Group Activity: Science Experiments

Warning: Messy Activities involved! Fun and learning could happen!
For best results, mix one part adult to two parts kids.

In small groups, try one or more of these science experiments---especially the cornstarch experiment!

1) Cornstarch experiment
2) Make your own slime
3) Sweet Treat
4) Jumping Rice
5) Making a compass*
6) Acid/Base*

*better for older kids

For inspiration before the experiments, listen to "The Science Fair" or "Battle of the Mad Scientists"

For more science experiments visit www.fatlion.com/science

Experiment 1: Cornstarch and water!

You'll need:

Cornstarch	Large bowl
Water	Measuring cups (1 liquid, 1 dry)

Instructions:

Place a cup of cornstarch into the bowl. Add 1/4 cup of water and mix. Keep adding water until the mixture is thicker than pancake batter. Take a handful and knead it like you would bread dough. The mixture will stay firm as long as you keep squeezing it. As soon as you stop squeezing the mixture will pour through your fingers.

Why's it do that?

Isotropy is the property of a fluid to become firm when agitated. The more you squeeze the gunk, the firmer it gets, like a solid. When you let it lay in your hand, it becomes more like a liquid. If this raises your curiosity, look up isotropy and non-Newtonian fluids.

Experiment 2: Make your own slime

You'll need:

White glue	A jar or large cup
Borax	A bowl for mixing
Water	Food coloring (optional)
Sealable plastic baggie	Measuring cups
Spoon or craft sticks	Tablespoon

Instructions:

In the jar combine a table of borax powder with a cup of water and stir or shake if it has a lid. In the bowl mix 2 tablespoons water and 2 tablespoons glue. Now add 4 tablespoons of borax solution to glue/water mixture and stir quickly. The mixture should be slimy or gooey. You can add food color to create authentic looking slime. Save your slime in a baggie so it doesn't dry out.

Why's it do that?

When you mix the glue with the water you make a substance known as a polymer. When you add the borax solution it acts as a connector for the polymer chains making the glue solution thicker creating slime. If you add more borax the slime will get even thicker turning into silly putty.

Experiment 3: Sweet Treat

You'll need:

A coffee filter (white)
Package of Smarties
Small cup of water
Plate
Eye dropper (optional)

Instructions:

Place the plate on a flat surface and put the paper on the plate. Put a smartie in the center of the paper. Using the eye dropper or your finger, drop a little water on the smartie. Repeat this slowly, until the sweet is completely wet. Wait (why not try another experiment or you can eat the smarties you're not using) When you come back you should see rings of color around the smartie.

Why'd it do that?

The color in the sugar coating of the smartie dissolves in water and that water is drawn out through the paper by capillary action, moving into a circle. The different dyes that make up the smartie color move at different speeds, therefore separating into different color circles. The colors that migrate the furthest from the candy have less of a mass than the ones closest to the candy.

Experiment 4: Jumping Rice

You'll need:

1/2 to 1 cup of rice krispies
glass plate or plexiglass
wool sweater
2 wooden blocks, ceramic cups or something to raise plate 2 to 3 inches above table & that's non-metallic

Instructions:

Put the rice krispies on the table. Put one block on either side of rice krispies then balance glass plate on blocks over the rice krispies. Rub the top of the plate with a wool sweater. The rice kirspies should start to stand on end then jump to the glass plate.

Why'd it do that?

The jumping rice is caused by the buildup of a static charge. Rubbing the wool sweater on the glass generates a net negative charge on the glass surface. This net negative charge has the effect of polarizing the rice krispies on the table, so positive charges accumulate on points on the negatively charged plate. Unlike charges attract and when the difference in charge becomes great enough it draws the rice krispies to the plate, against the force of gravity. When the rice krisipie hits the plate it makes the charge dissipate causing the rice krispie to fall back to the table.

Experiment 5: Making a compass

You'll need:

1 inch sewing needle	small piece of cork
magnet	glass of water

Instructions:

Run the magnet over the needle a few times, always in the same direction in order to magnetize the needle. Drive the needle through a piece of cork. You can use the cork from a wine bottle, just cut a piece off. It's better to put the needle through the circle, like the diameter, rather than through he center, like a bulls eye. Float the cork in the water so the needle lies roughly parallel to the surface of the water. Place your compass on a flat still surface and watch what happens. It should be pointing to the nearest pole. Place a magnet near your compass and see what happens.

Why'd it do that?

The earth produces a magnetic field. By floating the needle on the cork, you let it rotate freely so it can orient itself within the earth's magnetic field, pointing toward the north or south pole.

Experiment 6: Acid/Base

You'll need:

1/2 head of red cabbage	Detergent in water
Metal grater or chopper	Clear soda
5 cups or glasses	Diluted citrus juice
White vinegar	Baking soda in water

Instructions:

Prior to experiment the cabbage will have to be grated or chopped and boiled for 20-30 minutes until the water turns a dark purplish color. Strain the cabbage keeping the water. Let it cool, then you're ready to start.

Add a few drops of cabbage juice to your solutions. Acid solutions will turn pink and base solutions will turn green. Can you think of any other solutions to try? Keep in mind the lighter or clearer the solution, the easier it'll be to see the color change.

Why'd it do that?

Red cabbage contains pigments called anthocyanins that give it the red/purplish color. This anthocyanins alters a base or an acid in such a way that it changes the color of the solution to green or pink.