

BEAM's Big List of Demo Ideas

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Engineering Projects

- Alka-seltzer and film cartridge mini rockets
(<http://www.sciencebob.com/experiments/filmrocket.php> or <http://www.stevespanglerscience.com/experiment/film-canister-rocket>)
- Trebuchet
- Slingshot
- Marshmallow challenge: Raise a marshmallow as high as possible with 20 sticks of spaghetti, 1 yard of tape, and 1 yard of string
(http://blog.ted.com/2010/04/22/build_a_tower_b/)
- Popsicle stick tower challenge
- Designing and building dams to hold back marbles/beans/etc
- Transfer water from one cup to another via string or other form of viaduct
(<http://pbskids.org/zoom/activities/sci/wateronastring.html>)
- Mechanical grabber (<http://pbskids.org/zoom/activities/sci/mechanicalgrabber.html>)
- Paper table to support weight
(http://pbskids.org/designsquad/pdf/parentseducators/DS_Act_Guide_Lead_PaperTable.pdf)
- Model arm and leg (in [Biology - Miscellaneous](#))
- Egg drop challenge

- Yo-yo drop challenge: How to make them descend to the ground the slowest?
- Top challenge: how to make them spin the longest?
- Mouse trap racers (<http://www.instructables.com/id/Mouse-Trap-car/>)
- Rubber band car races
(http://pbskids.org/designsquad/pdf/parentseducators/ds_pe_event_guide_rubber_band_car.pdf)
- Paper airplanes
- Paper airplanes in wind tunnel
- Wind-powered cars with sails
- Hot air balloons powered by a hair dryer
- Hover car with computer fan
- Boats out of various materials: foil, clay, etc
- Balloon racers on fishing wire
(<http://www.reachoutmichigan.org/funexperiments/quick/alaska/balloon.html> and <http://www.sciencebob.com/experiments/balloonrocket.php>)
- Balloon powered car
- Something powered by falling weight: fan, car
- Kites
- Parachutes
- Windmills
- String telephones
- Solar cookers
- Air track trains
- Solar-powered cars
- Ping pong catapults and aim for targets
- Marshmallow gun or bow (<http://www.instructables.com/id/Marshmallow-gun/>)
- Confetti launcher
(http://pbskids.org/designsquad/parentseducators/resources/confetti_launcher.html)
- Ball kicker
(http://pbskids.org/designsquad/parentseducators/resources/extreme_kicking_machine.html and http://pbskids.org/designsquad/parentseducators/resources/kicking_machine.html)
- Homemade Speaker
(http://www.josepino.com/other_projects/index.php?homemade-hifi-speaker.jpg
<http://makeprojects.com/Project/Styrofoam-Plate-Speaker/37/1#.T9LChMWwUz0>)
- Homemade Van de Graaf (in [Physics - Electricity](#))
- Homemade phonograph
(http://www.discoverengineering.org/pdfs/ca-Reproduce_Sound.pdf)
- Homemade light bulb (<http://www.youtube.com/watch?&v=wLBZdYDks10>)
- Lou vee air car (<http://www.smartcenter.org/sciencechallenge/lou-vee-air.html>)
- Roller coaster speedway - Buy hot wheels for students and have them “mod” them to go the farthest after being launched from a ramp
- Lego 5-speed transmission (<http://www.youtube.com/watch?v=IY8qk1xllaE>)
- Scribbling machines

- Bristle bot (<http://www.evilmadscientist.com/2007/bristlebot-a-tiny-directional-vibrobot/> and http://www.youtube.com/watch?feature=endscreen&v=rUSTXUis_ys)
- LED flashlights
- Radios: ham, AM, or FM
- Instruments: flute, guitar, drum
- Mobiles: making them balanced
- Periscopes
- Build a birdhouse
- Hydrogen fuel cells
- Play-doh (<http://www.instructables.com/id/How-to-Make-Playdough-Play-doh/>)
- Water filter
- River or coastal erosion protection
- Build a yeast/bacterial strain, then build soda bottle bioreactor for scale up, then extract the compound (pigment, smell, etc)
- Sailboats to catch wind and travel along a canal. Cut wide-diameter pipe in half and fill it with water. Use a hair dryer for wind.

