Build a Bottle Diver

Make a toy that lets you experiment with buoyancy. Does it sink or float? Give it a squeeze and you may be surprised!

You will need:

- A clear plastic bottle with a cap (a 2-liter soda or juice bottle works well – remove the label)
- A medicine dropper (glass works best, but a plastic dropper can work)
    - Alternative options: a straw and paper clips, or small packets of sauce or ketchup from a fast-food restaurant
- Cup of water (large enough to hold the dropper)
- Optional: rubber bands, twist ties, pipe cleaners or modeling clay

Try this!

1) Put the empty medicine dropper in the cup of water. Does it sink or float? Try picking up some water with the dropper: hold the dropper in the water, squeeze the bulb and let go. Now put the dropper in the cup again. What happens this time? Try to add enough water to your dropper so that it *just barely* floats in the water.

2) Fill the plastic bottle completely with water. Put your dropper (filled with water) into the bottle and close the cap. Squeeze the bottle. What happens to the dropper? What happens when you let go of the bottle?

What's going on?

When figuring out whether something floats or sinks, both weight and size (volume) matter. The dropper floats because it has just enough air inside. But the air can be compressed into a smaller space when pressure is applied – the pressure from your hands squeezing the bottle. Even though the air is still in the dropper, it takes up less space, which causes the dropper to sink. When you release the pressure, the air expands and the dropper floats again.

Keep experimenting!

- If you don't have a glass medicine dropper, you can make a diver out of a straw. Cut the straw so that it is only a few inches long and fold it in half. Use a paper clip to keep it folded. Add paper clips to the ends to make it heavy enough. You can also add rubber bands, twist ties, pipe cleaners or modeling clay – anything that will add just enough weight but still keep a little air trapped inside.

- Can you think of anything else around the house that might work? Fast-food sauce packets usually have a tiny bit of air sealed in them. Try to find a packet that just barely floats in a cup of water. Put it in your bottle and see if you can make it dive!

Find more STEM fun at imaginecm.org!

Let's Be Scientists, like Ada Twist!
Build an Aquascope

Scopes are tools that let scientists see things more clearly. Telescopes show us large things that are very far away, like the moon. Microscopes show us very small things that are close, like germs. An aquascope helps us see objects in water. Without it, water is hard to see through because its surface reflects light and distorts the view.

Supplies:

- ✓ Bucket or bath tub with water
- ✓ 2-3 small plastic toys or coins
- ✓ Can opener
- ✓ Clean and empty food can
- ✓ Plastic wrap
- ✓ Scissors
- ✓ Rubber bands
- ✓ A grown-up to help

Instructions:

1. Using a can opener, carefully remove the bottom of an empty can.
2. Put the can on one end on a flat surface, like a table.
3. Cut a piece of plastic wrap (15 cm x 15 cm) with scissors.
4. Place the plastic wrap over the top of the can and smooth it down. Make sure the plastic wrap is wrinkle-free.
5. Secure the plastic wrap with rubber bands.
6. Fill a bucket or bathtub with water. Drop in small plastic toys or coins. Press the aquascope to the surface of the water and look through the can. Can you see the toys and coins clearly? Try looking without the scope and tell your grown-up if it is the same or different.

This activity is from *Ada Twist's Big Project Book for Stellar Scientists* by Andrea Beaty (2018). Visit www.sno-isle.org to find it and others about Ada's friends – Rosie Revere, Iggy Peck and Sofia Valdez.

SNO-ISLE LIBRARIES

Science of M&Ms

What you need:

- M&Ms
- A plastic plate
- A plastic cup
- Some water

Step 1: On the plate, arrange the M&Ms in a circle.

Step 2: Slowly add water to the plate so that it covers the bottom. The M&Ms should be in the water.

Step 3: Observe what happens.

When the M&Ms are in the water, the colors will dissolve into the water. As more color comes off the candy, it will gradually flow through the water. As you observe the color flowing, what do you notice?

- Are the colors mixing together? Are there parts that a solid color and parts that are a mixture of the candy next to it?
- Does the shape make a difference? What would this look like with a line? A square? A star?
- Do you think the same thing would happen with other candies, like Skittles?
- What kind of art would you make?

Another experiment that uses M&Ms in water is to drop one M&M into the cup and cover with water so that the candy is completely under the water. The color will come off but keep observing. Notice what happens to the M on the candy. After some time, the M will float off the candy.

To clean up: It is recommend to drain the water into a sink and throw the M&Ms away. The color in the water isn't harmful and the candies that have the hard candy shells removed become very messy.

After Spring into STEM, March 16th, the Science of M&Ms demonstration video will be posted at the following locations:

YouTube: https://www.youtube.com/channel/UCNx93s_KYC_sxWBbFXoGT1Q

Facebook: https://www.facebook.com/MukilteoStemtree

Stemtree is an education center with acandemiic support and after-school enrichment programs. They have programs for children K-12 in coding, robotics, science and electricity.

