Underwater Fireworks

WHAT ARE WE INVESTIGATING?

Can you make fireworks in a glass?

MATERIALS:

- Water
- Vegetable Oil
- Food Coloring
- Tall, Clear Glass
- Cup
- Fork
- Strive Academy's Engineering Design Process Handout (found at www.striveacademy.org)
- Pencil or Pen

EXTENSION:

* Try this experiment again but add more than one color of food coloring. Which color fireworks can you make when you mix colors together?

* Learn about density by doing some research! Does the density of an object ever change? How can you calculate the density of an object? How can heavy objects be less dense than water?

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DIRECTIONS:

1. Gather all of your materials. Our materials are just suggestions - feel free to add other things too!

2. On your handout (found at www.striveacademy.org), fill in the title of your experiment (Underwater Fireworks).

3. On your handout, fill in your hypothesis. You want to answer the question: How can I use water, oil, and food coloring to make underwater fireworks?

4. On your handout, sketch a design of how you will make your underwater fireworks. You will be using water, oil, and food coloring. Feel free to use color and label the materials that you will be using!

5. Fill the tall, clear glass up with room temperature water about ¾ of the way full.

6. In the second cup, pour in 2 tablespoons of vegetable oil. Add 2-3 drops of food coloring.

7. Use your fork to stir the food coloring and the oil. You don't want to completely mix them together, but you want to break the food coloring drops into smaller drops.

8. Under "Data Collection/Observations", draw what your cup looks like with the oil and food coloring. Use color!

9. Pour the oil and food coloring mixture into the tall glass with water. Now this is the fun part! Watch as the droplets expand as they fall - this looks like fireworks!

10. Under "Results", draw or write some observations about what you see happening in the glass.

11. Answer the "Analysis" questions on your handout:
    - What did you notice about the oil when you added it to the water? Did it sink to the bottom or float on top?
    - What did you notice happened to the food coloring droplets when you added it to the water? Did they sink to the bottom or float on top?
    - This is all about density - things that are more dense than water sink and things that are less dense than water float. Which ingredient was more dense than water? Which ingredient was less dense than water?

** Try the extension activities on the first page for more fun! **