Physics - Magnetism

- Superconductor disk.
- Magnetic linear accelerator (<http://sci-toys.com/scitoys/scitoys/electro/railgun/railgun.html> or <http://my.execpc.com/~rhoadley/maglnch.htm> or <http://scitoys.com/scitoys/scitoys/magnets/gauss.html> or <http://my.execpc.com/~rhoadley/maglnch.htm>)
- Magnet launcher using aligned magnets (<http://www.youtube.com/watch?v=VeXrFfw4RSU>)
- Maglev train - A simple magnetic train with a 2x4 and a few magnets (<http://amasci.com/maglev/train.html>)
- Electromagnetic Maglev train (<http://amasci.com/maglev/linmot.html> or <http://www.youtube.com/watch?v=cK-8z7duHpM> or <http://www.youtube.com/watch?v=IPkaWKk2Hio>)
- Disassembled doorbell (<http://my.execpc.com/~rhoadley/magsolen.htm> bottom of page)
- Ferrofluid
- Homemade motor (<http://scitoys.com/scitoys/scitoys/electro/electro.html> and <http://www.eskimo.com/~billb/amateur/coilgen.html> and <http://www.evilmadscientist.com/2006/how-to-make-the-simplest-electric-motor/>)
- Eddy current tube demonstrating Lenz's Law (<http://www.youtube.com/watch?v=nrw-i5Ku0ml>)
- Eddy current pendulum (<http://www.youtube.com/watch?v=38XPT9sWlso>)
- Magnetohydrodynamic motor (<http://www.youtube.com/watch?v=Trvd2XOleXY>)
- You let one coil of copper swing over a magnet, and an attached copper wire starts swinging over another magnet. (http://www.exploratorium.edu/snacks/magnetic_pendulums.html)
- Magnetic heat engine (http://scitoys.com/scitoys/scitoys/magnets/magnets.html#curie_effect)
- Jumping ring (<http://www.youtube.com/watch?v=PI7KyVIJ1iE>)

- Dual jumping ring (<http://my.execpc.com/~rhoadley/magring.htm>)
- Jumping wire (<http://www.youtube.com/watch?v=tUCtCYty-ns>)
- Parallel wires (http://buphy.bu.edu/~duffy/elec/5H40_10.html)
- Temperature effect on magnetism (buphy.bu.edu/~duffy/elec/5G50_10.html)
- Magnetic deflection of electron beam between Helmholtz coils
(https://www.thesciencesource.com/store/subject.php?product_id=647&subject=2&subsubject=26)
- Use magnets to push and pull a disc to spin it (www.youtube.com/watch?v=4Ge2h8Apgd8)

Physics - Electricity

- Van de Graaff generator (<http://www.physics.ucsb.edu/~circus/electricitydemo.htm>). Various experiments to do with it:
http://www.physics.ucla.edu/demoweb/demomanual/electricity_and_magnetism/electrostatics/van_der_graaff_experiments.html
- Homemade Van de Graaff (<http://scitoys.com/scitoys/scitoys/electro/electro6.html> or <http://web.singnet.com.sg/~sengam/construction.htm> or <http://makeprojects.com/Project/Simple-Van-de-Graaff-Generator/2072/1#.T9O7WsWwUz0>)
- Push aluminum can with charged rod
(http://www.haverford.edu/physics/demonstrations/e%26m/charge-propelled_coke_can.htm)
- Curve water with charged rod
- Tesla coil
- Cooking hot dogs with electricity
- Wimhurst Machine (http://www.youtube.com/watch?v=M4rT_SkhTy8)
- Homopolar motor (<http://www.youtube.com/watch?v=w2f6RD1hT6Q>)
- Circuit lab
- Scribbling machines circuit lab
- Cooking hot dogs with electricity
- Potato/lemon battery
- Battery with hands, a copper plate, and an aluminum plate
(http://www.exploratorium.edu/snacks/hand_battery/)
- Lorentz Force Motor (<http://orched.com/Experiments/Experiment%2011-05.htm#>)
- Using graphite to conduct electricity to show resistance
- Homemade light bulb
(<http://www.stevespanglerscience.com/content/experiment/build-a-light-bulb-circuit-science>)
- Jacob's ladder (<http://www.youtube.com/watch?v=e9bdGuXu060>)
- Conductivity of distilled water (<http://www.youtube.com/watch?v=Rf2mS4J0FNq>)
- Make glass conductive by heating it (<http://www.youtube.com/watch?v=ee9bj4mhosY>)
- Test the resistance of your body
- Graphite circuits

