

WHAT ARE WE INVESTIGATING?

How does soap affect the surface of water?

MATERIALS:

- Shallow Bowl
- Water
- Pepper
- Dish Soap
- Toothpick
- Strive Academy's Engineering Design Process Handout (found at www.striveacademy.org)
- Pencil or Pen

EXTENSION:

* See if other liquids have the same surface tension as water - try the experiment again with liquids such as olive oil, milk, or soda.

* A great example of surface tension is testing to see how many drops of water can fit on a penny - try this!

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 (Pepper and Soap).
3. On your handout, fill in your hypothesis. You want to answer the question: What will happen to the pepper flakes when the soapy toothpick touches the water?
4. On your handout, sketch a design of your experimental setup. You will be adding pepper to the water and then introducing some soap to it. Feel free to use color and label the materials that you will be using!
5. Fill the bowl with about an inch of water.
6. Sprinkle pepper evenly across the surface of the water. Be careful not to sneeze!
7. Squeeze a tiny bubble of dish soap onto a plate. Touch the tip of the toothpick to the bubble of soap.
8. Poke the soapy toothpick into the middle of the water. Under “Data Collection /Observations”, draw a picture of what happens to the pepper flakes.
9. Repeat #8 a few times. Under “Results”, record how many pepper flakes move to the side compared to how many pepper flakes stay in the middle.
10. Answer the “Analysis” questions on your handout:
 - What happened to the pepper when you added it to the water? Did it float or sink?
 - The pepper flakes moved because water has surface tension - water molecules are sticky. Do you think this makes the water molecules want to stay together or separate?

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