



*Look out! Those bags  
are about to explode!*

# Hands-On Science Camps Age 6-11

*It's like "Mister Rogers meets Mythbusters"!*

At Rock-it Science, we combine hands-on experiments with crazy "fractured fairytales" to capture your child's attention and imagination and stimulate their creative thinking. In our experiments, we don't tell the kids how it's supposed to turn out, so they get to have the "Wow!" experience that comes from discovering something new and unexpected, like real scientists.

Our classroom is a real inventor's workshop where kids are surrounded by fantastic gadgets and exotic equipment. Our innovative, exciting, project-oriented camps cover a wide variety of science topics -- electricity and magnetism, engineering, potential and kinetic energy, chemistry, physics, and more.

**Camps are Filling Up Fast -- Register NOW at**  
[www.rockitscience.com/summer/](http://www.rockitscience.com/summer/)

**All Camps are Half-Day**  
**Mon-Fri, 9-Noon or 1:30-4:30**  
**\$240 per camp**

- **Lightning Bolt Dragons!**  
June 19 - 23 OR July 17 - 21
- **Rocket-Powered Elephants!**  
June 26 - 30 OR July 24 - 28
- **Volcanoes Blowing Bubbles!**  
July 3, 5, 6, 7 (4 days) OR July 31 - Aug 4
- **Burping Sea Serpents!**  
July 10 - 14 OR Aug 7 - 11

**See full Camp Descriptions on  
the following pages.**



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## 2017 Rock-it Science Summer Camp Descriptions

### **Lightning Bolt Dragons!** -- June 19 - 23 OR July 17 - 21

**You'll become a master of fire and lightning!** Use electricity to create lightning bolts, make ghostly shapes float through the air, burn up wires, and create a monster with squirming snakes of electricity coming out of its eyes and ears. Make magical paper that bursts into flames and disappears in an instant. Use the heat of the sun to melt a penny in seconds and turn a rock into hot lava. Create fire with a piece of ice, and much more! See the experiments list below.

**Bang, Boom, Pop!** -- Make all kinds of explosions using caps, party poppers, and other chemicals. (*Explosive Properties of Contact Percussion Devices*)

**Burning With Ice** -- Create fire from ice! (*Utilizing Nuclear Fusion and an Ice Cube to Burn Paper*)

**Candles in a Jar** -- In our un-birthday party we will make dozens of candles drown themselves in the interest of science. (*Creating Partial Vacuum by Means of Combustion*)

**Freezing Stuff with Dry Ice** -- See what would happen to the plants if we had a sudden Ice Age! (*Creating a Cryogenic Liquid Bath to Instantly Freeze Water-based Biological Material*)

**Electricity by Hand Crank** -- Spin a generator hooked up to motors, lights, fans, bells, and electromagnets to see how it feels. (*Converting Mechanical Energy into Electrical Energy*)

**Elephant Toothpaste** -- What do elephants use to keep their tusks clean? Why, a giant tube of elephant toothpaste, and some fire! (*Accelerating Exothermic Reactions by Means of a Catalyst*)

**Flash Paper** -- Dissolve ping pong balls and use the resulting goop to make fast, medium, or slow flash paper. (*Rapid Decomposition of Nitrocellulose Releasing Heat and Light*)

**Foam Cutters** -- A super-thin wire and a battery will let you make all kinds of shapes out of plastic foam. (*Melting Polymers with Heat Generated by Electrical Resistance*)

**Lasers and Mirrors** -- Give yourself 1000 eyes, create the illusion of a tunnel deep into the earth, make a laser show, and instantly create 10 of anything you can draw. (*Light Amplification by Stimulated Emission of Radiation*)

**Lightbulb Filaments** -- Run electric current through different kinds of wire to see if they burn up. (*Production of Light by Excitation and Collapse of Electron Orbits*)

**Solar Furnace** -- Melt a penny in 30 seconds, create instant flames on wood, and turn a rock into hot lava! (*Amplification of Solar Insolation by Means of a Fresnel Lens*)

**Static Electricity** -- Create lightning bolts, levitate pie tins, and make your long hair stand on end with static electricity. (*Overcoming Gravity by the Force of Electrical Fields*)

**Static Levitation** -- Use invisible forces to make shimmering ghostly shapes float through the air. (*Electrostatic Levitation by Means of Triboelectric Charging*)

**Static Wand** -- What kinds of things can you zap with electricity, and which ones just ignore you? (*Effects of Electrical Charges on Dissimilar Objects*)

**Tesla Coil** -- Create a monster face with long squirming snakes of electricity coming out of its eyes and ears. (*Resonant Electrical Circuits that Create Ionized Air Streamers*)

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### ***Rocket-Powered Elephants!*** -- June 26 - 30 OR July 24 - 28

