

Solubility Lesson Plan

Key topics and ideas to discuss with students

- How to you clean something? Soap cleans oil, but water cleans salts
- What does it mean to dissolve? The molecules break up and go into the solution
- Things that look the same don't have the same properties!
- Molecules that are like each other dissolve each other - Since students do not know about intermolecular forces describe molecules as being more "water like" or more "oil like"
 - If it dissolves in water, it's more like water – hydrophilic – water loving
 - If it dissolves in oil – it's more like oil – hydrophobic – water hating
 - The alcohol in in the middle of water and oil
- Solute definition
- Solvent definition

Materials

- Plastic cups
- Plastic spoons
- Rubbing alcohol
- Water
- Mineral oil
- Salt
- Soap
- Canola oil
- Sugar – colored
- Sugar not colored
- Pepper
- Corn syrup
- Dish soap
- Popsicle sticks

Experiment 1 – What does it mean to dissolve?

1. Fill 1 test tubes with water
2. Talk to students about what it means to dissolve.
3. Drop a little bit of salt into the test tube.
4. Have the students describe what happened.

Experiment 2 –Solubility of liquids

1. Fill cups with small amount of water, oil, and alcohol
2. Use dropper to add a few drops of alcohol to water cup
3. Use dropper to add a few drops of oil to water cup
4. Use dropper to add a few drops of oil to alcohol cup
5. Use dropper to add a few drops of water to alcohol cup.
6. Use dropper to add a few drops of oil to water cup
7. Use dropper to add a few drops of alcohol to water cup

Fill in table with observations

Experiment 3 – Solubility of solids into liquids

1. Using the same cups as from Experiment 2 add a little bit of each of the following solids to each cup filling out your solubility chart as you go along
 - a. Sugar
 - b. Colored Sugar
 - c. Salt Cinnamon
 - d. Baking Soda
 - e. Baking Powder
 - f. Corn starch

Fill in table with observations (Some of them make take a while)

Experiment 4: How do you wash oil from your hands?

1. Ask the students why you use soap when you wash your hands? Or when you do dishes?
2. Fill a falcon tube about halfway with water.
3. Add a drop or two of oil.
4. Add a little squirt of soap.
5. Shake and let the bubbles clear out a little bit.
6. Talk about how half of soap molecules are water like and half are oil like so it can dissolve oil into water.