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My Science Journal

This journal belongs to:

_____

DragonflyTV Engineers

1. Ski Jump Madness!

-Karl, Garrett and John of Grand Rapids, MN

We ski jump in the V-style. Our dads, grandpas and uncles ski jumped in the "cranker"(skis together with arms flapping) or "superman" (skis together with arms forward) styles. We wanted to know which of these was the best, so we jumped using each position three times, and measured our jump distances with a measuring chain. How did each position perform?

A. cranker went further than superman, and V-style went the shortest distance

B. superman flew further than cranker, but didn't go as far as V-style

C. cranker style jumped more distance then superman but less than V-style

Answer

C: We jumped farther using the "cranker" style than using the "superman," but we discovered that our regular "V" position allowed us to jump the farthest of all. Plus, it made us look the coolest!

2. Hoop It Up!

-Jay and Jonathan of New York City, NY

We're into hoops big time! We were working on our jump shots, and noticed that kids younger than us shoot from their chin, but kids older than us do overhead shots. We wondered what the difference was between the two shots. We got our friends to take 10 jump shots each using three different hand positions: hand starting at chest, starting at chin, and starting overhead. We counted the baskets and observed the arc of the ball with a video camera. What shape of arc led to the highest shot percentage?

A. arc near the hoop

B. flat arc

C. high arc

Answer

C. Our friends had different shooting styles, but each time they were successful, we noticed the arc of the ball was high. This gave the ball a greater chance of going through the hoop, no matter which hand position they used.

Oceans of Fun!

How many times can you find the word **OCEAN** in this puzzle? Look forwards, backwards, up and down, and diagonally!

O	A	E	C	O	C	E	N	N
C	C	O	C	E	A	N	E	A
E	N	E	C	E	E	N	A	E
A	A	C	A	C	N	A	E	C
N	C	E	A	N	A	E	C	O

Answer: The word ocean appears six times.

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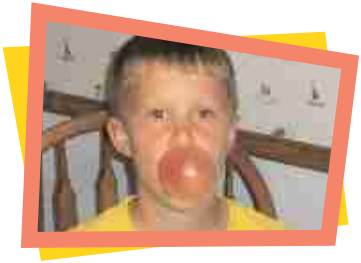

Super Do It!

What?

To see what happens to the weight of gum after you chew it.

Materials:

- a kitchen scale
- bubble gum
- a mouth!

How?

1. Unwrap two or three pieces of gum, and place them on the kitchen scale.
2. Write down the weight.
3. Now chew the gum for 5-10 minutes.
4. Now take the wad of gum out of your mouth and weigh it again. Is it heavier or lighter? Why? Do you get the same result with sugarless gum as with regular gum?

What Happened?

Sugar is a major ingredient in gum, and the chewing process allows the gum to dissolve in your saliva. When you swallow, the sugar goes down your throat. This makes the gum weigh less than what you started with. The little bit of saliva that mixes in with the chewed up gum adds only part of the weight back.

Log on to DragonflyTV at
http://pbskids.org/dragonflytv/superdoit/chew_gum.html
and tell us your results!

DragonflyTV Word Unscramble

Unscramble each group of letters to find a science topic from Season 3 DragonflyTV.

1. REINNGEGINE _____
2. BATSAHIT _____
3. AYONOMSTR _____
4. ESICFRSNO _____
5. PESED _____
6. MEGAS _____
7. HATLEH _____
8. DINW _____
9. OGDS _____
10. ROPSST _____

Answer:
Engineering; Habitats; Astronomy; Forensics; Speed; Games; Health; Wind; Dogs; Sports

Check out the DFTV Science Fair Source at www.dragonflytv.org

Science Outside... Be a CSI!

Tracks left by feet or vehicles at a crime scene can be used by police to help identify a suspect. The pattern of the track can be used to distinguish certain traits about the person or the vehicle. Here's a chance for you to be one of the people from CSI! First, walk through some soft sand, and measure the distance between the steps. Next, run through the soft sand and measure the distance again. What happens to the shape and the distance of the foot prints? Draw the prints here, or in your notebook. Ride your bike through some soft sand, and examine the tire tread pattern that is left behind. Do the same with some other bike tires. Look for differences in the patterns. Draw the patterns in this CSI notebook.

Log on to the DragonflyTV website at www.dragonflytv.org and tell us what you learned!

