunt for bugs indoors by looking in ceiling corners and inside cupboards. There's a lot to do, so choose a project and become an expert!

Collect Like an Expert

Entomologists catch insects in many different ways. Here are some tools and tips on how to use them, including the best ways to catch bugs that you might normally have trouble collecting.

Sifting

Sifting helps you separate many kinds of bugs from their habitats so you can get a closer look.

SUPPLIES

- A small white plastic tray or dishpan

DIRECTIONS

1. Spread some dirt, dead leaves, old grass clippings, or other material from the ground on the tray.
2. Shake the tray gently from side to side, and the bugs will move across it—making it easier for you to see and catch them.

To find pond bugs, do the same with bottom debris from a pond, but also add an inch of water.

Beating Tray

This method catches lots of spiders, caterpillars, other larvae, and adults such as plant bugs, which sit on leaves.

SUPPLIES

- Large white tray
- Sturdy stick

DIRECTIONS

1. Hold the tray underneath a leafy branch of a tree or bush.
2. Tap the branch firmly with your stick. Insects will be knocked off the leaves and fall onto your tray.

EXCERPTED FROM
The Bug Book and Bug Bottle
ISBN: 978-0-7611-4889-0
WORKMAN • workman.com

Collect Like an Expert

Entomologists catch insects in many different ways. Here are some tools and tips on how to use them, including the best ways to catch bugs that you might normally have trouble collecting. You may need some help from an adult.

Pitfall Trap

A pitfall trap is an easy way to catch bugs that run over the ground. Once you set it up, insects will fall into the trap.

1. 2. 3.

Making a pitfall trap

SUPPLIES

- Trowel or small shovel
- Empty, clean yogurt container
- Tile or thin piece of wood
- 3 or 4 small stones
- Bits of cheese, cookie, banana, lunch meat, or other food

DIRECTIONS

1. Find a flat area on the ground. Using the trowel or small shovel, dig a hole just large enough to fit the yogurt container.
2. Carefully place the yogurt container in the hole. As needed, fill the hole with extra dirt, or dig deeper so that the rim is completely level with the ground. Place the bait in the cup.
3. Prop up the tile or wood above the container with the small stones. This will protect the cup from the sun and rain.
4. Leave the trap overnight. In the morning, go back to the trap to see what you have caught.
5. Experiment with different baits to see which kinds of bugs are attracted to different foods.
6. If you catch a lot of bugs, lift the container out of the ground for a closer look. Put some of the insects into your Bug Bottle so you can look at them even more closely.
7. Record your catches in your Bug Journal.

Pond Net

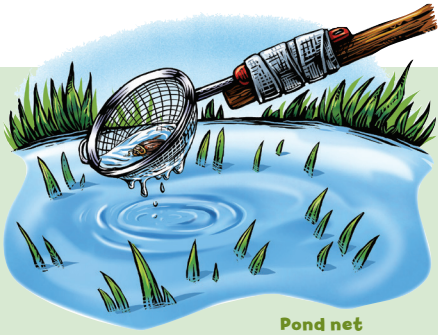
An inexpensive food strainer becomes a helpful pond net with a few quick, simple adjustments.

SUPPLIES

- Long-handled food strainer
- Stick or short broom handle, 2 to 3 feet long
- Duct tape

DIRECTIONS

1. Fasten one end of the stick to the handle of the strainer with duct tape. Wrap it three times.
2. Use the strainer to catch large beetles and other insects you see swimming in the water.
3. Pull the net gently through water plants, and you may catch insects like water beetles and water boatmen.



Pond net

EXCERPTED FROM
The Bug Book and Bug Bottle
ISBN: 978-0-7611-4889-0
WORKMAN • workman.com

CAMP WORKMAN
EST 1974

EXPERIMENT:

Cheetos Pollen

Use this orangey snack to really help you see what happens during pollination.

WHAT YOU NEED

- Cheetos—the cheesier and more orangey, the better
- At least two paper cups
- At least two tissues (one for each cup)
- At least two rubber bands (one for each cup)
- Scissors

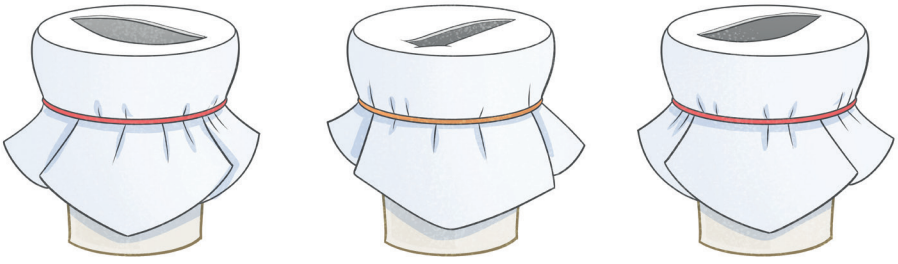
Don't have Cheetos? Use colored Jell-O dust or hot chocolate powder. Just dampen your fingers before you do STEP 2.