Physics - Energy/Electromagnetic Radiation

- Why metal sparks in a microwave

- Microwave grapes (<http://www.youtube.com/watch?v=0i2lhO3bSjQ>)
- Microwave marshmallow peep
- Microwave lit match (<http://www.youtube.com/watch?v=Ingzml3Ybog>)
- Microwave ivory soap (www.youtube.com/watch?v=z1hzatoE1tg)
- Microwave CD (http://www.youtube.com/watch?v=0JkCfLE_-M)
- Demonstrating Gauss' Law with a radio in a metal cage
- Inductor radio (<http://www.youtube.com/watch?v=gfUuwnD2-fg>)
- Hold a fluorescent light bulb next to a plasma lamp to make it glow
(<http://scientificsonline.com/product.asp?pn=3081803&sid=2008FS&eid=2008FS&sid=merNXTG&mr:referralID=28733b82-f654-11dc-b7fb-000423bb4e95>)
- Microwave a light bulb in water
(http://www.youtube.com/watch?feature=player_embedded&v=WDP20OLgi8s)
- Faraday's cage insulation (<http://www.youtube.com/watch?v=bZwID-Z0zmE>)
- Radiometer
(http://scientificsonline.com/product.asp?pn=3060082&cm_mmc=Mercent--Google--NULL--3060082&mr:trackingCode=DBE4340A-201B-DE11-8130-000423C27502&mr:referralID=NA&bhcd2=1248763550)
- Cloud chamber (<http://www.lns.cornell.edu/~adf4/cloud.html>)

Physics - Mechanics

- Shot vs. falling projectile (<http://www.youtube.com/watch?v=qErh402eJgI>)
- Dropping objects in vacuum (http://www.youtube.com/watch?v=_XJcZ-KoL9o)
- Rotating see-saw to show rotation
- Yanking a tablecloth to show inertia
(http://krampf.com/experiments/Science_Experiment1.html)
- Linear air track (<http://www.nexusresearchgroup.com/technical-data/air-track.htm>)
- Push-pull on air track (<http://www.youtube.com/watch?v=amfw2nABke4>)
- Newton's cradle to show transfer of energy
- One-square toilet paper rip to show inertia
- Flicking a business card out from under a penny over a cup to show inertia
- Flying pig suspended from to show conical pendulum
- Flying baby through tunnel to show projectile motion
- Balance something strangely-shaped on a stick to show center of mass
- Tug of war with scales to show Newton's 3rd
(<http://www.youtube.com/watch?v=jO6B0yx3FHE>)
- Swinging bucket of water (<http://www.youtube.com/watch?v=Sav9vQ663u4>)
- Conservation of angular momentum (<http://www.youtube.com/watch?v=yAWLLo5cyfE>)
- Sitting on a rotating stool while holding a spinning bicycle wheel gyroscope
(<http://www.youtube.com/watch?v=eLRFsy0fOT>)
- Suspending a spinning bike wheel gyroscope from string
(<http://www.youtube.com/watch?v=8H98BgRzpOM>)
- Penny inside spinning balloon (<http://www.weirdsciencekids.com/Balloonpenny.html>)

- Double ball bounce (<http://www.youtube.com/watch?v=kWwLS-9JVM4>)
- Bungee Barbie with rubber bands
- Disprove a major misconception about airfoil function (<http://amasci.com/wing/airfoil.html>)
- Walking on eggs (www.youtube.com/watch?v=Xckhg7Ns8so)

