Science!

Activity Book & Journal

PROJECTS AND EXPERIMENTS TO TRY

Name: _____

Age: _____

Date: _____

Experiments

All of these experiments are included in your crate this month. This booklet has all the directions you need to complete them. Don't forget to write any notes and results in your Science Journal too!

Magic Toothpicks

1.

Oil & Water

2.

Lava Lamp

3.

Rock Candy

4.

Floating Ink

5.

Microscope Fun

6.

Optical Illusions

7.

Magic TOOTHPICKS

Materials:

- Toothpicks
- Plate
- Water
- Pipette

Instructions:

- Take 5 toothpicks and bend and crack them in the middle without breaking them in 2.
- Arrange them on the plate with the middles (the bent parts) of each touching to form a closed star shape.
- Using the pipette, slowly add a few drops of water to the center of the star.
- After a few seconds the star should transform!

Questions to ask:

Why is this happening?
Does cold or warm water work better?
How much water works the best?

Oil & Water EXPERIMENT

Materials:

- Oil
- Water
- Pipette
- Clear cups
- Food coloring tablets
- Baking dish (optional)

Instructions:

- Place the cups in a baking dish if using (alternatively you can put paper towels under the cups to prevent spilling.)
- Fill 2 cups half way with water.
- Fill the other 2 cups half way with oil.
- Add food coloring to the 2 cups with water.
- Using the pipette, suck up some of the colored water and add droplets to the oil cups.

Questions to ask:

What do you notice?
Why is this happening?
Can you change the size of the bubbles?
What happens if you add the colored water to the oil slowly? Or add it quickly?
What happens if you stir the water and oil with the pipette?
Do oil and water mix?
Do you think oil or water is heavier? Why?

Lava Lamp EXPERIMENT

*Do the Oil & Water Experiment First

Materials:

- The oil bottle that came with your kit
- Vegetable oil
- Water
- Salt
- Food coloring tablets
- Flashlight (optional)

Instructions:

- Using the oil bottle from your kit, remove the label and leave 1/4 of the oil in the bottle (use the poured out oil for the Oil & Water experiment.)
- Fill your container almost to the top with water (be sure to leave enough room to add the salt!)
- Add 1 food coloring tablet and let dissolve.
- Let the mixture separate.
- Once separated, pour a packet of salt into the container. When the salt dissolves you will start to see the lava lamp effect. When the bubbles stop, you can add more salt to see it again!
- Optional: Shine a flashlight behind the container to watch your lava lamp glow! You will be able to see all the tiny oil bubbles by doing this

Questions to ask:

What color water makes the best looking lava lamp?
How much salt works best? 1 packet? 2 Packets? etc?
What happens when you shake the bottle?

Rock Candy EXPERIMENT

YOU WILL NEED ADULT HELP WITH THIS EXPERIMENT

Materials:

- Granulated sugar
- Bamboo skewers
- Kool-aid packets
- Jars or Glasses
- Clothespins
- Large pot
- Water
- Spoons

Instructions:

- Soak the sticks in water for 30 to 60 minutes. Once they are fully wet, roll the ends in sugar. Let them dry completely on a plate. This gives the sugar crystals a base to begin growing on the sticks!
- In a large pot, combine sugar and water. Keep adding sugar until it doesn't dissolve anymore. You'll use about 2 to 2.5 cups of sugar for every 1 cup of water (make enough to fill at least 2 jars/glasses.)
- Bring to a boil. Remove from heat and let cool at least 15 minutes (until it is cool enough to handle.)
- Split the Kool Aid powder into 2 glasses. Add the sugar liquid and stir until you dissolve as much Kool Aid as possible.
- Attach the non-sugar side of the skewers to the clothespins. Put the sugar side down into the glass. Position the clothespin on top of the glass so the skewer won't touch the side or bottom of the glass (it's ok if it's off center.)
- Cover glasses with foil or plastic wrap and let them sit for 10-14 days! You can peek at them periodically, but try not to disturb them so the crystals have time to grow.
- When they are ready, pull them out and let them dry slightly on a plate or pan before you start eating them. There may be crystals on the glasses that you can eat too!

