Candy science experiments for kids

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Leftover Halloween candy makes a whole science lab: rainbows on a plate, letters that float off, gummy bears that grow overnight, a density tower and a balloon blown up by popping candy. Here are twelve experiments, each with an age, what you need, the steps and what's happening, plus a printable sheet to record it.

Before you start

- Hard candy, gum, gummies and popping candy are choking risks for children under 4. Keep little brothers and sisters away from the experiment table.
- A grown-up handles hot water, the oven and soda bottles.
- Candy that's been in an experiment is for looking at, not eating: it's been in vinegar, oil, salt water or little hands for an hour.
- Check the wrappers for nuts and other allergies before a class or a group joins in.
- Cover the table with a towel or baking paper. Food coloring stains.

The experiments at a glance

- Experiment: The candy rainbow · Ages: 4 and up, with help · Mess: Low · A grown-up: Nearby
- Experiment: Floating letters · Ages: 5 and up · Mess: Low · A grown-up: Nearby
- Experiment: The chocolate melt race · Ages: 4 and up · Mess: Some · A grown-up: Nearby
- Experiment: Sink or float? · Ages: 4 and up · Mess: Some · A grown-up: Nearby
- Experiment: Peppermint stars · Ages: 4 and up, with help · Mess: Low · A grown-up: Nearby
- Experiment: The dissolving race · Ages: 5 and up · Mess: Some · A grown-up: Nearby
- Experiment: Candy corn: hot, warm or cold? · Ages: 5 and up, with a grown-up · Mess: Low · A grown-up: Needed
- Experiment: Growing gummy bears · Ages: 6 and up · Mess: Low · A grown-up: Nearby
- Experiment: Candy color detective · Ages: 6 and up · Mess: Some · A grown-up: Nearby
- Experiment: The candy rock cycle · Ages: 6 and up · Mess: Some · A grown-up: Needed
- Experiment: The candy density tower · Ages: 7 and up, with a grown-up · Mess: Lots · A grown-up: Needed
- Experiment: The fizzy balloon · Ages: 6 and up, with a grown-up · Mess: Lots · A grown-up: Needed

Twelve candy science experiments

The candy rainbow

Ages: 4 and up, with help. Mess: Low. You need: Hard-shelled fruit candies or candy-coated chocolates, a white plate, warm water.

1. Lay the candies in a ring around the edge of the plate, mixing the colors.
2. Gently pour warm water into the middle until it just touches every candy.
3. Wait a minute and watch.

What's happening: The shells are sugar and food coloring, and both dissolve in water, so the colors run toward the middle. Where two colors meet, the water on each side is about as sugary as the other, so they don't push into each other much and the lines stay sharp for a while.

Change one thing: Try cold water and hot tap water on two plates side by side. Which rainbow comes first?

Floating letters

Ages: 5 and up. Mess: Low. You need: Candy-coated chocolates with a letter printed on them, a shallow dish of water.

1. Set a few candies in the water, letter side up.
2. Don't touch them for a few minutes, and watch the letters.

What's happening: The letter is printed in an edible ink that doesn't dissolve in water. The sugar shell under it does, so the letter comes loose and floats up as a thin film.

Change one thing: Does it work with the letter side down? Does warm water free the letters faster?

The chocolate melt race

Ages: 4 and up. Mess: Some. You need: Four squares of chocolate, a small plate each.

1. Put one in a sunny window, one in the fridge and one on the counter.
2. Hold the last one in a closed hand, on a napkin.
3. Check every two minutes. Which melts first?

What's happening: Chocolate starts to melt a little below the temperature inside your body, so a warm hand beats the counter.

Change one thing: Race milk chocolate against dark chocolate, both in the sun. Is one quicker?

Sink or float?

Ages: 4 and up. Mess: Some. You need: A bowl of water and one of each kind of candy, still in their wrappers.

1. Guess first: sink or float? Write the guesses down.
2. Drop them in one at a time.
3. Then try a few with the wrapper off.

What's happening: It's about how much stuff is packed into the space a candy takes up. A fluffy, whipped bar has air in it and can float. A hard candy is packed tight and sinks. Wrappers can trap air, so the same candy may do something different unwrapped.

Change one thing: Stir lots of salt into the water and try the sinkers again. Do any float now?

Peppermint stars

Ages: 4 and up, with help. Mess: Low. You need: Striped peppermint candies, a white plate, warm water.

1. Put one peppermint in the middle of the plate.
2. Pour in warm water until it comes about halfway up the candy.
3. Keep the plate still and watch the stripes.

What's happening: The red is a thin coat of coloring on the outside of the sugar. As the sugar dissolves, the colored, sugary water spreads out across the plate in lines, like the points of a star.

Mind: Hard candy is a choking risk for children under 4. This one is for looking at.

Change one thing: Use three plates: cold, warm and a grown-up's hot water. Which star spreads furthest in five minutes?

The dissolving race

Ages: 5 and up. Mess: Some. You need: Five of the same candy, five cups: cold water, warm water, vinegar, milk and cooking oil.

1. Guess which cup wins first.
2. Drop one candy in each.
3. Look every five minutes and write down what you see.

What's happening: Water, vinegar and milk are mostly water, and sugar dissolves in water, faster when it's warm because the tiny bits of water move faster. Sugar hardly dissolves in oil at all.

Change one thing: Try soda water, or water with salt in it. Where do they come in the race?

Candy corn: hot, warm or cold?

Ages: 5 and up, with a grown-up. Mess: Low. You need: Three candy corns, three clear cups: ice water, tap water, and hot water a grown-up pours.

1. Guess which cup will make its candy corn disappear first.
2. Drop one candy corn in each cup at the same moment.
3. Look every two minutes and draw what you see.