Physics - Materials & Phase Transitions

- Fog chamber/cloud in a bottle (http://exploratorium.edu/snacks/fog_chamber/index.html and <http://www.stevespanglerscience.com/experiment/00000030>)
- Oobleck (<http://www.science-house.org/CO2/activities/polymer/oobleck.html>)
- Shaking Oobleck at a certain frequency to make little "fingers" pop up (<http://www.youtube.com/watch?v=nq3ZjY0Uf-g>)
- Running across Oobleck
- Density column with water, oil, alcohol, gas, etc. (<http://www.youtube.com/watch?v=aCSxEI82Sek>)
- Soda float or sink (www.youtube.com/watch?v=MzsORE0ae10)
- Float a paper airplane on sulfur hexafluoride (<http://chemistry.about.com/od/demonstrationexperiments/a/sulfurfluoride.htm>)
- Metamucil flubber (<http://chemistry.about.com/cs/howtos/ht/flubber.htm>)
- Sodium polyacrylate, a superabsorbant polymer (<http://www.youtube.com/watch?feature=fvwp&NR=1&v=Vais8pL0w8U>)
- Experiment with buoyancy with clay and a fish tank
- Lifesaver water filter (http://www.ted.com/talks/michael_pritchard_invents_a_water_filter.html)
- Put dry ice into a balloon
- Supercooled water instantly transforming into ice (<http://www.youtube.com/watch?v=ph8xusY3GTM>)
- Gallium spoon (<http://www.youtube.com/watch?v=klbYiO5BRYk>)
- Memory wire, nitinol
- Liquid nitrogen bomb making ping pong balls fly (<http://www.youtube.com/watch?v=zBgJ0OrOJII>)

Physics - Fluid motion & Pressure

- Laminar flow viscosity (http://www.youtube.com/watch?v=p08_KITKP50)
- Kelvin-Helmholtz billows (http://www.youtube.com/watch?v=_B_VkfnGcTM)
- Bernoulli's ping pong balls (http://hendrix.uoregon.edu/~demo/Demo/Fluid_Mechanics/Dynamics/Bernoulli.html)
- Bernoulli's spool (http://hendrix.uoregon.edu/~demo/Demo/Fluid_Mechanics/Dynamics/Spool.html)
- Smoke ring cannon (<http://www.youtube.com/watch?v=4b2SV3ASUxY>)
- Dry ice bubbles (<http://www.youtube.com/watch?v=8tHOVVgGkpk>)
- Amazing Rings Demo (<http://www.physics.ucsb.edu/~circus/magnetismdemo.htm>)
- Fire vortex

- Getting an egg in a bottle (<http://www.youtube.com/watch?v=xZdfcRiDs8I>)
- Visualize fluid dynamics in a simulation flow table (<http://www.youtube.com/watch?v=JIOM1gVNhbw>)
- Heron's fountain (http://en.wikipedia.org/wiki/Heron's_fountain)
- Crushing a can with air pressure (<http://www.youtube.com/watch?v=rX52TsJCuKA>)
- Vacuum packing person (<http://www.youtube.com/watch?v=hgkhkL71qTo>)
- Whoosh bottle (<http://www.youtube.com/watch?v=AS8TDpFP0OQ>)
- Disappearing smoke (<http://www.youtube.com/watch?v=3BaFpyE8sMo>)

Physics - Acoustics & Sound

- Sound-sucker acoustic illusion -- makes you feel like you're going part-deaf (<http://amasci.com/freenrg/audhole.html>)
- Shattering glass with sound
- Visualizing sound wave (frequency - pitch) with salt (<http://www.impactlab.com/2008/10/01/visualizing-sound-waves-with-salt/>)
- Visualizing sound with a high-pressure air source over an overhead projector
- Visualizing the wave motion of sound with a slinky or string
- Make a standing wave in a pool (<http://www.youtube.com/watch?v=NpEevfOU4Z8>)
- Make a standing wave with a Ruben's tube
- Ruben's tube (<http://www.youtube.com/watch?v=HpovwbPGEoo>)
- Inhaling helium and sulfur hexafluoride (<http://www.youtube.com/watch?v=OtYtSDzCcDQ>)
- Mechanical-induced oscillation (http://www.youtube.com/watch?v=svg0v_ZttA)
- Sound lens (<http://www.west.net/~science/sound.htm>)
- Paper cup telephone
- Holophonic sound (<http://onemansblog.com/2007/05/13/get-your-virtual-haircut-and-other-auditory-illusions/>)
- Making holophonic sound clips (<http://www.head-fi.org/forums/f4/how-can-i-create-holophonic-sound-293793/index2.html>)
- Vibrating string (http://www.physics.ohio-state.edu/~p616/acoustics/vibr_string.html)
- Rubbing the rim of a wineglass to make sound
- Demonstrate the Doppler effect (<http://www.youtube.com/watch?v=a3RfULw7aA> or with Holme's Doppler football)
- Shepard's ascending tones illusion (<http://extra.listverse.com/amazon/audioillusions/shepards.mp3>)
- Falling bells illusion (<http://extra.listverse.com/amazon/audioillusions/falling.mp3>)
- Quickening beats illusion (<http://extra.listverse.com/amazon/audioillusions/beat.mp3>)
- Tritone paradox (http://extra.listverse.com/amazon/audioillusions/Tritone_paradox.mp3)
- MhGurk Effect (<http://www.youtube.com/watch?v=73LE1vKGfy4>)
- Testing limits of frequency perception
- Deutsch's scale illusion (<http://www.youtube.com/watch?v=C5xLOfUzM4M>)
- Speech recognition (<http://www.nuance.com/naturallyspeaking/>)
- Octave illusion (http://en.wikipedia.org/wiki/Octave_illusion)

