JESSAMINE COUNTY 4-H

4-H PORCH PROJECTS

SCIENCE ENGINEERING & TECHNOLOGY

Science porch projects to go! We will have all of the following items in ONE KIT! You may take ONE per child. Please visit our FaceBook page to share your creations and let us know a little about you! Use #jessco4H when posting about your project!

Thursday April 23, 2020 Pick up starting at 1pm until gone!

Inside each bag:

* **Make your own FLOAM**
* **Make your own Bouncy Ball**
* **Make your own GEODE**
* **Straw Rockets!**

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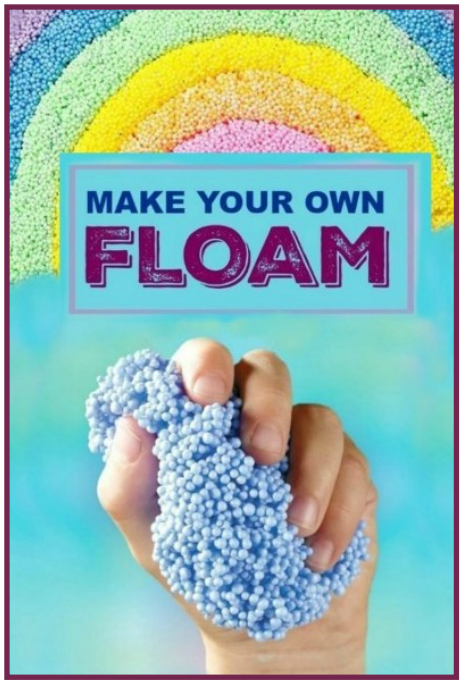
4-H Youth Development



WHAT IS FLOAM?

Floam is a cross between play dough and slime.
It's mold-able slime! How cool is that! Make your own by following the recipe below.

FLOAM RECIPE

2 tsp of borax
1/2 cup of warm water & 1/4 cup of warm water- divided
2 oz of white school glue
1 & 1/3 cups of polystyrene beads (bean bag filler)
Optional: Food coloring or liquid watercolors if color is desired

METHOD

In a bowl combine 2 teaspoons of borax with 1/2 cup of very warm water.
Mix until the borax is dissolved.
In a separate bowl combine 1/4 cup of white school glue with 1/4 cup of water. Add several drops of food coloring or liquid water-colors if color is desired.
Once the ingredients of both bowls are mixed pour the glue mix-ture into a zip seal bag. Add the polystyrene beads, and then add the borax and water mixture and seal the bag.
Once sealed mix the ingredients in the bag well until the floam is formed.
You can use more or less of the borax and water mixture to create different floam consistencies.
Use more borax for a stiffer and more mold-able floam.
Use less borax to create a more slime-like floam.

Mixing the floam is really fun for kids and is an activity all in itself. Floam is so fun! It can be molded and shaped like play dough but is also squishy and gooey like slime. It has a really unique texture that is irresistible to touch.
Floam can be stored in an air-tight container for endless play, or kids can leave their creations out to dry and preserve their works of art.

https://www.growingajeweledrose.com

LEXINGTON, KY 40546

Scientific Method

PURPOSE

What do I want to learn?

EXPERIMENT

Design a test to confirm or disprove your hypothesis.

RESEARCH

Find out as much about your topic as you can.

ANALYSIS

Record what happened during the experiment.

HYPOTHESIS

Predict what the answer to the problem is.

CONCLUSION

Was my hypothesis correct?

Purpose/Research for FLOAM:

Hypothesis for FLOAM:

Analysis for FLOAM:

Conclusion for FLOAM:

When you use the scientific method, you make observations before experimenting and testing a hypothesis. You've followed a procedure to make something. Now you can vary the procedure on your projects and use your observations to make predictions about the effect of the changes.

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To make beautiful geodes in your own kitchen you need more patience and time than anything else! Here is the basic recipe to start you off in the world of beautiful geodes.

Project recipe:

- 3 Tablespoons Borax– Included
- 1 Cup boiling water, on hand
- Food coloring
- Pipe cleaners– Included
- Large jar, glass or pitcher, on hand
- Dish cloth, on hand
- Popsicle Stick—Included
- Fishing line or curling ribbon, Included

The color of the pipe cleaner is what decides the color of your crystals. For example, I used dark blue to get the sapphire colour. If you only have white pipe cleaners, you can use food coloring in the water to dye them. Metallic pipe cleaners work best.

Shape the pipe cleaner(s) and thread fishing line or curling ribbon through the edge.

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Put it in your empty container and using a skewer, butter knife or chop stick, tie the ends around it so that your pipe cleaner shape doesn't touch the sides or bottom of your container. Once you've got it tied off at the right height, remove it from the container before you add your water.