*You'll send things flying through the air when you build a catapult, a hovercraft, a roller coaster, a parachute, and a rocket launcher. Use chemical explosions to blow the tops off containers. Turn plastic bottles into projectiles that fly high into the air. Even your friends will be up in the air when you hoist them up with just your own muscle power, and much more! See the experiments list below.*

**Blowing Your Top** -- Use dry ice, baking soda plus vinegar, and then Alka-Seltzer to discover which one will blast the top off of a film can the highest. *(Chemical Reactions that Create Excess Gas in an Enclosed Space)*

**Catapults** -- Build a catapult and use it to launch stuff all over the lab. *((Rapid Release of Stored Energy to Launch Projectiles)*

**Cork Shooters** -- Discover how to launch a cork across the classroom with a piece of tubing, a stick, and a rubber washer. *(Converting Mechanical energy into Pressure Sufficient to Overcome the Static Friction of a Cork)*

**Curveball** -- If you shoot a dragon with a projectile that curves in the air, he'll never see it coming. *(Effects of Rotation on Parabolic Trajectory)*

**Exploding Film Cans** -- SA little spark plus some breath spray creates a loud bang, and away it goes! *(Rapid Exothermic Reactions Accelerating Polymer Discs)*

**Dry Ice** -- Make fog, bubbling potions, and screaming pieces of metal with this versatile material. *(Cryogenics with Dry Ice)*

**Hovercraft**-- Make your own hovercraft and race them across the floor. Then you can glide across our lab on a much larger hovercraft. *(Levitation of a Smooth Disc by Means of a Thin Film of Pressurized Air)*

**Parachutes** -- Students will drop parachutes and experiment with ways to make them stay up in the sky the longest. *(Effect of Atmospheric Viscosity on the Speed of a Falling Object)*

**Roller Coasters** -- Create loop-de-loops, corkscrews, and flying marbles with ordinary foam tubing. *(Creation of a Three-Dimensional Structure that Converts Potential Energy into Kinetic Energy)*

**Ropes & Pulleys** -- Use rock-climbing equipment to lift each other off of the ground. *(Mechanical Advantage by Means of Pulleys and Ropes)*

**Smoke Rings** -- Use stage fog to create smoke rings from all sorts of containers. *(Visible Vortex Ring Movement in the Atmosphere)*

**Soda & Mentos** -- Drop some Mentos candies in a 2-liter bottle of soda and see if it can squirt 25 feet high. *(Spontaneous Release of Carbon Dioxide Gas by Means of Nucleation Sites)*

**Stomp Rockets** -- Convert a clear tube into a rocket and launch it with our stompers. *(Launching Projectiles via Pressurized Air)*

**Straw Rockets** -- Shoot a straw clear out of sight with a tube and an ordinary balloon. *(Sudden Acceleration of Polymer Tubes By Action of Stretched Elastomers)*

**Water Rockets** -- Launch 2-liter bottles with air pressure and then with air pressure plus water. *(Utilization of Air Pressure to Accelerate Water One Direction while Causing the Pressure Vessel to Go the Opposite Direction)*

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### ***Volcanoes Blowing Bubbles!*** -- July 3, 5, 6, 7 (4 days) OR July 31 – Aug 4

***You'll be the master builder!*** Build towers and knock them down, make boats and then sink them, support heavy objects with just a sheet of paper, and create a tower that leans out over a cliff without falling over. Test your strength against different materials to see which ones are best to build with. Use magnetism to make objects move in unpredictable ways, and much more! See the experiments list below.

**Bendable Light** -- You'll experiment with laser pens, colored flashlights, and clear plastic to see if you can make something like a light saber. (*Utilization of Total Internal Reflection to Efficiently Propagate Light Long Distances*)

**Box Towers** -- Build towers of cardboard boxes as tall as you can and then knock them down. (*Elevation of Stacked Cubes Through Control of Center of Mass*)

**Destructive Testing** -- Twist, tear, cut, smash and bend stuff until it breaks. (*Tensile, Compressive, and Shear Testing of Materials*)

**Thermal Conductivity Dry Ice** -- If you had to camp overnight on a frozen lake, what could you put under your sleeping bag to keep from freezing? (*Conductivity of Various Materials Detected by Touch*)

**Electric Motor** -- Make an electric motor with a magnet. (*Synchronized Electromagnetic Attraction to Create Rotation*)

**Gigantic Bubbles** -- Make bubble creatures, snake bubbles, square bubbles, and bubbles with you inside! (*Creation of Elastic Membranes that Float in Air While Producing Interference Patterns in Light*)

**Gyroscopes** -- Make a gyroscope and see if you can toss it onto a table without it tipping over. (*Creating a Virtual Center of Mass by a Constantly Changing Momentum*)

**Magnetic Creatures** -- Create a colorful magnetic creature that moves at your command. (*Attraction and Repulsion by Means of Magnetic Fields*)