- Mosquito tone that only young people can hear
- Put a speaker up to a tank of water to show wave motion of sound
- Subsonic frequencies
- Bell in vacuum (<http://www.youtube.com/watch?v=b8VNs5vIbPA>)
- Resonance with tuning forks (<http://www.youtube.com/watch?v=zWKiWaiM3Pw>)
- Interference and beats (<http://www.youtube.com/watch?v=dD9gtq08tss>)
- Helmholtz resonance (<http://www.millersville.edu/~physics/exp.of.the.month/85/>)

Physics - Optics & Light

- Use a laser to pop a balloon or light a match
- Lenses & mirrors
- Draw a line and dip into water
- Thin film
- Show differences between convex and concave lenses using a laser pointer
- Diffraction grating
- Focusing light to produce heat--intensity vs frequency
- Photoelectric effect (<http://www.youtube.com/watch?v=4bscKD7V0Vg>)
- Double slit experiment (<http://www.youtube.com/watch?v=DfPeprQ7oGc>)
- Shine a light through a flame, casting the shadow onto a wall. The darkest part of the flame should be the flame because that is where most of the soot is.

Physics & Chemistry - Heat, Thermodynamics, & Fire

- Fire tornado (http://www.youtube.com/watch?v=BUXcmmF_4p8)
- Teabag on fire
- Hot air balloon
- Flash paper
- Lycopodium powder. Also works with flour
(<http://www.youtube.com/watch?v=TAdEIO1FCSM>)
- Fire syringe (<http://www.teachersource.com/product/fire-syringe-demo/chemistry> and www.youtube.com/watch?v=4qe1Ueifekg)
- Film cannister poppers (<http://www.explorabox.org/activities/heat/film-poppers/>)
- Steel sphere smashing creates heat
(<http://www.teachersource.com/product/smashing-steel-sphere-demo-kit/energy>)
- Maple seed eternally spinning over heater
- Fire extinguisher ice cream
- Coffee cup heat engine (<https://sites.google.com/site/stirlingbuilder/coffee-cup-stirling-engine> and <http://www.youtube.com/watch?v=UvrBzwBIFhM>)
- Build a simple steam engine (<http://scitoys.com/scitoys/scitoys/thermo/thermo.html#heat>)
- Freeze water by boiling it in a vacuum (<http://www.youtube.com/watch?v=8oCjj8iDB9I>)
- Warm spoon against dry ice
- Wet penny on top of frozen water bottle will "jump"
- Compare effects of color on heat retention

- Compare insulating properties of different substances
- Adding liquid oxygen to a flame
(<http://www.popsoci.com/diy/article/2008-03/flaming-oxygen-drops>)
- Adding extra oxygen from hydrogen peroxide to a flame
(http://krampf.com/experiments/Science_Experiment60.html)
- Thermite
- Ball bearing controlled thermite (<http://www.youtube.com/watch?v=O5v3XxFfUOw>)
- Ignite a methane bubble (<http://www.youtube.com/watch?v=gXcug7RqPgs>)
- Ethanol-powered explosions (<http://www.youtube.com/watch?v=4s-SZypWxeg>)
- Whoosh bottle (in [Physics - Fluid Motion & Pressure](#))
- Exploding eggs (<http://www.youtube.com/watch?v=L03LHMxrda4>)
- Mix calcium or magnesium and water and ignite the hydrogen
- Ammonium nitrate + water = coldness
- Ammonium salt + Barium hydroxide = coldness
- Calcium chloride + water = heat
- Magnesium sulfate + water = heat
- Melted potassium chlorate + candy = heat
- Squeeze a citrus fruit into a fire to make sparks
- Aniline + N₂O₄ (http://www.youtube.com/watch?v=bin_W1xVPfY)
- Fire water (<http://www.youtube.com/watch?v=z1z0AVvY9yM>)
- Burning money without damaging the bill
(<http://chemistry.about.com/od/demonstrationexperiments/ss/burnmoney.htm>)
- Making different-colored flames
(<http://chemistry.about.com/od/funfireprojects/a/greenfire.htm>)
- Light a match with superheated water (http://www.youtube.com/watch?v=f6QR2AN6_es)
- Candle seesaw (http://www.youtube.com/watch?v=-W2m2NpM3_g)

