

# Science & Engineering

## Egg Drop

Parent permission and/or supervision required!



### Materials:

- 1.) Raw Egg
- 2.) Building materials can vary. Utilize what you have in the house and are willing to destroy (look in your recycling bin). Make sure all participants have the same supplies to choose from.

Examples: Scissors, tape, paper, tissues, coffee filters, cardboard, cotton balls, straws, paper cup, pieces of an egg carton, etc. ...



### Instructions:

- 1.) Chose a high dropping point for the test.  
Ex. High staircase, standing on a chair, balcony, deck, etc.
- 2.) Give participant a set amount of time to build their vessels.
- 3.) The goal is to build something that will protect the egg during the test drop.
- 4.) Encourage participants to get creative with their building.
- 5.) Choose judges that aren't building to judge based on the egg's survival, style and creativity.

# **Bottled Egg**

Parent permission and/or supervision required!

## **Materials:**

- 1.) Egg
- 2.) Pot & Stove
- 3.) Glass bottle (MUST BE GLASS with a small mouth)
- 4.) Matches or candle



## **Instructions:**

- 1.) Hard boil the egg by placing it in a full pot of water. Bring the water to a boil and let sit for 20 minutes.
- 2.) Cool the egg in cold water.
- 3.) Peel the egg.
- 4.) Position the bottle up right with the opening towards the sky.
- 5.) Carefully light three matches and drop them into the bottle OR put the candle in the bottom of the egg and light the candle.
- 6.) Wait 1-2 seconds.
- 7.) Place the egg on the top of the bottle (don't wait too long, the matches must be lit for this trick to work).
- 8.) Watch the egg squeeze into the bottle.

Source: <https://www.wikihow.com/Get-an-Egg-Into-a-Bottle>

# Dish Soap Silly Putty

Parent permission and/or supervision required!

## Materials

- 1.) 1.5 tablespoons of dish soap
- 2.) 2 tablespoons of corn starch

## Instructions:

- 1.) Combine dish soap with corn starch.
- 2.) Constantly move the combination; if you let it rest it will drip and fall like molasses.
- 3.) If your putty is runny add a bit more corn starch.
- 4.) If it is too dry add a bit more soap.
- 5.) This putty is not meant to last very long, meaning play with it and clean it up when you are done!



Source: <https://www.smartschoolhouse.com/diy-crafts/dish-soap-silly-putty>

# Fingerprint Study

Parent permission and/or supervision required!

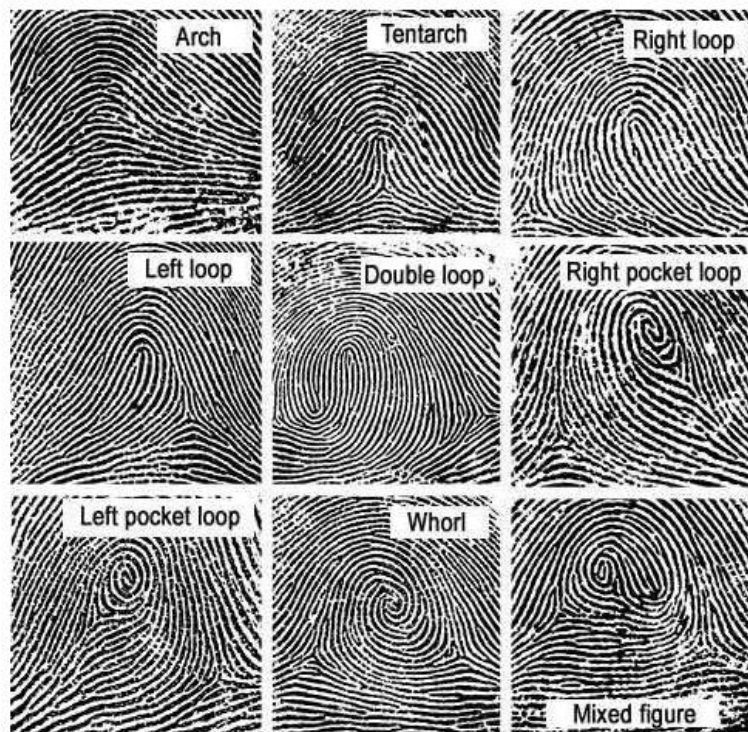
## Material:

- 1.) Ink pad (substitutions: marker or paint)
- 2.) Magnifying glass (not necessary but helpful)
- 3.) Paper
- 4.) Ink pen

## Instructions:

- 1.) Label paper with participants name and each finger so they know where to place each finger.
- 2.) Press one finger at a time on the ink pad; or dip finger in paint or washable marker.
- 3.) Press/roll finger on paper in labeled places.
- 4.) Use the magnifying glass to compare your fingerprints with the chart below.

