

**Week 2: STEM Week**  
**June 8-12**

Monday, June 8

**Activity 1: Bernoulli's Principle: Balloons**

Description: Fun way to learn about Bernoulli's principle: fast-moving fluids (or air), such as strong winds, have lower pressure than slow-moving air. This explains why a roof being blown off a house during a hurricane or tornado isn't pushed off by strong winds but instead by the air inside the house.

Items Needed:

- 2 Balloons
- Scissors
- String
- Tape
- Paper Towel Roll

Steps:

1. Inflate and tie the two balloons. Make sure they are a similar size.
2. Cut two pieces of string and tie them to each balloon
3. Hang up the balloons at the same height next to each from the ceiling or from a doorway. Make sure the balloons are about 10-15 centimeters from each other.
4. Ask your kids what will happen to the balloons? Come together or go away from each other?
5. Blow air through the paper towel holder gently. Do the balloons move?
6. Now blow harder. The higher pressure on the outside of the balloons will move the balloons in together due to the low pressure in between them.

**Activity 2: Math Hopscotch**

Description: Draw out a hopscotch (or obstacle course) with chalk. In each spot, put a number or a math symbol and have kids go through the course and practice their math skills.

Items Needed:

- Chalk

**Activity 3: Giant Bubbles**

Description: Get something to mix your bubble solution in. It can be a kiddie pool, bowl, or anything else you have around the house. Put water in the bowl and add dish soap (1/3 amount of the water). Mix it slowly and try to avoid making it foamy. The longer it sits, the better. Now use whatever you have around the house as the wand. If you're using a kiddie pool, you can stand in it and have someone slowly lift up the hula hoop. You can use a plastic pipette by cutting off part of the larger end and blowing through the skinny end.

Items Needed:

- Mixing bowl (kiddie pool)

- Water
- Dish soap
- Hula hoop
- Plastic pipette

Tuesday, June 9

#### Activity 1: Clothespin Airplane

Description: Use clothespins and popsicle sticks to create an airplane. Decorate it with paint/markers.

Items Needed:

- Clothespins
- Popsicle sticks
- Paint, crayons, markers etc.
- Glue

Reference: <https://www.steamsational.com/clothespin-airplane-engineering-challenge/>

#### Activity 2: Watermelon Seed Spitting

Description: Get a watermelon with seeds and pick the seeds out. Create a starting point on the sidewalk with chalk. Have the participants at the starting line take turns spitting the seeds as far as they can go. Measure how far they go using measuring tape. If you want to get more math in the activity, use your measurements to calculate average distance, mean, and median. You can also make a graph that shows the distance of all the seeds or try to spit a seed a pre-specified distance.

Items Needed:

- Seeded watermelon
- Measuring tape

#### Activity 3: Bottle Rockets

Description: PARENTS WILL NEED TO HANDLE THE MAIN PORTION OF THIS ACTIVITY. Have the kids decorate a 2 liter bottle to look like a rocket. Have kids also build a launch pad for the rocket. You can build this out of Legos, Tinker Toys, a cardboard box, etc. Put  $\frac{3}{4}$  - 1 cup of vinegar in the bottle. Then add about a tablespoon of baking soda in a paper towel. Fold up the paper and slip it into the bottle. Put in the cork (can be a piece of pool noodle or similar material). Place the bottle upside down on the launch pad and step back. Take a video of your bottle rockets and send them to [jweems@paducahky.gov](mailto:jweems@paducahky.gov) so we can share them on our website and social media.

Items Needed:

- Empty 2 liter bottle
- (Optional) stuff to decorate the bottle
- Launch pad (Legos, Tinker Toys, Cardboard box)
- Vinegar
- Paper towel
- Baking soda

- Cork (piece of pool noodle can work)

Reference: <https://www.steampoweredfamily.com/activities/bottle-rockets/>

Wednesday, June 10

#### Activity 1: Rain Clouds

Description: Fill a mason jar almost to the top with water. Cover the top with a “cloud” of shaving cream. Let your child drop food coloring into the cloud until the color starts “raining” into the water below. Explain that this is how rain works. The water collects in the cloud until there is too much, and then it leaks through, forming rain.

Items Needed:

- Mason jar
- Water
- Shaving cream
- Food coloring

#### Activity 2: Lemon Volcanos

Description: Cut lemons in half. Poke some holes within the lemon with popsicle sticks. Add a few drops of food coloring and be creative with colors. Add a little drizzle of dish soap to each lemon. Sprinkle the top of the lemon with a layer of baking soda. Watch as your volcanoes erupt.

Items Needed:

- Lemons
- Popsicle sticks (something to poke holes in the lemons with)
- Food coloring
- Dish soap
- Baking soda

#### Activity 3: Pool Noodle Periscope

- Reference: <https://www.steampoweredfamily.com/activities/pool-noodle-periscope/>

Thursday, June 11

#### Activity 1: Words of Affirmation Coding Bracelets

Description: For this activity you will need beads. Decide on two colors you want to use. Pipe cleaners or string can be used for the arm bands, or you can make it into a key chain. Pick a word that describes yourself, or you can use your name. Using the binary character table, place the colors of beads on order on the band. Color one represents ‘0’ and color two represents ‘1’. For instance: if you were to use the word “Cool,” you’re binary code would be 01000011011011110110111101101100.

Items Needed

- Beads
- Pipe cleaners or string
- Binary character sheet

Reference: <http://sticksandstones.kstrom.com/appen.html>

#### Activity 2: Rubber Band Cars

How-to Video: [https://www.youtube.com/watch?v=LABwk\\_Q8ZB8](https://www.youtube.com/watch?v=LABwk_Q8ZB8)

#### Activity 3: Paper Airplane

Description: Research the best ways to make a paper airplane. Similar to watermelon seed spitting, measure how far the airplanes fly. You can take the measurements and graph them, find the average, mean, and median.

Items Needed:

- Paper
- Measuring tape

Friday, June 12

#### Activity 1: Marshmallow Constellations

Description: If you want, put the marshmallows in a Ziplock bag and add a few drops of food coloring and shake. Use the constellation guide to find what constellation you want to create, or you can get creative and make your own constellation. Break up your toothpicks into the necessary size and use a marshmallow for each star in the constellation. Photograph your constellation on black paper for fun. Send us your pictures at [jweems@paducahky.gov](mailto:jweems@paducahky.gov) and we will share them on our website and social media.

Items Needed:

- Marshmallows
- Toothpicks
- Food coloring
- Ziplock bag
- Black paper

#### Activity 2: Egg Drop

Description: Help your kids design a device to protect their egg when dropped from a high spot. We've provided a list of suggested supplies to use. Feel free to add or remove anything from the list. Challenge yourself to make the device in a specified time period. When all the devices are done drop your egg from somewhere high and see if it's cracked or not.

List of suggested supplies

- Tape
- White Glue
- Paper
- Trash bag
- Pipe cleaners

- Cottonballs
- Rubberbands
- Popsicle sticks
- Yarn

### Activity 3: Math Jenga

Description: If you have the Jenga board game, take tape and write a math problem on your child's math level and stick it to the Jenga pieces. While you play, every piece you pull out, you solve the math problem. If you do not have Jenga, use any other game. You can play Tic-Tac-Toe and have a stack of index cards you draw from with math problems.

#### Items needed

- Jenga
- Tape
- Pen/Sharpie