Chemistry - Chemical Reactions

- Sulfuric acid decomposition of sugar (http://www.youtube.com/watch?v=_gG0UAX3V7c)
- Elephant's Toothpaste (<http://library.thinkquest.org/10429/low/cool/labs/elephantlab.htm>)
- Barking dog experiment – blue chemiluminescent flash with barking sound
(<http://chemistry.about.com/od/chemistrydemonstrations/a/barkingdog.htm>)
- Briggs-Rauscher oscillating reaction (<http://www.youtube.com/watch?v=Ch93AKJm9os>)
- Old Nassau Reaction, going from black to orange
(http://www.chemie.uni-regensburg.de/Organische_Chemie/Didaktik/Keusch/D-Old_Nassau-e.htm)
- Iodine Clock Reaction, going from clear to purple
(http://www.chemie.uni-regensburg.de/Organische_Chemie/Didaktik/Keusch/D-Landolt-e.htm)
- Traffic light color change (<http://www.youtube.com/watch?v=WVBj92KmqNo>)
- Chameleon reaction (<http://www.youtube.com/watch?v=kKIXe2mrnHQ>)
- Copper and nitric acid (<http://www.youtube.com/watch?v=pJSQq494oV4>)

- pH Rainbow. Fill a graduated cylinder about 2/3 full of 0.1 M HCl with some universal indicator. Tilt the cylinder and add a few mL of saturated Na_2CO_3 . The dense liquid will sink to the bottom with a purple color. As the acid and carbonate react to form CO_2 gas and H_2O , the pH gradient forms a rainbow (<http://www.chemmybear.com/lv2007/index.html>)
- Universal indicator and dry ice color (<http://www.youtube.com/watch?v=orW7CEwcAW8>)
- Luminol glow-in-the-dark (<http://www.angelo.edu/faculty/kboudrea/demos/luminol/luminol.htm>)
- Luminol fountain (<http://www.youtube.com/watch?v=qS6rGsUBync>)
- Chemiluminescence
(<http://educ.queensu.ca/%7Escience/main/concept/chem/c02/C02DESU1.html>)
- Luminescence of rubrene with TCPO, NaOAc and H_2O_2
(<http://www.youtube.com/watch?v=tltOOpyJP5k>)
- Chemiluminescent ammonia fountain (<http://www.youtube.com/watch?v=sLpITPAqdUI>)
- Heat white phosphorous in water, then the glow of phosphorous can be seen
(<http://lateralscience.co.uk/phos/index.html>)
- Colored smoke bomb
(http://chemistry.about.com/od/demonstrationexperiments/ss/smokebomb_5.htm)
- Carbon disulfide drawing on paper. The white phosphorus in the paper reacts with
(<http://www.jce.divched.org/JCESoft/CCA/CCA3/MAIN/PHOSPHO/PAGE1.HTM>)
- White phosphorous in carbon disulfate used to write on paper. Later the paper chars as the carbon disulfate evaporates.
(<http://www.jce.divched.org/JCESoft/CCA/CCA3/MAIN/PHOSPHO/PAGE1.HTM>)
- Any precipitation reaction
(http://genchem.chem.wisc.edu/demonstrations/Gen_Chem_Pages/15precippage/precipmain.htm)
- Bleeding iron (<https://www.youtube.com/watch?v=IH3b4426FMs>)
- Supersaturated sodium acetate. Also makes heat.
(<http://www.youtube.com/watch?v=bL7qT8iQHCA>)
- Potassium chloride and sugar
(http://bigbro.biophys.cornell.edu/~toombes/Science_Education/Grade_Four_Science_Lessons/Reactions_and_Solutions/Colours_and_Indicators/magiwand.htm or
<http://www.woodrow.org/teachers/chemistry/institutes/1988/gummybear.htm>)
- Make water flammable after soaking a battery in it
(http://www.youtube.com/watch?v=ApNYP_E_P4Y)
- (<http://chem.lapeer.org/Chem1Docs/Florescence.html>)
- Heat powdered zinc and sulfur to give off a puff of yellowish smoke
(http://www.angelo.edu/faculty/kboudrea/demos/zinc_sulfur/zinc_sulfur.htm)
- Burning iron and sulfur (<http://www.youtube.com/watch?v=A5H6DVe5FAI>)
- Burning mercury thiocyanide (<http://www.youtube.com/watch?v=dX7xeF-ywxc>)
- Glycine-Nitrate Synthesis of BZY82 (<http://www.youtube.com/watch?v=ojf9Ob2vhso>)
- Burn magnesium in dry ice (www.youtube.com/watch?v=_xCbal2YyaE)
- Ammonium dichromate volcano
(<http://www.practicalchemistry.org/experiments/ammonium-dichromate-volcano.56.EX.html>)