Add your pipe cleaner shape tied to the skewer, butter knife or chop stick and cover with a dish cloth.

Let sit overnight or about 5 hours.
Uncover and be amazed!

Carefully pull out the fishing line or curling ribbon from your finished geode.

Notes:

Don’t throw your water away! To reuse it, heat the water to boiling again and add 1 & 1/2 tablespoons of Borax.

I believe that what little affect the food coloring has will fade pretty quickly. Cover your geodes with a coat of clear nail polish if you use food coloring.

The longer your geode is immersed in the water, the bigger the crystals will be.

I strongly suggest curling ribbon or fishing line to suspend your pipe cleaners. I originally used string and couldn’t pull it out of my finished geode.

For larger geodes, make a cage out of chicken wire and wrap it with pipe cleaners.

dollarstorecrafts.com/2015/05/tutorial-diy-geodes/

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Hypothesis for GEODES:

Analysis for GEODES:

Conclusion for GEODES:

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SUPER Bouncy Balls

So here it is! Our recipe for super bouncy balls using just THREE ingredients (and one of those is water!).
www.lifescarousel.com/make-super-bouncy-balls/

Ingredients

- 1/2 Cup of Warm Water
- 1 TBSP of Borax
- 1 to 2 TBSP of Clear Elmer's Glue (or Elmer's Clear Glitter Glue)

A couple of notes on these ingredients

- ***Borax** is safe to use, IF used properly.*
- *This project is not suitable for children under 3 years old.*
- *Only use a very small amount and make sure you dissolve it fully before using. Burns or skin irritation might occur if it is use without diluting it first.*
- *Do not use if you or your child have any sort of skin condition or sensitive skin (or wear gloves to mix it).*
- *Supervise children and make sure they don't put their hands in their mouth after using it.*
- *And with all craft projects, make sure you wash your hands afterwards!*

***Glitter Glue:** After we used up our bottle of Elmer's Glitter Glue, we still wanted to make more (addictive!) so we tried using the dollar store glitter glue. Nope! It just didn't work. There's something about the Elmer's glue that is different to the generic glues.*

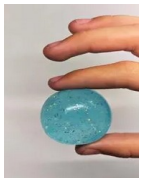
How to Make Super Bouncy Balls

Step 1: Making Borax Solution

(It's probably best for a grown up to do this step.)
You want to stir together the 1/2 cup of warm water and 1 tablespoon of borax, until it is completely dissolved (add more water if it doesn't all dissolve).
If the water is hot, allow it to cool.

Step 2: Add Your Glue

Next slowly pour your desired amount of glue into the bowl of borax solution. The more glue you use, the bigger the ball! (We used about 2 tablespoons of glue)
To get this light blue translucent glitter super bouncy ball, we combined clear and glitter glue together as we poured it into the borax solution.



Step 3: Squish and Squeeze!

As soon as the glue hits the borax solution it will start to harden. Gently squeeze and squish the glue ball until it is no longer sticky.
Remove from the borax solution and roll between your hands to make it ball shaped.

Note: The glue is going to go hard, not the borax solution. You will be left with a bowl of solution, so you can repeat the process and make as many super bouncy balls as you like!
That's it! How easy is that? And they really do BOUNCE!
A word of warning. These super bouncy balls are basically very very thick slime. So if you leave them for any length of time they will slowly go flat and make a disc. But it's very simple to just roll them in your hand to make them ball shaped again.

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Purpose/Research for BOUNCY BALLS:

Hypothesis for BOUNCY BALLS:

Analysis for BOUNCY BALLS:

Conclusion for BOUNCY BALLS:

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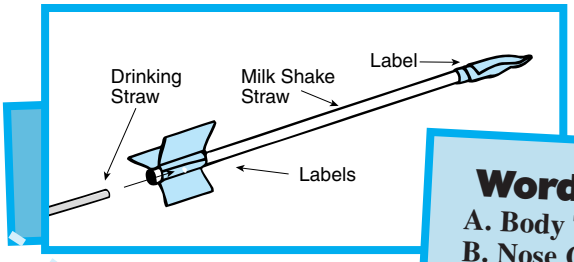
Rockets Away!

As easy as 1, 2, 3 you can make your very own rocket that goes as high as you can blow. In this activity you will make your own drinking straw rocket, discover rocket parts and their purpose, compare your rocket to a model rocket and teach a friend the parts of a model rocket. Building a straw rocket will also help you prepare to build a model rocket kit.

Life Skills: Teaches others coaches to apply related concepts
Aerospace Skill: Building a straw rocket
Science Skill: Building models
What To Do: Make a drinking straw rocket.

