Build a Density Tower: The Kitchen Science Experiment That Actually Works

Science | All Year | Ages 6-10

Last Tuesday, my seven-year-old asked why ice floats. Twenty minutes later, we had five different liquids stacked in a jar like a weird scientific parfait, and she was dropping LEGOs into it to see what would happen.

This is the density tower experiment, and it's one of those rare activities that looks impressive but requires zero special equipment. You're basically proving that different liquids have different densities by layering them in a clear jar. The heavier ones sink, the lighter ones float on top, and when you drop objects in, they stop at whatever layer matches their density.

What You Need

• A clear jar or tall glass (we used an old pickle jar from the Brookside Farmers Market)
• Honey
• Light corn syrup
• Dish soap (blue or green shows up best)
• Water (add a few drops of food coloring)
• Vegetable oil
• Small objects to drop in: LEGOs, grapes, popcorn kernels, paper clips, plastic beads, small toys

How to Build It

Pour slowly. That's the whole trick.

Start with honey at the bottom. Pour about an inch into your jar. Then add corn syrup — aim for the side of the jar so it slides down instead of crashing through the honey. You want distinct layers, not a mixed-up mess.

Next comes dish soap. Pour it the same way, slow and steady along the glass. Then colored water (we used blue). Finally, vegetable oil on top.

If your layers mix a little, don't panic. Ours did the first time. Let it sit for a few minutes and they'll mostly separate again.

The Fun Part

Now start dropping stuff in. A grape sinks through the oil and water but floats on the dish soap. A LEGO brick goes almost to the bottom. A popcorn kernel floats on the oil. My daughter spent half an hour testing every small object in our junk drawer.

Each thing stops at the layer that matches its density. Heavier than that layer? It keeps sinking. Lighter? It floats right there.

What We Learned the Hard WayDon't use a jar that's too wide — tall and narrow works better for seeing the layers. We grabbed a pasta sauce jar first and the layers were too shallow to be impressive.

Room temperature liquids layer better than cold ones straight from the fridge.

If you've got a kid who wants to really understand it, talk about molecules. Honey molecules are packed tight (dense), oil molecules are spread out (less dense). That's why honey sinks and oil floats.

KC Tip

After you're done, seal the jar with the lid and bring it to Science City at Union Station the next time you visit. They've got a whole floor about density and buoyancy, and your kid can compare their tower to the exhibits. Makes the abstract concept way more concrete when they see it twice.

This experiment sits on our kitchen counter for days. Kids keep dropping new things into it. It's the kind of science that doesn't feel like school, which means they actually remember it.