Activity Booklet

Density Globe Activity

(Physics)
Description:

Is it possible for liquids to stay separate? If they do separate, why? This activity lets children explore the effects of *density* - how compact a substance is - as they create their own density globes.

Materials:

- Vegetable Oil
- Water
- Alka-seltzer
- Optional: Glitter, Beads, or some other small item like tiny plastic fish
- Food Coloring
- Jar of Some Kind

Directions:

1) Fill jar half full with water
2) Allow children to drop and mix 2-3 drops of food coloring in the jar
3) Fill a quarter of the jar with vegetable oil
4) Mix the water and oil and let separate
5) Optional: You can add glitter, beads, or some other small items and see what happens
6) Add alka-seltzer
7) Seal the jar

Additional Resources:

- https://nubipro.blogspot.com/2016/05/how-to-make-easy-lava-lamp-homemade.html
- https://www.youtube.com/watch?v=ugzsjlBMmKI

Film Canister Rockets

(Chemistry)

Description:

Children will be exploring the chemical reaction between Alka-Seltzer and water. As the alka-seltzer tablet dissolves, carbon dioxide gases will be released and will build pressure within the canister. Eventually the trapped gasses will result in blast off!

Materials:

- Film Canister
- Alka-Seltzer Tablet
- Water

Directions:

1) Pour about 5ml of water into a film canister
2) Place half an Alka-Seltzer tablet into the canister
3) Quickly snap on lid (tightly) and place upside down on the ground
4) Move back quickly and wait for blast off!

Additional Resources:

- https://sciencebob.com/build-a-film-canister-rocket/

Gache : *(pronounced "gack")*

(Chemistry)

Description:

Gache is a fantastic opportunity for students to be introduced to *non-newtonian fluids* and *polymers*. Each child will mix together two parts glue and one part liquid starch to form a goopy mass of slime. This slime imitates a *non-newtonian fluid*, or a material that is neither a true liquid nor a true solid. Although technically a liquid, gache both flows but can also bounce and stretch. This is the result of mixing the *polymer,* glue, with liquid starch. A *polymer* is really long chain of repeating complicated structures that form a molecule. Typically they are found in materials such as plastic, rubber, and wood. Let's see what happens when these materials mix!

Materials:

- Aprons
- Liquid Starch
- Glue
- Bowl
- Food Coloring (Optional)

Directions:

1) Place two portions of glue in a bowl (½ cup recommended)
2) Incorporate one portion of liquid starch and mix (¼ cup)
3) Add 2-3 drops of food coloring to the slime mixture
4) See how far you can stretch your creation!
5) Refrigerate at home to keep it ready for continued play

Additional Resources:

- http://littlebinsforlittlehands.com/liquid-starch-slime-easy-sensory-play-recipe/
- https://littlebinsforlittlehands.com/basic-slime-science-homemade-slime-for-kids/
- https://www.livescience.com/60682-polymers.html

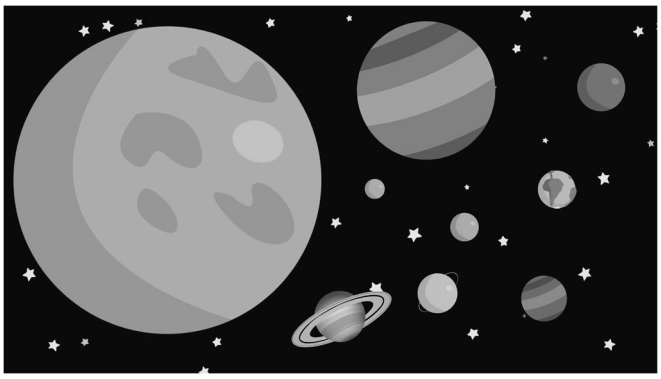
Paint a Planet

(Physics)

Description:

A planet is an object in orbit around a star, like the Earth around our sun! It has gravity of some kind, and is relatively ball-shaped. Planets can be huge and made mostly of gases, like Jupiter. They can also be small and made mostly of rocks, like Mercury. Earth is special, however, because we are the perfect distance away from our sun to have gases to breath, liquids to drink, and rocks to walk on - a distance known as the *goldilocks zone.* In this activity, we will use our imaginations to think of what else could be in our galaxy. Be creative!