Materials: two 1" x 2 ½" adhesive address labels, drinking straw—regular size, milk shake straw—slightly larger than a pencil
NOTE: Drinking straw must fit just inside the milk shake straw



Blast Off

Work with a friend to make your rocket.

1. First cut the labels in half to make four 1" x 1¼" labels.

2. Then wrap one label around the end of the large milk shake straw; seal completely to form a nose cone shape.

3. Attach both ends of each of the remaining labels to the bottom of the straw that has the nose cone. Stick the adhesive together and crease to make three fins.

4. Put the drinking straw inside the large milk shake straw. Countdown, "10...9...8..." Aim straight into the air, blow and gently blast-off!

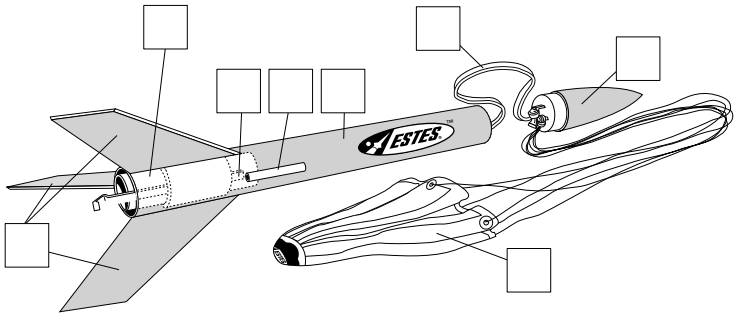
5. Now that you and your friend have made a rocket, teach another friend how to make a similar rocket. Try to teach in a way that lets your "student" learn by doing before being told or shown how.

7. Experiment with your straw rocket by changing the fins. Use larger labels, different numbers of fins, or bend and twist the fins. Estimate and record the length and height of each flight in the chart.

8. Check Hangar Talk for the definitions of the parts, and write in the letter of each part on the illustration below.

Word Bank

A. Body Tube
B. Nose Cone
C. Engine Hook
D. Fins
E. Recovery System (parachute)
F. Launch Lug
G. Engine Mount
H. Shock Cord
I. Schroud Lines



Flight Log

	Time Me/Friend	Height Me/Friend	Comments
Flight 1	/	/	
Flight 2	/	/	
Flight 3	/	/	
Flight 4	/	/	

Debriefing

Ground to Ground (Share)

- Explain how you made your rocket.
- Share with your helper how you taught your friend.

Climb Out (Process)

- How is your straw rocket similar to the model rocket? How is it different?
- What happened each time you changed your fins?

Level Off (Generalize)

- How do you feel about teaching others? About learning from others?
- What do you like others to do when they are teaching you something new?

Cross Country (Apply)

- If you were going to teach a friend how to do something, how would you do it?

Changing the fins can make a difference.

Aerospace Facts

- Sir Isaac Newton (1642–1727), an English scientist, astronomer and mathematician, was the first to discover and describe some of the laws of motion and gravity that today help us understand how things move and how they fly. Newton's first law of motion says any object that is still will stay still, and any object that is moving will stay moving, unless they are acted on by an unbalanced force. You can see Newton's first law with your rocket. It will fly nowhere until you blow into it.
- Your breath creates an "unbalanced force" and away it goes!

Solo Flight

1. Make an Estes Wizard™ rocket available from 4-H Source Book. See Prop Shop, page 36.

2. Exhibit a rocket at a fair or other public exhibition.

Science Fun Facts Sheet

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FLOAM

- How it works: borax reacts to crosslink the polyvinyl acetate molecules in the glue to form a type of plastic called a flexible polymer. If you use 3M Scotch clear glue or equivalent you will get a more transparent product that looks better. Lower amounts of the borax solution results in a very fluid Floam, 15 ml for average Floam, and the entire amount for stiff Floam.

GEODES

- Crystals are molecules that bind together ionically (meaning that they are not flexible). Most crystal molecules form specific patterns of crystal formation. Borax crystals have a square shape to them. Borax crystals can form when a supersaturated liquid containing borax powder is cooled. Hot water molecules are more active, so the molecules bounce around more and have more space between them. This means that hot water can hold more of a powder than cold liquid. So as the liquid cools, those extra borax molecules must go somewhere, and they cling together to form crystals.

BOUNCY BALLS

- The bouncing ball is made from a polymer, like the floam is! Polymers are molecules made up of repeating chemical units. Glue contains the polymer polyvinyl acetate (PVA), which cross-links to itself when reacted with borax.

*** ROCKET Information is in the kit with supplies!

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