

Date: \_\_\_\_\_

Name: \_\_\_\_\_

## Particle Theory Reaction in Action

This activity was created by Sophia.

### Materials

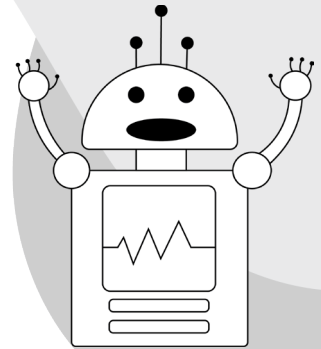
- Dish soap
- Milk (2% or higher)
- Food colouring
- Plate

### Directions

- 1 Pour milk onto your plate until it covers the bottom of the plate.
- 2 Add food colouring to the milk near the centre of the plate, use as many colours you'd like! Make sure you can still see the milk.
- 3 Add a drop of dish soap to the middle of the plate (you can also dip a Q-tip into some dish soap and place that into the milk. Place it in different spots and see what happens!



Following instructions is the same as following an algorithm! Keep it up, coder!



### What happened?

The super special ingredient for this experiment is soap! Soap molecules have two ends on them. One is **hydrophilic**, which means it's attracted to water, and one end is **hydrophobic**, which means it does not like water. Milk is a mixture of fat, water and a few other things. When you add soap to the milk it helps to separate the water and the milk. The **hydrophobic** end breaks up the fat molecules, and the **hydrophilic** end bonds with the water molecules. As all this movement happens, the food colouring gets pushed around and creates the designs you see on your plate! Try adding more soap, if there are fat molecules that haven't been bonded, the colours will continue to move!

### Exploring further:

If you can, try using different types of milk or dairy products, like skim, 1%, 2%, half and half, or heavy cream. What do you notice between a liquid with a higher fat content or lower fat content? Which one works better for the experiment?