Materials:



- Paper Plate
- Washable Paints
- Paint Brushes
- Cups of Water
- Paper Towels

Directions:

1) Get your materials together. Let's think, what could a planet look like?
2) Think. Is there life on your planet? Is it big? Is it small? Does it have fun colors?
3) Place paper towels underneath your plate and it's time to paint!
4) Leave your creation time to dry

Additional Resources:

- https://solarsystem.nasa.gov/planets/in-depth/
- https://science.nasa.gov/science-news/science-at-nasa/2003/02oct_goldilocks

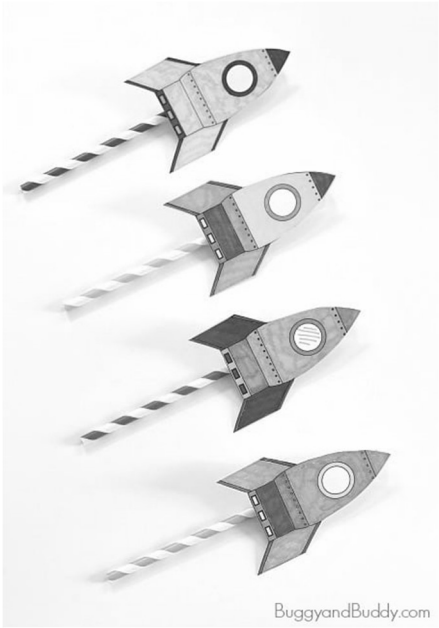
Pipet Rockets

(Physics)

Description:

This activity allows children to explore the concept of *pressure* - a force exerted on a surface. In this case, the buildup of air pressure in a straw against a rocket with a pipette attached will result in a launch. What fun rocket design can you make?

Materials:



- Straws
- Tape or Glue Dots
- Plastic Pipettes (or Straws with a larger diameter than the other set of straws)
- Markers, crayons, or colored pencils
- Scissors
- Rocket Template

Directions:

1) Print out Rocket Template and Color
2) Cut out the rocket
3) Cut the bottom off a plastic pipette and attach it to the back of a rocket using tape or glue dots
    a) (If using a larger straw instead of a pipette, be sure to cut the straw to fit the rocket and seal one end with tape).
4) Slip a straw into your pipette and have fun!

Additional Resources:

- https://buggyandbuddy.com/straw-rockets-with-free-rocket-template/

Rainbow Fish Activity

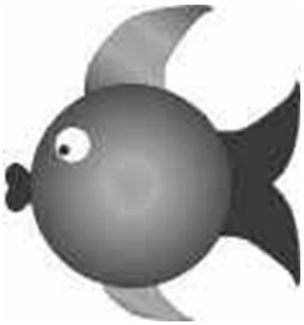
(Physics)

Description:

How do rainbows form? Light is actually made up of waves, and when it meets something like water or the material on the CD, it is *diffracted* - the light bends and spreads apart. The result? In this case, we see lots of pretty colors! For this activity, we will make a pretty rainbow fish and see how sunlight reflects off the shiny CD material.

Materials:

- CD
- Fishing Line
- Stickers, Construction Paper, Other Decorations
- Fish Template
- Tape or Glue
- Scissors



Directions:

1) Place the CD with the shiny side up.
2) Cut a fish head, a fish tail, and a fish fin for the CD
3) Decorate! Use tape or glue to attach to the CD
4) Take some fishing line and tie around the CD from center to edge
5) Hang your rainbow decoration in a window and watch how the sun diffracts light off of it!

Additional Resources:

- https://science.nasa.gov/ems/03_behaviors
- https://www.coolkidfacts.com/rainbow-facts/
- https://www.dltk-kids.com/animals/mcdfish.html