What's happening: Candy corn is mostly sugar. The bits of water in hot water move faster and bump the sugar loose more quickly, so the hot cup wins and the ice water is slowest.

Mind: A grown-up handles the hot water.

Change one thing: Stir one cup and leave one still, both the same temperature. Does stirring help?

Growing gummy bears

Ages: 6 and up. Mess: Low. You need: Three gummy bears, two cups (one of plain water, one of water with two spoons of salt), a ruler.

1. Measure each bear.
2. Put one in plain water, one in salty water and keep one dry.
3. Leave them overnight and measure again.

What's happening: Water moves into the bear, where there's less water and more sugar. The gelatin holds its shape, so the bear swells. Salty water already has a lot in it, so less water goes in and that bear grows less.

Mind: These bears are for looking at, not eating.

Change one thing: Put a bear in sugar water. Does it grow less than in plain water, like the salty one?

Candy color detective

Ages: 6 and up. Mess: Some. You need: A coffee filter cut into strips, a pencil, colored hard-shelled candy, a glass with a little water.

1. Draw a pencil line near the bottom of a strip.
2. Wet a candy and dab its color on the line.
3. Stand the strip in the glass with the water just below the line.
4. Wait ten minutes.

What's happening: The water climbs the paper and carries the color with it. Many candy colors are a mix of two or more dyes, and each moves at its own speed, so one color can split into two.

Change one thing: Test every color in the bag. Which ones are one dye, and which are a mix?

The candy rock cycle

Ages: 6 and up. Mess: Some. You need: Soft fruit chews in three or four colors, baking paper, a plastic knife.

1. Sedimentary: cut the chews into small bits, sprinkle them in layers on baking paper and press down with your palm. Cut it in half to see the layers.
2. Metamorphic: warm the layered bit in your hands, then squash and twist it. The layers bend and swirl.
3. Igneous: a grown-up can warm a piece on baking paper in a low oven until it melts and then cools hard.

What's happening: Real rocks change the same ways: layers of sand and mud get pressed into sedimentary rock, heat and squeezing bend it into metamorphic rock, and melted rock cools into igneous rock.

Mind: A grown-up does the oven, and melted candy stays hot for a while.

Change one thing: Squash one stack hard and one gently. Which keeps its layers?

The candy density tower

Ages: 7 and up, with a grown-up. Mess: Lots. You need: Hard-shelled candies in four colors, four cups, warm water, a spoon, a tall clear glass.

1. Put 2 candies of one color in the first cup, 4 of the next in the second, 6 in the third and 8 in the fourth.
2. Add 3 spoons of warm water to each cup and stir until the color comes off.
3. Pour the 8-candy water into the glass. Then very slowly pour the 6, then the 4, then the 2 over the back of a spoon, so each runs gently down the side.

What's happening: The cups with more candy have more sugar packed into the same water, so they're heavier for their size (denser). The heaviest sinks to the bottom and the lightest floats on top, so the colors stack in bands.

Mind: A grown-up handles the warm water. Pour slowly; it takes a few tries.

Change one thing: Pour them in the wrong order, lightest first. What happens to the bands?

The fizzy balloon

Ages: 6 and up, with a grown-up. Mess: Lots. You need: A pack of popping candy, a balloon, a funnel, a small bottle of soda.

1. Go outside. Pour the popping candy into the balloon through the funnel.
2. A grown-up opens the soda.

3. Stretch the balloon over the top without spilling, then lift it so the candy falls in.

What's happening: Popping candy has tiny pockets of gas trapped inside. When it drops in, it makes the soda let go of lots of its own gas too, and the gas puffs up the balloon a little.

Mind: Popping candy isn't for children under 4. Do this one outside, and point the bottle away from faces.

Change one thing: Try a cold bottle against a warm one. Which balloon grows more?

Make it a real experiment

Scientists call it a fair test. The printable sheet at the top of this page has a box for each step.

1. Ask a question: which liquid dissolves candy fastest?
2. Predict: write down what you think will happen, and why.
3. Change one thing only (the liquid), and keep everything else the same: the same candy, the same amount, the same cups, the same time.
4. Watch and write it down. Draw it, time it, measure it.
5. Say what happened, and whether your prediction was right. Being wrong is fine; that's how scientists find things out.

For a school science fair, the science fair projects page has projects by grade, and which liquid dissolves candy fastest is written up as a full project with a question, a hypothesis and a results table.

More from Peabody

- What to do with leftover Halloween candy: where to donate it, what to make, and how to keep it.
- Halloween candy math: count, sort, graph and find fractions of the bag, with printables.
- Science at Peabody: how kids learn science, and what to try next.
- Science games: more science to play on screen.
- Halloween HQ: every Halloween thing at Peabody, still open.

Questions grown-ups ask

What science experiments can you do with Halloween candy?

A candy rainbow on a plate, floating letters, a chocolate melt race, sink or float, peppermint stars, a dissolving race, candy corn in hot and cold water, growing gummy bears, candy color detective with coffee filters, a candy rock cycle, a density tower, and a fizzy balloon with popping candy and soda.

What's the easiest candy experiment for preschoolers?

The candy rainbow: candies in a ring on a white plate and a little warm water in the middle. The colors run in toward the center in a couple of minutes. A grown-up keeps the candy away from children under 4, who could choke on it.

Which candy experiment is best for a science fair?

One with a question and something to measure: the dissolving race (which liquid dissolves candy fastest?), growing gummy bears (how much does a bear grow in plain and salty water?) or candy color detective (which colors are a mix of dyes?). Change one thing, keep the rest the same, and measure.

Can you eat the candy after the experiment?

No. It has been sitting in water, vinegar, oil or salt water, or in warm hands, so it's for looking at. Use the candy nobody wants to eat, and keep the favorites in the bag.

Does this page cost anything?

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