Which type of fingerprint do you have?



Source: [https://wehavekids.com/parenting/Fingerprint Science Project for Kids](https://wehavekids.com/parenting/Fingerprint_Science_Project_for_Kids)

# Tie-Dyed Milk

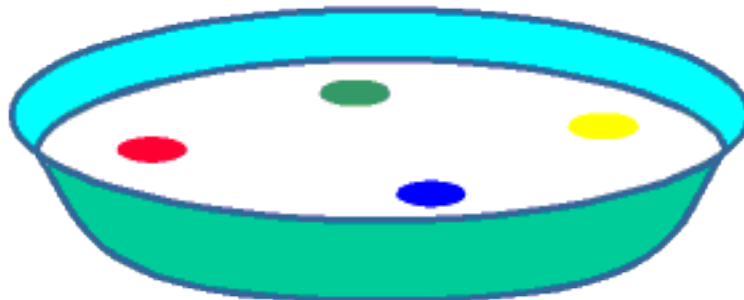
Parent permission and/or supervision required!

## Materials:

- 1.) Shallow dish, bowl or cup (clear is best)
- 2.) Milk (higher in fat content the better)
- 3.) Food coloring (4 different colors)
- 4.) Liquid dish soap
- 5.) Toothpick or small straw (might be helpful, not necessary)

## Instructions:

- 1.) Pour a layer of milk into the dish about (1/2 inch).
- 2.) Let sit until room temperature.
- 3.) Carefully put one small drop of each of the four food colors on the surface of the milk, widely separated, and not in the middle.
- 4.) Very carefully drop one drop of dish soap onto the surface of the milk in the center of the dish (be careful not to put the soap directly on top of the coloring. To help put the dish soap in the right place use a toothpick. Dip the toothpick into the soap, then put the drop of soap in the milk using the toothpick.)
- 5.) Watch what happens.



# Lava Lamp

Parent permission and/or supervision required!

## Materials:

- 1.) Clear drinking glass
- 2.)  $\frac{1}{4}$  cup vegetable oil
- 3.) 1 teaspoon salt
- 4.) Water
- 5.) Food coloring (optional)



## Instructions:

- 1.) Fill the glass about  $\frac{3}{4}$  full of water.
- 2.) Add about 5 drops of food coloring.
- 3.) Slowly pour vegetable oil into the glass.
- 4.) Sprinkle salt on top of the oil.
- 5.) Watch the blobs of lava move up and down in your glass!
- 6.) Add another teaspoon of salt to keep the effect going.

Source: <https://sciencebob.com/try-some-lava-in-a-cup/>



# Tornado In A Bottle

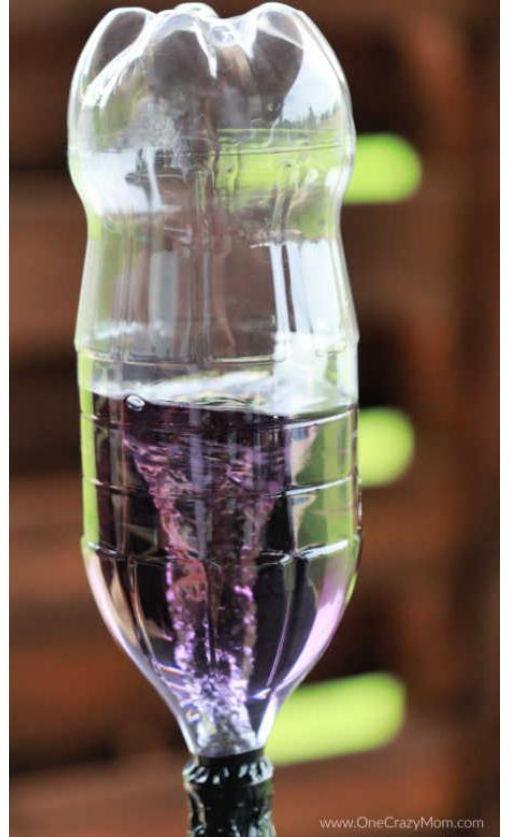
Parent permission and/or supervision required!

## Materials:

- 1.) Clear Bottle
- 2.) Water
- 3.) Dish washing liquid
- 4.) Glitter or food dye (optional)

## Instructions:

- 1.) Fill one plastic bottle  $\frac{3}{4}$  full.
- 2.) Add a few drops of dish washing liquid.
- 3.) Sprinkle in a few pinches of glitter or food coloring.
- 4.) Put the cap on tightly.
- 5.) Turn the bottle upside down and hold it by the neck.
- 6.) Quickly spin the bottle in a circular motion for a few seconds.
- 7.) Stop and look inside to see a mini tornado forming.



