



Student Guide to Participating in the STEM + Families Science Festival Program at Home

Materials Needed

<p>Alka Rockets</p>	<ul style="list-style-type: none"> • Empty film canister • Glass of water • Effervescent antacid tablets
<p>Bubbling Lava Lamp</p>	<ul style="list-style-type: none"> • Water • A clear plastic bottle with cap • Vegetable oil • Food coloring • Effervescent antacid tablets
<p>Martian Jelly</p> 	<ul style="list-style-type: none"> • 1 tablespoon grape jelly • 1/8 teaspoon baking soda (not baking powder) • 1 tablespoon vinegar • 1/2 cup of warm water • Popsicle stick to stir solution
<p>Sticky Icky</p> 	<ul style="list-style-type: none"> • White school glue • Food coloring (various colors) • Borax (found in the laundry aisle) • Two pitchers: labeled “Borax Solution” and “Water Only” • Warm tap water • Plastic Tablespoons (some for water, some for glue) • Plastic Teaspoons (for Borax solution) • Six-ounce plastic cups (one for each student-adult pair) • Popsicle sticks (one for each student-adult pair) • Safety glasses

What is STEM?

What does STEM stand for?

What do you know about careers in STEM?

Activating Question

Question: What makes a rocket lift off?

Alka Rockets

Experiment: Alka Rockets	
<p>Vocabulary</p> <p>Chemical reaction:</p> <p>Phase change:</p> <p>Pressure:</p>	<p>Directions</p> <p>Adult and student: After you're outside, put on your safety glasses.</p> <p>Student: Pour approximately ½ inch of water into the film canister. Make sure to fill the film canister one-half full with water and not more than that.</p> <p>Adult and student:</p> <ul style="list-style-type: none"> ● Break the effervescent antacid tablet in half. ● Put one half of the tablet into the film canister. ● Quickly put the lid on the cannister, make sure the seal is tight. <p>Student: Shake the canister vigorously, turn it upside down and place it on a flat surface or on the ground (on its lid).</p> <p>Adult and student: Step back a few feet! Wait and watch the film canister rocket launch.</p>
<p>Materials</p> <ul style="list-style-type: none"> ● Empty film canister ● Glass of water ● Effervescent antacid tablets ● Safety glasses 	

Going Deeper

How does this work?

How is this connected to the real world?

What else did you learn?

Take a family photo or video during your experiment
Who is in it?



Sticky Icky

Experiment: Sticky Icky	
Vocabulary Polymer: Solution:	Directions Adult: In your plastic cup, mix one tablespoon of plain warm tap water with one tablespoon of white glue. Student: Stir well with a popsicle stick. Tell your partner which color to use for the next step. Adult: Add a few drops of food coloring to the glue and water mix. Student: Stir well with a popsicle stick, keep stirring during the next step. Adult: Slowly pour two teaspoons of the Borax solution into the glue and water mixture. Student: Keep stirring until there is no liquid left.
Materials <ul style="list-style-type: none">• White school glue• Food coloring (various colors)• Borax (found in the laundry aisle)• Two pitchers: One labeled “Borax Solution,” one labeled “Water Only”• Warm tap water• Plastic Tablespoons (some for water, some for glue)• Plastic Teaspoons (for Borax solution)• Six-ounce plastic cups (one for each student-adult pair)• Popsicle sticks (one for each student-adult pair)• Safety glasses	

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Martian Jelly

Experiment: Martian Jelly	
<p>Vocabulary</p> <p>Basic:</p> <p>Acidic:</p>	<p>Directions</p> <p>Student: Fill your plastic cup halfway with warm water. Dissolve one spoonful of grape jelly in the cup and note the color.</p> <p>Adult: Add a pinch of baking soda and stir. Be careful! A fizzing reaction will occur, possibly causing it to overflow.</p> <p>Both: When the fizzing dies down, what do you notice?</p> <p>Adult: Slowly, add 2-3 spoonfuls of vinegar. Take care not to let any vinegar splash—it can sting your eyes!</p> <p>Student: Stir until the color of the grape jelly solution changes again.</p>
<p>Materials</p> <ul style="list-style-type: none"> • 1 tablespoon grape jelly • 1/8 teaspoon baking soda (not baking powder) • 1 tablespoon vinegar • 1/2 cup of warm water • Popsicle stick to stir solution 	