**Samson's Columns** -- Think you need to be as strong as Superman to hold up a heavy building? Think again! (*Using Cellulose Sheets Strategically Formed into Columns to Support Great Weights*)

**Shake Buildings** -- Try to build a LEGO building that will be totally destroyed by the earthquakes created on our earthquake table. (*Overcoming Interference Fit Friction by Means of Violent G-Forces*)

**Shrinky Squirmy Plastic** -- Put perfectly innocent cheeseburger trays and drink cups in the oven and watch them wiggle and squirm. (*Polymer Shape Recovery Above the Glass Transition Temperature*)

**Solar System** -- If you carried your backpack into space, how heavy would it be on Mars? How about Jupiter? Or Pluto? (*Simulating the Force of Gravity on Different Planets*)

**Sunken Ships** -- Make all shapes of boats out of aluminum foil and see how much weight it takes to sink them. (*Revealing the Relationship Between Surface Area and Volume to Maximize Bouyancy*)

**Balancing Blocks** -- Build a structure that leans way out over the edge of a cliff, but don't let it tip over! (*Creating a Catenary Arch into Space*)

**Upside-Down Pendulum** -- Make a pendulum that does anything but swing back and forth. (*Defying Gravity by Strategic Use of Magnetic Fields*)

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### ***Burping Sea Serpents!*** -- July 10 – 14 OR Aug 7 - 11

*You'll feel like a magician! Mix chemicals together and watch them change color, get hot and cold, and burst their container! Light paper on fire without burning it up, make goop that acts like both a solid and a liquid, paint with glowing chemicals, and make water do weird stuff. Make strange musical instruments that sound like a foghorn or a light sabre. Turn your own voice into a laser light show, and more! See the experiments list below.*

**Burning Money** -- Light a piece of paper on fire, watch the flames, and try to find a way to keep the paper from turning into ashes. (*Suppression of Combustion of Currency Soaked in Volatile Solvents by Saturation with Water*)

**Echoes** -- Create loud echoes and waves of all sorts with a slinky spring and two cups. (*Production and Amplification of Reflected Sound in an Helical Spring*)

**Spin Art** -- If you were sitting on the rings of Saturn and discovered that they were covered with different colors of paint and then the rings started spinning real fast, what would happen to you and the paint? (*Splatter Patterns on Rotational Objects*)

**GAK** -- Yes, there is nothing like goopy, slimy, and stretchy stuff! Mix glue and soap, and end up with rubber. (*Behavior of Non-Newtonian Fluids*)

**Glove Bagpipes** -- A latex glove carefully placed on a tube and inflated can create the most marvelously loud foghorn sound. (*The Utilization of Bernoulli's Principle to Create Acoustic Vibrations in an Elastomeric Sheet*)

**Glow Painting with Pipettes** -- Use the chemicals in glow sticks to create brightly glowing artwork. (*Chemical Reaction that Produces Photons in the Absence of Heat*)

**Heat Waves** -- If a dragon is hiding under a pile of leaves, you can discover where he is by looking for the invisible heat waves. (*Visualize Density Variations in Transparent Media using Schlieren Imaging*)

**Helium Balloons** -- Try to make a helium balloon hover and follow you wherever you go. (*Buoyancy of Latex Spheroids by Means of Helium Gas*)

**Hot, Cold, and Fizzy** -- Mix chemicals together and watch them change color, feel them change temperature, smell them getting nasty, and hear the bag pop! (*Using Physical Senses to Detect Changes in Chemical Reactions*)

**Laser Sound Waves** -- Turn your own voice into a laser light show. (*Amplification of Resonant Audio Energy Revealed by Laser Beam*)

**Liquified Nitrogen** -- Dip all sorts of things like oranges, leaves, balloons, water, and rubber balls in liquid nitrogen to freeze them almost instantly and then see what happens when you drop them on the table (*Cryogenics with Liquified Nitrogen*)

**Magically Sinking Minion** -- Trick your friends with this creature that swims up or down at your command but does nothing for them. (*Utilizing Compressibility of Air to Change the Density of a Buoyant Object*)

**Making Slushies** -- Discover a way to make ice cubes 20 degrees colder than they want to be so you can freeze orange juice with them. (*Absorption of Thermal Energy by Means of a Solid/Liquid Phase Change*)

**Super Water Repellant** -- Water hates this stuff. It's really weird, and you'll get a chance to pour water on it and see what happens. (*Examination of Water Droplet Surface Tension on Hydrophobic Surfaces*)

**Weird Water** -- Make water go uphill, stay in a jar that is upside down over your head, and squirt out of a fountain all by itself. (*Pulling Liquid Uphill by Means of a Greater Mass of Liquid Going Downhill in a Tube*)

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