Designer Kites!

Investigate the smallest kite you can make that still flies. Try a bunch of different designs and find the one that catches air the best, even though it's little. Does the shape of the kite make a difference? Try making a kite that's shaped like a triangle and compare it to one shaped like a square. Make a drawing of your best kite below!

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Super Do It!

What?

Demonstrate the power of putty!

Materials:

- 1/4 cup white glue
- 1 teaspoon household borax
- 1 cup water
- wooden stirrer

How?

1. Dissolve the borax in the cup of water.
2. Pour the glue into the mixing bowl.
3. Add 1/4 cup of the borax water to the glue, and stir really well.
4. The glue turns into a blob! Go ahead and pick it up with your hands, and start stretching it. How far can you stretch the blob without breaking it?

How's it work?

The borax "connects" the glue molecules into one big supermolecule...this is called "crosslinking." A similar process is used to make rubber for car tires and hard plastic for bowling balls!

Log on to DragonflyTV at
http://pbskids.org/dragonflytv/superdoit/funny_putty.html
and tell us your results!

How could you easily carry 100 pounds of water?

 = A or U

 = C or L

 = E or P

 = W or T

 = R or N

 = H or I

 = M or D

 = O

!

Answer

Put the water in a round container and roll it home!

Log on to www.dragonflytv.org and click on Riddles & Games to see for yourself!

Science In Your Backyard: Take a Deep Breath

How does your pet's heart rate change after playing around? Use your hands to feel your dog's chest move in and out, and count the breaths in a minute. Also, find your resting breath rate. Then run around and play with your pet for a few minutes, and count breaths again right away; this is the active breath rate. Count the breath rate one more time, after resting for one minute. Whose breathing rate returns to normal faster? Yours, or your dog's? Write down your findings below.

Your resting breath rate _____

Your dog's resting breath rate _____

Your active breath rate _____

Your dog's active breath rate _____

Your breath rate one minute later _____

Your dog's breath rate one minute later _____

Edible Investigations

Corey Scott

Corey has the best job of all because he gets to eat his research! Well, not really. Corey's a Nutritionist for General Mills Bell Institute of Health and Nutrition. Corey looks closely at the nutritional composition of fruits and vegetables.

Search for mold!

Mold can actually make some people sick. Wipe a cotton swab on the kitchen or bathroom countertop, then dab it onto a piece of white bread. Add a few drops of water, then close the bread in a plastic zipper bag and leave it in a warm place for a few days. If your cotton swab collected molds from the countertop, they will grow on the bread.

Log onto DragonflyTV at www.dragonflytv.org and tell us what you learned!

Learn about other cool scientists at pbskids.org/dragonflytv

Super Do It!

What?
Mix up a Super Bubble Recipe

Materials:
- dish soap
- bubble hoop
- "secret" ingredients
- tape measure or ruler

How?
1. Mix up some dish soap with water.
2. Add any secret ingredients you want, to make a super duper bubble recipe.
3. Dip the bubble hoop into the mixture, and blow!
4. Now, make the LARGEST bubble you can. You can use any size hoop you want, but here's a special challenge: be sure to measure the bubble before it pops.

How's it work?
One reason bubbles pop is due to evaporation of the thin bubble wall. Some ingredients can reduce the evaporation, letting you make a big long-lasting bubble. Don't just sit there...Get to it!

DragonflyTV Forensic Scientists

1. Who's been eating my cake?

-Carolyn and Kalia of Minneapolis, MN

Carolyn's sister Lizzy is celebrating her birthday, but we're investigating a crime. We returned home to find Lizzy's party set-up trashed. The cake was half-eaten, presents were thrown all over, and there was even some bright red stuff dripping off the table. We analyzed a fiber we found, and compared it to hair samples from our most likely suspects. Whose hair matched the crime scene sample?

A. Lizzy
B. Our nosy neighbor, Nellie
C. Sammy, the pooch

Answer
C. The hair sample analysis showed the crime scene fiber was much thicker than any human hair sample. That meant the culprit was Sammy the dog!

2. Coral Castle Whodunit!

-Tevi and Aaron of Miami, FL

We're really into exploring the science of places like the Egyptian pyramids, or a local mystery, Coral Castle in Florida. An unusual man named Ed somehow built this castle all by himself in the 1920s. Some of the limestone blocks here weigh over a ton. How could he have lifted them all by himself?

