

Experiments Guidelines

Compression Squeeze Science Experiment

Video: https://www.youtube.com/watch?v=cSku1_jsiq8

Explanation: How it works – pushing molecules together increases air pressure. Once the pressure releases, molecules become cooler as they expand, causing them to rapidly condense into droplets, creating a cloud.

Heat Rising Science Experiment

Video: <https://www.youtube.com/watch?v=ZPErStqSSMk>

Explanation: Heat travels from a warm object to a colder one. As molecules get warmer, they move faster and expand, floating upwards as they become less dense. As molecules cool, they move slower and contract, sinking downwards as they become denser. Air-conditioning to cool placed up and heat exchangers placed on the floor.

Cloud in a jar Science Experiment

Video: <https://www.youtube.com/watch?v=oq5yVILTsmI>

Explanation: Clouds form when water from Earth's surface is heated and evaporates (physical change from liquid to gas), rises into the atmosphere, and then cools and condenses (physical change from gas to liquid) onto microscopic particles (i.e., dust, dirt, ash) in the air.

In our experiment, the warm water in the jar caused the air inside the jar to heat up. When this happened some of the water evaporated into the air. This evaporation caused water vapor in the jar. Then the warm, moist air (water vapor) rose from the surface of the water to the top of the jar. Once it reached the top of the jar, the warm, moist air began to cool down. This is because of the ice that was on the lid of the jar. The water vapor in the cooling air then condensed onto the particles of hairspray, forming a cloud in the jar.

If you observe the cloud carefully, you'll notice that it swirls around the jar. This swirling is caused by a convection current of warm air rising and cold air sinking. A convection current is a current caused the rising and sinking of a heated and cooled fluid.

Heavier Orange Float Science Experiment

Video: <https://www.youtube.com/watch?v=W33dtzUBos0>

Explanation: How does the science experiment work?

An orange with a peel is heavier than an orange without a peel. So why does the orange with the peel (the heavier one) float and the orange with the peel (the lighter one) sink?

The secret to this experiment is density! Density is a measure of the mass per unit volume of a substance. Water has a density of 1 g/mL (g/cm³). Objects will float in water if their density is less than 1 g/mL. Objects will sink in water if their density is greater than 1 g/mL.

The orange with the peel floats because the peel is porous and filled with tiny air pockets. These pockets of air help increase the buoyancy of the orange. This increase in buoyancy helps the orange become less dense than the water, so the orange will float in the water. Think of the pockets of air in the orange peel are like tiny floatation devices for the orange. On the other hand, when you remove the peel from the orange, you are in fact making it lighter, but you are also removing those tiny air pocket floatation devices. Therefore, the orange without the peel is denser than water and it sinks. Buoyance is the tendency of an object to float in fluids because of the upward force fluid exert on objects.

Conducting Heat Science Experiment

Video: <https://www.youtube.com/watch?v=Ry8yXhCxclA>

Explanation: Heat can move in three ways: conduction, convection and radiation. In this experiment, the heat was transferred by means of conduction.

Conduction is the transfer of heat from one particle of matter to another without the movement of matter itself. As matter is heated, the particles that make up the matter begin to move faster.

In this experiment when we placed the spoons in the boiling water, the fast-moving water particles collide with the slow-moving spoon particles. As a result of the collision between the water particles and spoon particles, the particles of the spoon begin to move faster, and the metal spoon becomes hotter. As the metal spoon gets hotter, the butter begins to melt, and the bead slides down the spoon.

Why did the bead slide down the metal spoon faster than the wooden spoon or plastic spoon? Metal is a good conductor of heat, while wood and plastic are good insulators. A conductor transfers thermal energy (heat) well, while an insulator does not transfer thermal energy (heat) well.

Tornado in a Bottle Science Experiment

Video: https://www.youtube.com/watch?v=21b_mIGmJ5w

Explanation: How Does the Science Experiment Work?

When you spin the bottle in a circular motion it creates a water vortex that looks like a tornado. The water spins around the center of the vortex because of centripetal force. Because there is glitter in the water you can see the spinning water more clearly. The glitter is like the dust and debris that are found spinning in an actual tornado.

Viscosity of a Liquid Experiment Science Experiment

Video: <https://www.youtube.com/watch?v=2Gdxu4XcsbY>

Explanation: How it works – Liquids freeze at different temperatures because of the unique combinations of their specific molecules. Substances made from molecules with weaker bonds need cooler temperatures to freeze.