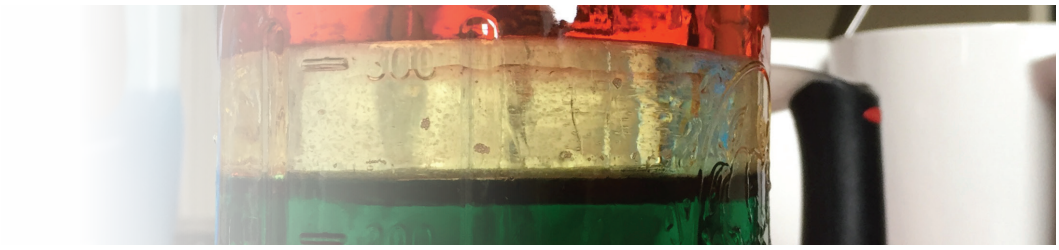
4-H STEM LAB



The Messy Meter

Liquid Layers

In this activity, kids will learn that different liquids have different densities. Using various colored liquids, they will create a rainbow in a jar with the densest liquids on the bottom, and lighter, varied colored layers, above.

Recommended Ages:
4 and up

Estimated Time:
20-25 minutes

Subject:
Liquid layers — some liquids are heavier than others

WHAT YOU'LL NEED

PANTRY STAPLES:

(Makes one jar)

- ½ cup of blue dishwashing liquid
- ½ cup of olive or vegetable oil
- ½ cup of rubbing alcohol
- ½ cup of light corn syrup
- Red, green, and blue food coloring
- 5 bowls for mixing
- 5 spoons
- Measuring cups
- Paper towel or dish rag (for spills)

OPTIONAL ADD-ON:

- Sauce bottles to help distribute liquids

STEPS

1. Make your purple layer by mixing a half cup of the light corn syrup with 1 drop of blue and 1 drop of red food coloring.
2. Pour the mixture in the bottom of your jar.
3. Next, carefully pour the blue dish soap down the side of the jar, going slowly so the colors do not mix.
4. Next, mix ½ cup of water in a bowl with 2 drops of green food coloring.
5. Carefully pour your green water slowly down the side of the jar.
6. Next, gently pour your ½ cup of oil down the side of the jar.
7. Now, mix ½ cup of rubbing alcohol with 2 drops of red food coloring.
8. Carefully pour the red rubbing alcohol down the inside of the jar.
9. Being careful not to disturb your liquids. Set your jar down on the table and enjoy your rainbow!!!

EXPERIENTIAL LEARNING NOTES

After completing the activity, you can ask the kids to reflect about what they learned from the activity and how they might apply it to their lives.

Adaptations for older/younger kids or groups (if applicable): Younger kids may need help to pour well and slowly. Older kids should be able to do it independently. Older youth may also be introduced to terms such as density and buoyancy.

BONUS FUN:

Mix your rainbow liquid layers together and see what happens!

QUESTIONS TO ENGAGE YOUTH

1. What liquids do you think are even heavier than corn syrup that we could have used at the bottom instead?
2. What do you think would have happened if we put the rubbing alcohol on the bottom, then added the dish soap?
3. What do you think would happen if the liquids mixed (see Bonus Fun)?

EXPLANATION

About the activity: As demonstrated in this activity, different liquids have different densities, and this has real world applications. For instance, in your own home, salad dressings separate between oils and vinegars, which is why they must be shaken before added to a salad. Greater implications for this can be seen in oil spills, when oil floats on the surface of open water areas, which helps emergency responders to contain and clean up the spill.

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