



*Student Page

Fireworks in a Jar



-Challenge:

Creating fireworks in a jar.

-MATERIALS:

- **Clear Jar**
- **Different food color dyes**
- **Water**
- **Vegetable Oil**
- **Fork**

-PROCEDURE:

- 1. Fill your jar 3/4 of the way full with warm water.**
- 2. In a separate bowl, mix 3-4 tablespoons of oil and several drops of different colors of food coloring (Use 4 drops of each color: red, yellow, blue, and green).**
- 3. Use a fork to gently mix the oil and food coloring together.**
- 4. Gently pour the oil mixture into the jar.**
- 5. Watch what happens—the food coloring will slowly sink out of the oil and into the water. When this happens, it will expand and begin to mix with the other colors.**

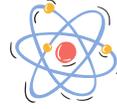
Example:





*Teacher Page

Fireworks in a Jar



We know that during play, children naturally engage in STEM (science, technology, engineering, and math) investigation. We also understand how crucial it is for adults to become SiW-literate in order to promote their children's SiEM literacy. Families are welcome to explore STEM topics via play by completing our STEM Challenges, which will benefit both adults and children. There are no "correct" answers in these open-ended challenges since adults and children collaborate to solve difficulties.

How to Support Learning during the STEM Challenge:

-Let Children Lead:

Adults are encouraged to allow the child to take the lead in the process. The design should be based on the ideas of the youngster. Adults can be helpful by holding materials as the child cuts or tapes them together.

-Ask Open-Ended Questions:

Asking open-ended questions can help adults enhance children's learning. Open-ended inquiries necessitate more than a yes/no response and allow youngsters to express their feelings and goals. Some examples of possible questions are...

- How did you...?
- Why did you...?
- What do you think would happen if....?
- What do you wonder about?
- What does this remind you of?
- Is there another way you can use this....?

-Reverse Engineer:

Inquire about "reverse engineering" as a method of approaching the design process. Children decide how to use the materials they have to make the ultimate result, keeping the end outcome in mind.

-Failure is Part of the Process:

Engineering is a process in which failures outnumber achievements. Allow children to understand that it's fine if their product fails the first, second, or hundredth time. The procedure is a loop in which you develop, test, tweak, and test again until you achieve your desired outcome. In the event that a design fails, consider the following:

- What else could you try?
- What do you think would happen if you changed this...?
- What did you notice... (about the design)?

