

5th Grade - Lesson 2.2
Activity Sheet
Developing Tests to Identify
Similar-Looking Liquids

Name: _____

Date: _____

Safety: Wear safety goggles and be sure to follow all safety instructions given by your teacher. Wash your hands after completing the activity.

INTRODUCTION

1. If you compare how different liquids act on wax paper, why is it important to use the same amount of each liquid in your “wax paper test”?

If you want to compare how different liquids look on wax paper, you should use the same amount of each liquid. It’s possible that the amount of liquid will affect the way they look on wax paper, but you only want the type of liquid to affect how they look. So, you should use the same amount.

ACTIVITY

Question to investigate:

Can you identify an unknown liquid by testing various liquids on different surfaces?

Materials

- Water in cup
- Isopropyl “rubbing” alcohol (70%) in cup
- Detergent solution in cup
- Salt water in cup
- Additional small cup (containing unknown liquid)
- 5 Droppers
- Wax paper
- Construction paper
- Pencil

WAX PAPER TEST

Procedure

1. Use a pencil to label the wax paper **W**, **SW**, **A**, and **D** for water, salt water, alcohol, and detergent. Mark the paper in the middle with **U** for the unknown.
2. Use a separate dropper to get a small amount of each liquid.
3. At the same time, gently squeeze 1 drop of each liquid onto its labeled area of the wax paper.



WHAT DID YOU OBSERVE?

2. Describe what you noticed about each liquid on the wax paper.

Water - **Beaded up and held together tightly with out spreading.**

Salt Water - **Beaded up and held together tightly with out spreading.**

Alcohol – **Flatter than water and salt water and spread out more.**

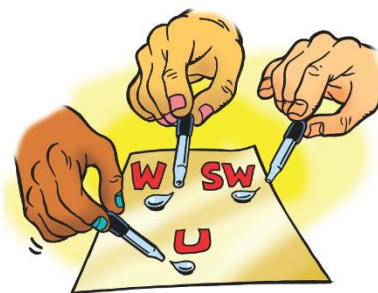
Detergent - **Flatter than water and salt water and spread out more.**

3. Based on the “wax paper test”, what do you think the identity of the unknown liquid might be? Water or Salt water

CONSTRUCTION PAPER TEST

Procedure

1. Use a pencil to label the construction paper W and SW for water and salt water and U for the unknown.
2. Use a dropper to get a small amount of each liquid.
3. At the same time, gently squeeze 1 drop of each liquid onto its labeled area of the construction paper.



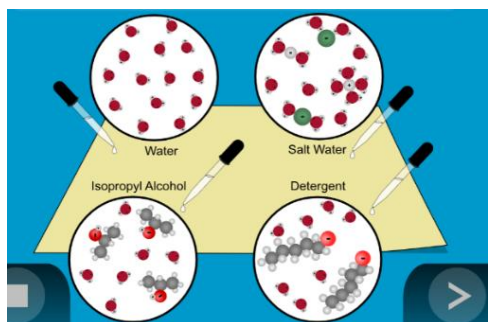
WHAT DID YOU OBSERVE?

4. Describe what you observed about the water, salt water, and the unknown on the construction paper.

For the construction paper test, the water and the unknown absorbed into the construction paper pretty quickly but the salt water beaded up a bit more and took longer to absorb.

5. Based on the “construction paper test”, what do you think is the identity of the unknown? WATER

EXPLAIN IT WITH ATOMS & MOLECULES



6. You saw models of the molecules of the different liquids. Why do you think the liquids acted differently from each other?

The liquids are made up of molecules with different shapes and sizes and different positive and negative charges. This makes them interact with the wax paper and the construction paper in a certain way.

TAKE IT FURTHER

Materials

- 2 white coffee filters
- 2 cups
- 3 or 4 drops of green food coloring in a small cup
- 2 cotton swabs
- Water
- Salt water

Procedure

1. Use a pencil to mark the coffee filters W and SW, for water and salt water.
 2. Dip your cotton swab into the food coloring and then use the swab to make a dark dot in the center of each coffee filter.
 3. Dip one end of a clean cotton swab into the water and move it around a bit to be sure it gets wet. Place the wet end on the dot on the coffee filter labeled W as shown.
 4. Use a different cotton swab and dip it into the salt water and move it around a bit to be sure it gets wet. Place the wet end on the dot on the coffee filter labeled SW as shown.
 5. If it looks like the color is not spreading much, re-dip the cotton swab into the water and salt water and put the wet end on the color again.
7. After allowing the color to spread for a while, describe what the color looked like on each coffee filter.



With Water - On the one with water, there was a pretty big round area of white with a thin ring of yellow and then a thin ring of blue around the yellow.

With Salt Water - On the one with salt water, there was a round area of yellow in the center and a rim of blue around it.

8. How do you think the salt in the salt water might be interacting with the molecules in the food coloring and the filter paper to affect the way the colors move?

The blue seems to move about the same in the water and salt water. It seems like the yellow doesn't move as much in salt water as fresh water. Maybe salt somehow attaches the yellow to the paper and doesn't let it move as far.