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Bubbling Lava Lamp

Experiment: Bubbling Lava Lamp	
<p>Vocabulary Intermolecular polarity: Water molecules are attracted to other water molecules; oil molecules are attracted to other oil molecules. The structures of the two molecules do not allow them to bond together.</p> <p>Density: Describes how much space an object or substance takes up (its volume) in relation to the amount of matter in that object or substance (its mass). If an object is heavy and compact, it has a high density. If an object is light and takes up a lot of space, it has a low density.</p>	<p>Directions Adult: Help your student draw a line $\frac{1}{4}$ of the way from the bottom of the bottle.</p> <p>Student: Pour water into the bottle up to the $\frac{1}{4}$ line.</p> <p>Student: Pour vegetable oil until the bottle is nearly full. Leave at least 1 inch of space at the top.</p> <p>Student: Add about 10 drops of food coloring to the bottle. Choose whatever color you like or try mixing two colors!</p> <p>Adult or student: Break an effervescent antacid tablet into several pieces and drop one into the bottle. Close the cap tightly and flip the bottle over. When the bubbling stops flip it over and add another piece.</p>
<p>Materials</p> <ul style="list-style-type: none"> ● Water ● A clear plastic bottle with cap ● Vegetable oil ● Food coloring ● Effervescent antacid tablets 	

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Extensions

To keep the STEM excitement alive by doing more activities as a family, go to:

- [PTA.org/STEM/At-Home](https://www.pta.org/STEM/At-Home)
- [MakingScienceMakeSense.com/Science-Library/Experiments/](https://www.makingsciencemakesense.com/science-library/experiments/)

Share with National PTA

Report on your experience with National PTA programs with our Program's Survey. (The survey is required.)

<https://www.pta.org/home/programs/programs-survey>

Email your photos to Crockett PTA at:

crockettnjpta@gmail.com

If you'd like you can also post pictures and videos to social media using hashtags like

#Crockettstemfestival

#Crockettfamilyscience

Name: _____

Crockett Middle School PTA
STEM + Families Science Festival

I am in Middle School, grade _____

My gender is (circle best answer)

Male Female Transgender Non-binary/Gender-expansive Prefer to self-describe
Or
Prefer not to answer

How much do you agree with the following statements? Circle 1 answer for each question.

I am glad I participated in the program
N/A Strongly Disagree Disagree Agree Strongly Agree

The program was easy to understand.
N/A Strongly Disagree Disagree Agree Strongly Agree

I will explore this topic more with my family at home.
N/A Strongly Disagree Disagree Agree Strongly Agree

Please have the parent/caregiver participant complete the next set of questions.

My ethnic background is:
African American/Black ____
Asian/Pacific Islander ____
Caucasian/White ____
Hispanic/Latinx ____
Native American/Alaskan Native (not Pacific Islander) ____
Bi-racial/Multi-racial ____
Prefer to self-describe:
Prefer not to answer ____

Please choose the number of students in your care who participated in this program in each gender category. If you choose not to answer, please select N/A.

- # of males ____
- # of females ____
- # of transgender ____
- # of Non-binary/Gender-expansive ____
- I prefer not to answer ____

How much do you agree with the following statements.

I learned something new about my student(s) interest in this topic.
N/A Strongly Disagree Disagree Agree Strongly Agree

I have new helpful materials/resources to use with my student(s) at home.
N/A Strongly Disagree Disagree Agree Strongly Agree

The program was easy for my family to understand.
N/A Strongly Disagree Disagree Agree Strongly Agree

The program was engaging.
N/A Strongly Disagree Disagree Agree Strongly Agree

I see my family attending more PTA programs.
N/A Strongly Disagree Disagree Agree Strongly Agree

The program was a fun way to connect with my community.
N/A Strongly Disagree Disagree Agree Strongly Agree

Would you be interested in doing these types of programs with your family in the future?

- Yes ____
- No ____
- Maybe ____