Field Trip Experiment List

Choose any combination of lessons below

Location:
2110 Walsh Ave., Suite F
Santa Clara, CA 95050

Duration:
Minimum 2 hours, maximum 4 hours. Experiments are 60 minutes each.

Event Times:
Mondays, anytime between 8:30 am and 5:00 pm.
By appointment only.

Student Ages:
A group may include students from Kindergarten through 5th Grade.

Price:
$240 per hour. Minimum 2 hours, maximum 4 hours. Maximum 36 students per group.

Experiments:
Choose any combination of lessons from this Field Trip Experiment List.

Chaperones:
At least two adult chaperones who know the children by name and can keep them orderly so the instructor can focus on the science lesson.

Contact:
programs@rockitscience.com
408-969-1900
www.rockitscience.com

Sorry, we don't do birthday parties.

CHEMISTRY

Bouncy Stretchy Goo: Students mix up a corn starch goop that acts both as a solid and a liquid. They compare it to rubber made from white glue and Boraxo (GAK). This relates to mixtures, solutions, chemical reactions, non-Newtonian fluids, viscosity, and elasticity.

Calcium Carbide: It looks like an ordinary rock, but some say that it smells like garlic. When it touches water it fizzes and, with a bit of luck, it can be used to blow the top off of a plastic cup. This relates to properties of matter, combustion, and air pressure.

Candle-in-a-Jar: We dispel the myth that a candle consumes oxygen and produces no other gases. The students learn about the source for the Greenhouse Effect as they discover the properties relating to birthday candles. This relates to combustion, air pressure, vacuum, atmospheric gases, and liquids.

Exploding Film Cans: Students discover how an automobile engine mixes fuel and air to produce motion. A tiny amount of butane is used to discover the effects of too much or too little oxygen in the combustion chamber. This relates to combustion, fuel and air balance, air pressure, and projectile motion.

Hot, Cold, and Fizzy: Students discover that common chemicals can create a wide variety of results when they are mixed in a certain way. This relates to dissolving, chemical reactions, mixtures, exothermic reactions, endothermic reactions, acids, bases, and acid/base indicators.

Making Ice Cream: Students discover how to lower the freezing point of water enough so that their sample of ice cream becomes a solid. This relates to freezing point depression, solutions, melting point, freezing point, and temperature scales.

Shrinking Plastic: Students discover that certain plastics will shrink dramatically upon heating. They then make an ornament on a container of clear plastic and shrink it to show how some areas shrink more than others. This relates to heat, properties of matter, molecular structure of carbon, and recycling.

Smoke Rings: Students discover a way to make a puff of air travel across the classroom with amazing efficiency. We then use stage fog to create smoke rings of many sizes. This relates to combustion, properties of matter, chemical properties of oxygen and carbon, and air flow.

EARTH SCIENCES

Dry Ice: Students discover how to make a hollow ice egg, how soap bubbles can float in mid air, how to make fog, and how to make eerie noises.This relates to solids, liquids, gases, sublimation, condensation, dew point, freezing point, vibrations, clouds, greenhouse effect, and respiration.

Earthquakes: Students discover how different types of shaking motions can affect their tower made from Lego bricks. They will see the shapes of earthquake waves and will be introduced to the numbers associated with earthquakes. This relates to plate tectonics, wave motion, and speed of wave propagation through solids, structures, and vibration.

ELECTRICITY

An Electrifying Experience: Students discover what happens when colored light bulbs are hooked up in series and in parallel. They also check a wide variety of materials to see if they are conductors.This relates to batteries, circuits, resistance, short circuits, and energy transformation.

Exploding Bubbles: Students discover what happens when electricity passes through water. We then let them combine the resulting hydrogen and oxygen back into water with a loud bang! This relates to water, hydrogen and oxygen, electricity, and combustion.

Foam Cutters: Students use a battery and a thin piece of wire and find ways to make the wire melt through thin foam. This relates to electricity, resistance, and melting point.

Hand Crank Generators: Students provide the power to activate lights, motors, bells, and fans. In the process

they will develop an appreciation of how much energy is needed to run ordinary electrical devices. This relates to electromagnetism, electric fields, resistance, current and voltage.