Terms to look up:

Crystals Supersaturated Solution Evaporation Seed Crystal

Floating Ink EXPERIMENT

Materials:

- Dry Erase Markers
- Ceramic or Glass Plate
- Water
- Towel (optional)

Instructions:

- Lay down a towel, if using, and set a plate on it.
- Using your makers, draw different shapes on the plate and let dry completely.
- When the ink is dry, slowly pour water onto the plate. Do not pour the water directly on top of the drawings.
- As the water is pouring the drawings should begin to lift off the plate. Tap or jiggle the plate slightly so the drawings float around.

Questions to ask:

Does cold or warm water work better?
Do different shapes work better than others?
Does a lot of ink or little bit of ink work better?
Does the ink float better on different plates?

Microscope Fun!

Materials:

- Microscope
- Slides
- Tweezers
- 2 AA Batteries (not included)
- Directions
- Specimen Jars

Instructions:

There are so many fun things you can look at with a microscope! Here are just a few ideas to get you srtarted. What other things can you think of?

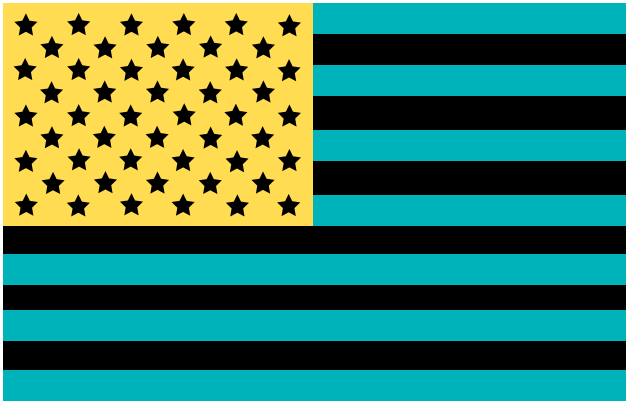
- Salt
- Sugar
- Leaf
- Grass
- Flower petal
- Onion
- Flour
- Spider web (see below)
- Dryer lint
- Strand of hair
- Thread/Yarn
- Sand/Dirt
- Cotton strands (from a cotton ball or cotton swab)

Find a spider web without a spider in it. One that looks new and complete will be the most interesting, but an old piece of one may work too.

Place a thin layer of nail polish on the slide. Let it dry until it's not wet, but still sticky (about a minute). Try not to touch it. Carefully place the slide against the thickest part of the web, sticky side first so you can capture it.
Once the web is attached, pull the slide gently towards you. Now you can "cut" your web piece free by removing the rest of the strands with a stick. You should now have a piece of the web stuck to the slide. If not, try repeating with another part of the web.

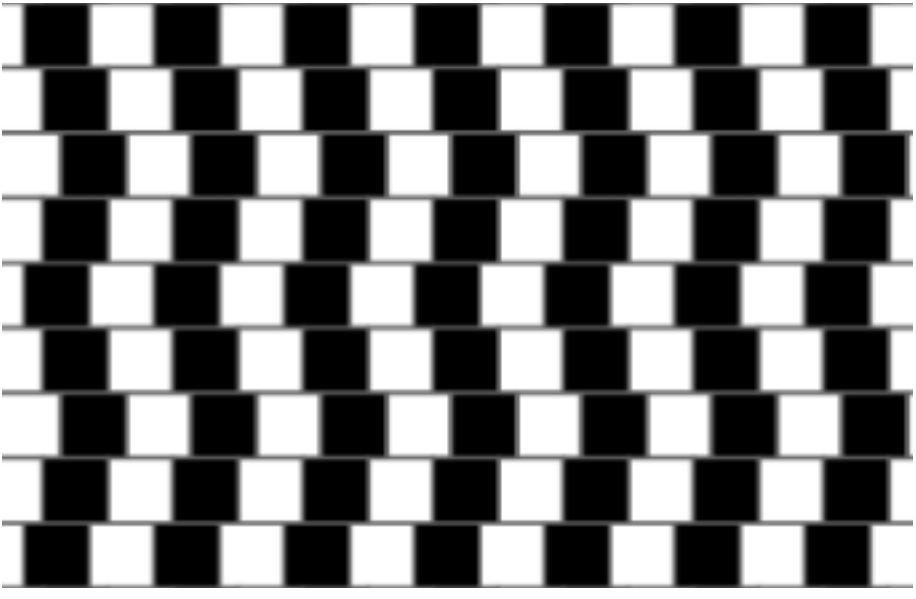
Now it's time to put the slide under the microscope and take and up-close look at the web!