Source: <http://www.sciencekids.co.nz/experiments/makeatornado.html>

# Rainbow In A Glass

Parent permission and/or supervision required!

## Materials:

- 1.) Water
- 2.) Sugar
- 3.) Food coloring
- 4.) Tablespoon
- 5.) 5 clear glasses or plastic cups

## Instructions:

- 1.) Line the five glasses up.
- 2.) Add 1 tablespoon of sugar in the first glass.
- 3.) Add 2 tablespoons of sugar in the second glass.
- 4.) Add 3 tablespoons of sugar in the third glass.
- 5.) Add 4 tablespoons of sugar in the fourth glass.
- 6.) Leave the fifth glass empty.
- 7.) Add 3 tablespoons of water to each of the first 4 glasses.
- 8.) Stir each solution.
- 9.) Add 2-3 drops of different colors into each of the first 4 glasses.
- 10.) The sugar causes each solution to have different densities.
- 11.) Now we can create our rainbow in the 5<sup>th</sup> empty glass.
- 12.) Fill the glass with  $\frac{1}{4}$  of each color solution. Start with the solution from the fourth glass.
- 13.) When adding the rest of the solutions use a spoon and get very close carefully transferring the contents so they layer on one another.



Source: <https://www.thoughtco.com/rainbow-in-a-glass-density-demonstration-604258>



# Awesome Color Blending

Parent permission and/or supervision required!

## Materials:

- 1.) 7 clear plastic cups (or glasses, glass jars)
- 2.) Food Coloring: red, blue and yellow
- 3.) 4 pieces of paper towel folded
- 4.) Water

## Instructions:

- 1.) Line the 7 cups up in a row; filling every other one with water.
- 2.) Put red food dye in the 1<sup>st</sup> & 7<sup>th</sup> cup.
- 3.) Put blue food dye in the 3<sup>rd</sup> cup.
- 4.) Put yellow food dye in the 5<sup>th</sup> cup.
- 5.) Fold the paper towel in the long way.
- 6.) Place the paper towels in the cups (one end in a cup with water, the other end in the cup next to it without water).
- 7.) Watch as the paper towels absorb the water and food dye to create a rainbow blend.



Source: Space Bound; <https://www.youtube.com/watch?v=K0PJ4LiW18w>

# Dancing Gummy Worms

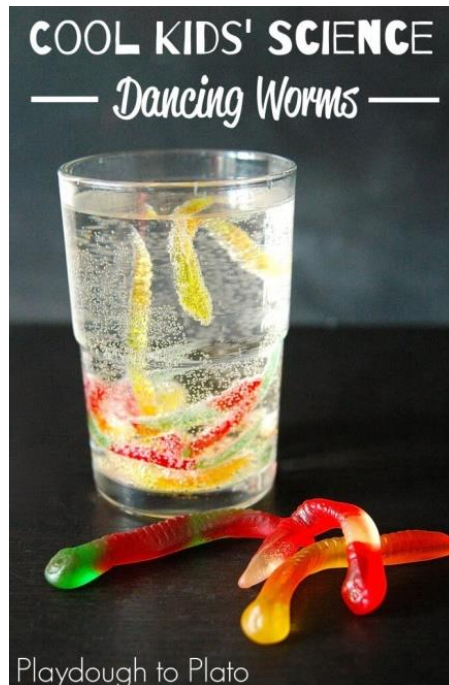
Parent permission and/or supervision required!

## Materials:

- 1.) Clear glasses/cups
- 2.) Water
- 3.) Salt
- 4.) Vinegar
- 5.) Gummy worm
- 6.) Knife

## Instructions:

- 1.) Cut gummy worm into quarters.
- 2.) Place them in a cup of salt water for 15 – 20 minutes.
- 3.) Pull them out of the salt water and place them in a cup of vinegar.
- 4.) Watch your gummy worms spin and dance!



Source: Space Bound; <https://www.youtube.com/watch?v=K0PJ4LiW18w>

# Magnetic Cereal

Parent permission and/or supervision required!

## Materials:

- 1.) High fiber cereal (Honey Bunches of Oats, Kellogg's, Chex, Cheerios)
- 2.) Water
- 3.) Bowl
- 4.) Magnet

## Instructions:

- 1.) Place one piece of cereal in a bowl of water.
- 2.) Hold a magnet above the cereal and slowly move the magnet around.
- 3.) The cereal should follow it as iron is a metal.



Source: Space Bound; <https://www.youtube.com/watch?v=K0PJ4LiW18w>

# The Floating M

Parent permission and/or supervision required!