Static Electricity: Students learn about thunder, lightning, and electrons. They discover how to separate a mixture of salt and pepper, lightning safety, and with one hair-raising experience, they discover the nature of static electricity. This relates to weather, lightning safety, electrons, positive and negative charges, voltage, lightning bolts, and cloud formation.

Tesla Coil: This device creates continuous streamers of purple lightning over 6 feet across, accompanied by staccato thunder. Students create faces on soda bottles and attempt to get streamers coming out of the eyes and hair before it melts and burns up. This relates to resonance, electricity, high voltage, conductivity, and heat.

LIGHT & HEAT

Candle-in-a-Jar: We dispel the myth that a candle consumes oxygen and produces no other gases. The students learn about the source for the Greenhouse Effect as they discover the properties relating to birthday candles. This relates to combustion, air pressure, vacuum, atmospheric gases, and liquids.

Glow Sticks: Students light up their glow sticks and try to find ways to make them glow more brightly or dimly. Then they paint with glow stick chemicals on a black surface. This relates to chemistry, luminescence, chemical reactions, heat and light.

Heat Conduction Dry Ice: Students discover how well heat travels through materials (such as copper, zinc, iron, aluminum, magnesium, plastic, wood and foam) that are touching dry ice. This relates to conductivity, specific heat, and insulators.

Lasers and Mirrors: Students use their reflections in plastic mirrors to discover how to make a million eyes, an infinite "tunnel", periscopes, kaleidoscopes, and how the 'fun house' mirrors work. A laser is used to show the light path. This relates to reflection, refraction, interference, rainbows, lasers, light waves, and color.

Solar Furnace: On a clear day we experiment with the sun's energy. Students don protective eyewear and we place many types of material at the focal point to see what happens. On a hot summer day, it can melt a penny in 30 seconds. This relates to solar energy, light, heat, curved lenses, melting point, and combustion.

MAGNETISM

Magnetic Creatures: Students discover all the weird things that magnets can do. Students make their own alien creature that moves magnetically through the habitat they create. This relates to magnetic fields, electrons, magnetic materials, attraction and repulsion, and north versus south poles.

MOTION

Cartesian Divers: Students make a tiny submersible and put it in a bottle of water. Then they try to find ways to make it go up and down. This relates to compressibility, density, and buoyancy.

Gigantic Bubbles: Students try making bubbles in their hands, on the tabletop, and outdoors. We also create a bubble tube large enough for a student to stand inside. This is related to buoyancy, air convection, reflection of light, evaporation, and light interference.

Guided Balloon Rockets: Students launch long balloons and try different curvatures to see how the flight is affected. This relates to weight and buoyancy, friction, air pressure, and air flow around curved surfaces.

Hovercraft: Students use balloons and DVDs to create a hovercraft that will slide effortlessly across the table. This relates to air pressure, surface area, friction, balance, and air bearings.

Parachutes: Students make parachutes and launch them into the sky. This relates to viscosity, buoyancy, lift and drag.

Water Bottle Rockets: Students launch water bottles with bicycle pumps and discover how to make them go higher and farther by adding weight! This experiment demonstrates Newton's laws of motion in a way that they will not forget. This relates to pressure, friction, air drag, momentum, compression of air, energy storage, Newton's three laws of motion, and teamwork.

Water-Powered Cars: Students use bicycle pumps to pressurize their cars with either air or a mixture of air and water. Then they try to find out which mix makes their car go the furthest. This relates to pressure, friction, air drag, momentum, compression of air, energy storage, and Newton's three laws of motion.

SIMPLE MACHINES

Catapults: Students discover the best way to launch plastic grapes with a catapult that converts mechanical energy into kinetic energy. This relates to strength of materials, kinetic and potential energy, and Newton's three laws of motion.

Gyroscopes: Students discover how the gyroscopic effect can help them steer a bicycle. Then they make a gyroscopic top and try to make it spin as long as possible. This relates to momentum, balance, center of mass, and guidance of missiles and aircraft.

Roller Coasters: Students work in groups to make a roller coaster with split foam tubes, marbles, and tape. They discover amazing ways to get as many energy conversions as possible. This relates to potential and kinetic energy, friction, inertia, and teamwork.