WHAT YOU DO

STEP 1:

Make your "flowers." You want to make at least two.

- Place a handful of Cheetos in each cup.
- Fold each tissue in half and make a 2-inch cut across the center. Open up each tissue and place one over the opening of each cup. Secure the tissue with a rubber band.



*CONTINUED

EXCERPTED FROM
Turn This Book Into a Beehive!
ISBN: 978-1-5235-0141-0
WORKMAN • workman.com

CAMP WORKMAN
EST 1974

STEP 2:

Set your "flowers" up next to each other and be like a bee and pollinate.

- Trying not to tear the tissue, reach into one "flower" to grab the Cheetos, your "nectar." Enjoy your "nectar." But don't lick your fingers.
- Move to another cup, reach in, and collect more "nectar."
- Go back and forth a couple of times.
- What do you notice about your flowers?

WHAT'S GOING ON?

Just like a bee, you saw something in the "flower" that you wanted: a tasty treat. So you reached in and gathered it. And just like a flower, the Cheeto was covered with a dust. In the Cheeto's case the dust is a bright orange cheese dust. In the flower's case the dust is pollen.

When you go from cup to cup gathering your treat, the dust comes along for the ride on your fingers and gets rubbed off on the next cup. Your tissues became more and more orange. In nature, a bee gathers a treat and the pollen comes along for the ride. It gets rubbed off on the next flower and pollinates it—just like your orangey Cheeto dust.

EXCERPTED FROM
Turn This Book Into a Beehive!
ISBN: 978-1-5235-0141-0
WORKMAN • workman.com

Camping Activity

Plant Pressing

What you need

Scissors

Paper towels (at least 2)

Notebook or any thick book that you can let sit for a week

Assorted leaves and flowers with at least 2 to 3 inches of stem (remember to use leaves and flowers that have fallen naturally; avoid poisonous plants)

A large, heavy rock

6 wide rubber bands (optional)

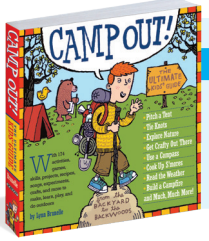
Envelope or folder, for storage

When you're out and about hiking and making observations, you may find that some interesting leaves or flowers have flung themselves on the ground in your path. Why not take them home? It's a great idea, but if you pack even a few straight into your journal, they may end up looking more like a pile of dust than the beautiful plants they once were. Not to fear! Plant pressing is here!

Pressed leaves and flowers can keep their shape and color for a long, long time—scientists still study specimens that were dried in the field more than a hundred years ago! These preserved plants are perfect for pasting into your Field Journal and great for other projects as well. They'll need to be squished for at least a week, so press them right in camp and keep them flat in your notebooks for easy transport.

What you do

1. Cut 2 paper towels to the size of the book.
2. Place 1 trimmed paper towel on a sturdy, flat surface like a rock or picnic table.
3. Place as many leaves or flowers on the paper towel as will fit comfortably. Try to lay them as flat as possible. If you're using a flower, you can press it with all the petals together, like a bud, or with the petals opened, which will give you more detail. If you want the petals to be open, place the flower face down and gently arrange the petals as you wish.
4. Lay another paper towel on top of the leaves and flowers. Smooth it out so it lays flat.
5. Place the whole thing between the pages in the back of your book and close it firmly.
6. Put the heavy rock on top of the book and let the whole thing sit in a warm, dry place (like the car) for a week.
7. If you're on the move, wrap the rubber bands around the book tightly to keep it closed firmly and to keep pressure on the leaves.
8. After a week or so, carefully remove the pressed leaves and flowers from the book.
9. Store them flat in an envelope or a folder until you're ready to use them. (Pressed flowers look great on posters, notecards, placemats, and more–use clear contact paper to secure them.)



EXCERPTED FROM
Camp Out!
ISBN: 978-0-7611-4122-8
WORKMAN • workman.com