Optical Illusions

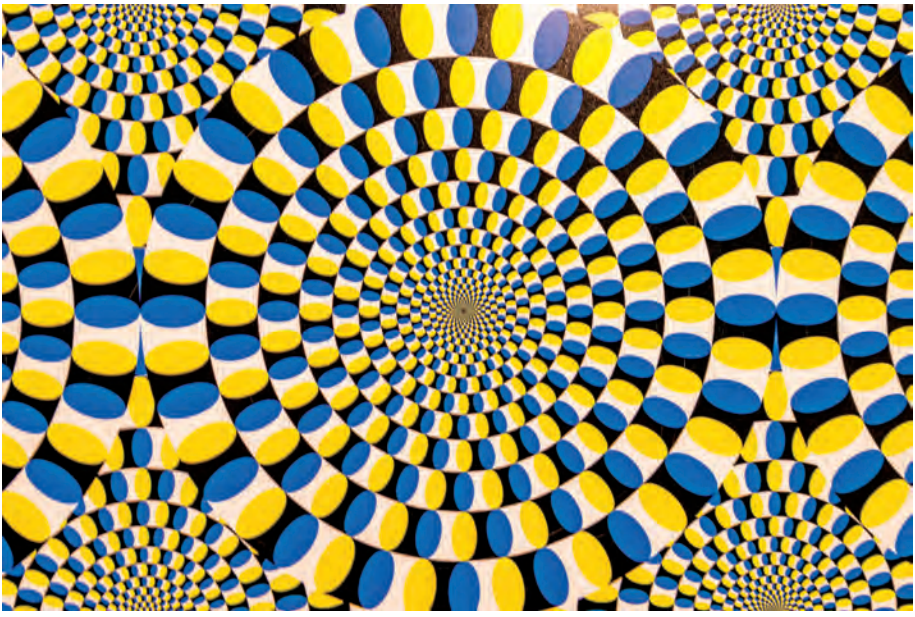


Stare at the center of the flag for at least 30 seconds, then look at at a blank white wall, or blank piece of paper. What do you see?

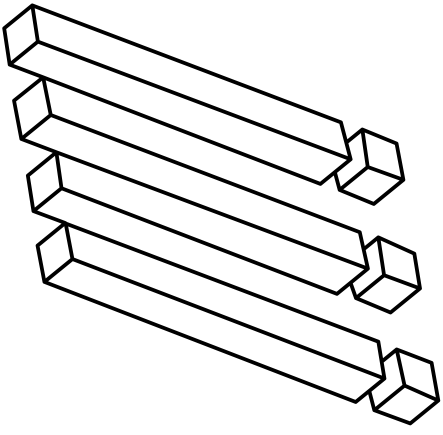
Look at the black and white design below. What do you see? Are the dark grey lines straight or bent? Line up a ruler or piece of paper to check if you are correct.



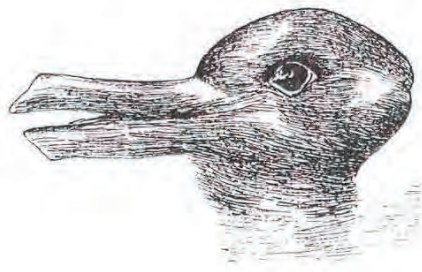
Optical Illusions



Look at the small black dot in the center of the middle circle. Now look up at the words "Optical Illusions" do you notice anything? Does it seem like the wheel in the center is moving? What if you look at the smaller half circles?



Look at the bars above. How many ends are there on both sides? What is going on in the image?



Look at the image above. What do you see? Do you see one animal or two?

My Notes

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