

DebraBell
AIM ACADEMY

M&M Experiments



Join Aim Academy science teacher, Dr. Karen Joseph, each week for science experiments you can watch with your kids or try at home.

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EXPERIMENT 1

Dissolving M&M's

In this experiment, we will test three different liquids to see which does the best job of dissolving the candy coating off an M&M.

SUPPLIES NEEDED:

- 3 cups water
- isopropyl alcohol
- cooking oil
- a marker
- a tablespoon measure
- 3 M&M's of the same color

TO DO:

1. Formulate your hypothesis. Which liquid do you think will do the best job of dissolving the coating M&M's? Don't just guess. Why do you think your choice will work best?
2. Use the marker to label one cup "water", one cup "alcohol" and one cup "oil."
3. Add 1 tablespoon of water to the cup labeled "water." Wash the tablespoon before using it for the next part.
4. Add 1 tablespoon of alcohol to the cup labeled "alcohol." Wash the tablespoon before using it for the next part.
5. Add 1 tablespoon of oil to the cup labeled "oil."
6. Place one M&M into each cup.
7. Swirl each cup for about 20 seconds and observe.

EXPLANATION:

The water did the best job of dissolving the coating on the M&M. Second best was the alcohol, and the oil did not dissolve the coating at all. The candy coating on the M&M's contains molecules that have one positively charged end and one negatively charged end. Water molecules also have one positively charged end and one negatively charged end. When the positive end of a water molecule comes into contact with a negatively charged end of a candy molecule, they attract. And when the negative end of a water molecule comes into contact with a positively charged end of a candy molecule, they attract. Water pulls on the candy molecules, literally pulling them apart. That's what we mean when we say that things dissolve.

Alcohol has a good amount of water in it, so it does a pretty good job of dissolving the candy coating. But oil molecules don't have positive and negative charges, so they don't stick to the candy coating and pull it apart like water does. So oil does not dissolve the candy coating at all.

Water is really great at dissolving things. In fact, so many things can dissolve in water that we call water the "Universal Solvent."

EXPERIMENT 2

The Floating M

In this experiment, we will use water to remove the letter M from an M&M.

SUPPLIES NEEDED:

- a shallow bowl
- water and M&M's in a variety of colors

TO DO:

1. Place a few M&M's in your bowl, positioning them so the "M" side is up. Be sure they aren't touching one another.
2. Add room temperature water to your bowl so that it completely covers the M&M's.
3. Watch carefully. It may take up to 20 minutes to see the M's float to the top.

EXPLANATION:

The colored candy coating on the M&M is made of a sugar and coloring, and they both dissolve in water. As you watch, you'll see the colors coming off the M&M's and sinking to the bottom of the bowl. But the M is made of a special edible paper that does not dissolve in water. After all the candy coating has dissolved into the water, the edible paper, with the M still on it, floats to the top of the water.

EXPERIMENT 3

M&M Rainbow

In this activity, we will use M&M's and the dissolving action of water to make a beautiful display of colors.

SUPPLIES NEEDED:

- M&M's in a variety of colors
- a glass or plastic plate
- warm water

TO DO:

1. Arrange M&M's in a circle near the edge of a glass or plastic plate.
2. Carefully, so you don't disturb the M&M's, pour warm water into the middle of the circle of M&M's.
3. Pour enough to come into contact with the circle of M&M's.
4. Watch as a rainbow of color begins to form!

EXPLANATION:

The candy coating of the M&M is made of sugar and colored dye. When water comes into contact with the sugary coating, the positive and negative charges in the water molecules pull on the negative and positive charges in the sugary coating, and the coating dissolves. As they dissolve, they don't mix right at first, so you get beautiful lines of color.

EXTEND THIS ACTIVITY:

You can try different arrangements of M&M's. Try putting 4 M&M's in a square. Try putting a circle within a circle, so you have two circles of M&M's. What arrangements can you come up with?