## Materials:

- 1.) Cup or shallow bowl
- 2.) Water
- 3.) M&M's candy

## Instructions:

- 1.) Place 5 M&M's in a cup.
- 2.) Slowly fill the cup with water until the M&M's are covered.
- 3.) Wait a 5-10 minutes.
- 4.) The "M" on the M&Ms will slowly come off as they are made out of edible paper.
- 5.) Use your finger to pick up the M out of the cup.



**Sources:** Space Bound; <https://www.youtube.com/watch?v=K0PJ4LiW18w>

<https://littlebinsforlittlehands.com/floating-m-mm-candy-science-experiment/>

# Building Structures with Toothpicks & Food

Parent permission and/or supervision required!

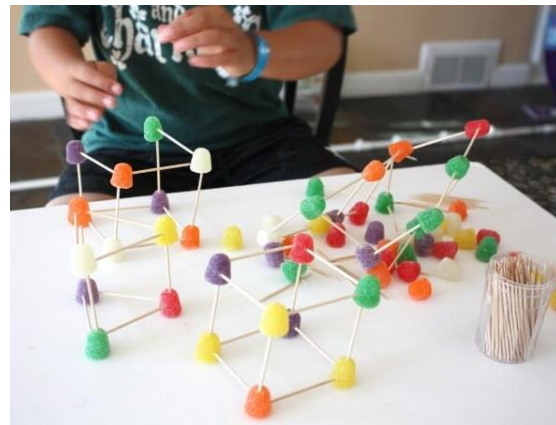
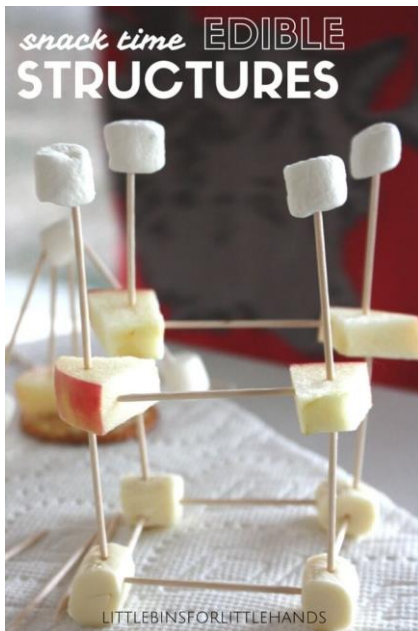
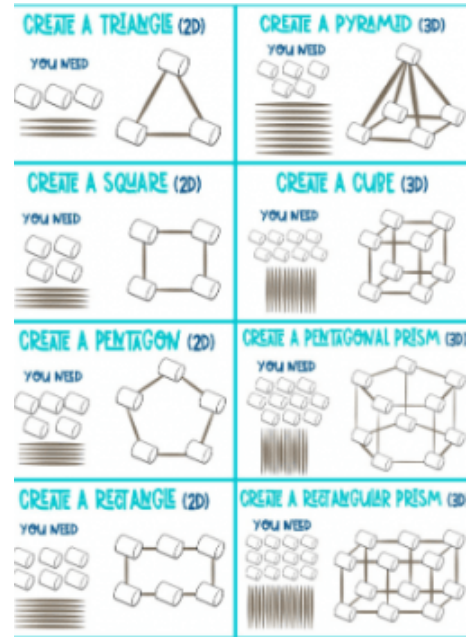
## Materials:

- 1.) Toothpicks
- 2.) Food suggestions: marshmallows, cranberries, apples, gum drops, jelly beans, etc.

## Instructions:

1. Be creative
2. Create houses, bridges, cells, mazes, etc.

Visit the website for more building structure materials and ideas!



Source: <https://littlebinsforlittlehands.com/best-structure-building-activities-kids/>

# Cray Paper Spider Web Challenge

Parent permission and/or supervision required!

## Materials:

- 1.) Cray paper (or string)
- 2.) Painters tape

## Instructions:

- 1.) In a narrow hallway or space tape the Cray paper on diagonals making a web design.
- 2.) Once complete, try to get from one side of the spider's web to the other without ripping the web.

## Too easy?

- 1.) Turn it into a competition and see who can get through it the fastest.
- 2.) Add more Cray paper in places where it is easy to get through.





# Make A Maze

Parent permission and/or supervision required!

## Materials:

- 1.) Building Materials
  - a. Legos, straws, macaroni, marshmallows, really anything!
  - b. Adhesive: tape, glue, play-duh, toothpicks, etc.
  - c. Supports: paper, cardboard, etc.
- 2.) Marble, bell, bead, small bounce ball to navigate the maze.

## Instructions:

- 1.) Construct your maze with your building materials.
- 2.) If you want glue it to cardboard or paper.
- 3.) Position your maze on a slight angle and drop your marble in.
- 4.) Time the marble to see how long it takes to get from one end to the other.