A. Using alien powers
B. Using simple machines
C. Using large power equipment

Answer
B. We found we could lift a one-ton rock using simple machines and our own muscles!

Learn more about these investigations by logging on to http://pbskids.org/dragonflytv/explore.html

Build a Hovercraft!

We built a hovercraft. Here's how you can build one, too!
-Rachel and Sarah of Monticello, MN

You'll need:

- 3/4 inch plywood 1/2 sheet, cut into a 4 foot diameter circle
- plastic disc, approximately 6 inchs in diameter, like a coffee can lid, or cut from a plastic flying disk
- heavy plastic sheet, like a picnic table cloth, cut to a 6 foot diameter circle
- 1/2 inch wood screws, about 6 of them
- duct tape
- leaf blower, gasoline or battery powered
- tape measure
- electric drill and 1/4 inch drill bit
- staple gun

What to do:

1. If it isn't already cut to shape, use a saber saw to cut the plywood into a 4 foot diameter circle

2. Measure the opening of the leaf blower, and draw a circle the same size on the plywood sheet, halfway between the edge of the plywood and its center. Draw the shape of the opening carefully to match the shape and size of the leaf blower nozzle. Carefully cut out this hole. (**Fig 1.**)

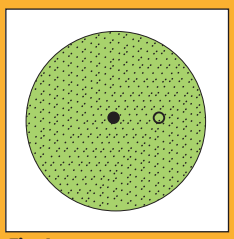

Fig 1.
Plywood, with leaf blower hole

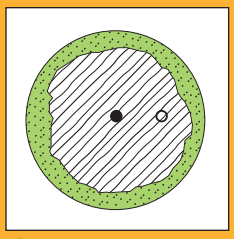

Fig 2.
Plywood, with skirt edge showing

3. If you haven't done so already, cut the plastic sheet or table cloth to a 6 foot diameter circle. This is called the "skirt". You may want to experiment with different size skirts (5½ feet, or 5 feet). Set the plywood circle over the skirt, then bring up the skirt edge and attach the skirt to the plywood. You can use a staple gun to hold it in place, then place duct tape all the way around to make a tight seal. (**Fig 2.**).

4. Flip the plywood over, so the plastic skirt is now on top. Attach the plastic disk to the center of the plywood. You can do this using several wood screws around the edge of the plastic disk. Be sure to use wood screws that don't poke through to the other side or you'll have an unpleasant surprise when you sit on the hovercraft! (**Fig 3.**)

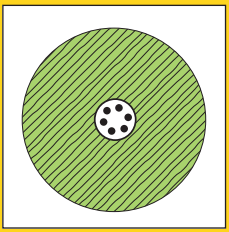

Fig 3.
Plastic disk mounted onto skirt-side of plywood

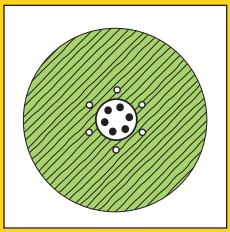

Fig 4.
Small holes in plastic skirt

5. Carefully cut six small holes in the plastic sheet, to let air escape out of the skirt. The holes can be about 2 inches in diameter, and should be near the plastic disk. You can experiment with the size, number, and spacing of these holes.

6. Flip the plywood back over, so it is skirt-side down. Insert the nozzle of the leaf blower into the hole you cut for it. Start the leaf blower and inflate the skirt. Check for air leaks around the edge of the skirt, where you taped it to the plywood, and around the hole where the leaf blower nozzle goes into the plywood. Your hovercraft is ready to ride!

DragonflyTV Themes

DragonflyTV is all about real kids, just like you, doing REAL SCIENCE! Check your local PBS listings to tune into episodes on these great topics:

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Investigate I	Investigate II	Investigate III
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Water	Spinning	Forensics
Rocks	Propulsion	Engineering
Flight	Human Body	Earth Systems
Weather	Sound	Animal Behavior
Technology	Technology	Speed
Plants	Ecosystems	Health
Air	Underwater	Habitats
Human Behavior	Mammals	Games
Space	Earth Systems	Space/Astronomy
Human Body	Creepy Crawlies	Sled Dogs

If you have great investigations, DragonflyTV wants to know about them! Visit our Web site at pbskids.org/dragonflytv, or write to us at:

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