Stemtree of Mukilteo
10100 Mukilteo Speedway, Suite 110, Mukilteo, WA 98275
(425) 405-7836 – mukilteo@stemtree.com

Snohomish County
Washington State University Extension

4-H GROWS HERE

From Google Earth to Minecraft:

Creating Awesome Builds Using the Real World

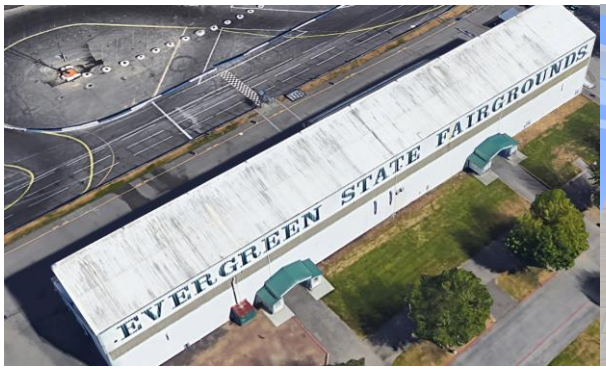
Activity Description:

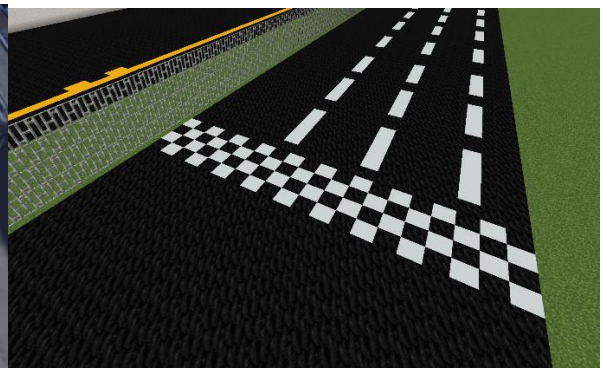
The Snohomish County 4-H Technology Program uses online tools such as Google Earth to help plan and construct real-world structures in Minecraft that are accurate and to scale.

Youth who participate in this session will get a quick tour of Google Earth and will have a chance to search for 2-3 natural or man-made phenomenon using longitude and latitude coordinates and the Google Earth platform (provided via link in the virtual system chat). Youth who are unable to connect to Google Earth can follow along as the presenter explores the same locations and will be asked to guide the presenter to explore the areas via the Google Earth tools. The activity will conclude with a quick look at the Evergreen Stage Fairgrounds and a photo tour of the fairgrounds currently under construction in Minecraft by the Snohomish County 4-H Technology Program.

Supplies Needed: Access to internet.

Graphics and Visuals:





Zeno Activity Title: Find Zeno Bear

Supplies Needed:

1. Yellow and Blue Position Words (provided) or home-made:

2. A stuffed animal or some other toy to hide
3. Bowl, box, or some fun hiding spots!

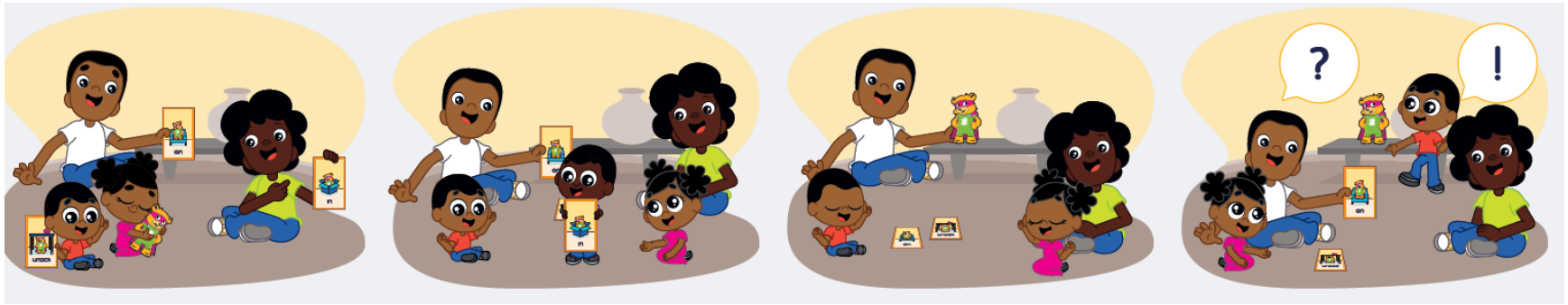
Instructions:

[Find Zeno Bear - At Home Positioning - YouTube]

1. Choose a position card as a clue. Or you can choose a word from the word bank below:

In	Beside	Below
On	Next To	Inside
Under	Behind	
Above	Between	

2. Talk about the position of Zeno Bear on the card.
3. Try moving into that position together.
4. Have children close their eyes while you hide a stuffed friend or toy based on the card's position clue.
5. Ask your child to find the stuffed friend or toy.
6. Talk about where your child is looking while finding their stuffed friend or toy!



MINE FOR CHOCOLATE

DISCOVER THE MAGIC OF ROCKS & MINERALS

"Mine" chocolate chip cookies and learn about the impacts of mining

ROCK SOLID SCIENCE

Materials : chocolate chip cookies, toothpicks and a plate