- Alkalai metal in water (<http://www.youtube.com/watch?v=uixxJtJPVXk>)
- Explosive polymerization of p-Nitro Alinine (<http://www.youtube.com/watch?v=h4pNXAtPJp8>)
- Nitrogen triiodide explosively decomposing
(http://www.angelo.edu/faculty/kboudrea/demos/nitrogen_triiodide/nitrogen_triiodide.htm)
- Mercury beating heart (http://en.wikipedia.org/wiki/Mercury_beating_heart)
- Making a bouncy-ball
(<http://chemistry.about.com/od/demonstrationsexperiments/ss/bounceball.htm>)
- Resin urées-formol, a fast-setting solid (http://www.youtube.com/watch?v=0_HAgYKITpY)
- Gallium beating heart (<http://www.youtube.com/watch?v=N6ccRvKKwZQ>)

Chemistry - Food Science

- Making cheese or butter from heavy cream.
- Extracting iron filings from cereals.
- Taste test with and without smell.
- Cook egg with acid.
- Dissolve eggshell with vinegar.
- Honeycomb candy
(<http://chemistry.about.com/od/foodscienceprojects/a/honeycombcandy.htm>)
- Caramel
- Cotton candy
- Candy chromatography
(<http://www.instructables.com/id/Candy-Chromatography/?ALLSTEPS>)
- Pop rocks (<http://www.youtube.com/watch?v=-QiXePPTvBo>)

Biology - Self-Experiments/Activities

- Extract DNA from cheek cells
- Reaction speed testing
- Kneecap reflex test
- Heart rate testing
- Lung size testing
- Skin sensitivity
(<http://www.methuen.k12.ma.us/daberns/Anatomy/Chapter%204/Skin%20Sensitivity%20Lab.htm>)
- Blind spot testing
- Optical illusions
- Population simulation
- Simulate evolution with colored dots
- You stand against a wall sideways and u put your ankle, your knee, and your shoulder against the wall. Then you try and lift up your other foot and its really hard
- Model spread of bacteria with starch in water
- Foot circles (http://krampf.com/experiments/Science_Experiment41.html)

Biology - Plants

- Chlorophyll extraction (<http://facstaff.bloomu.edu/mpugh/Experiment2.pdf>)
- Diffusion of a dye through a carnation
- Diffusion of dye into potato cubes
- Phototrophic plants
- Use dialysis tubing to show diffusion
- Put elodea (aquarium plant) in isotonic, hypertonic, and hypotonic water
- Tell how many sections are in a citrus fruit before slicing it
(http://krampf.com/experiments/Science_Experiment4.html)
- Put some pollen grains in 3% sugar solution. After some time, you can observe the pollen tubes under a microscope.

Biology - Biotech

- Extract DNA from a strawberry or meat
- pGlo bacteria
(http://www.bio-rad.com/prd/en/US/LSE/PDP/619b8f74-9d3f-4c2f-a795-8a27e67598b7/pGLO_Bacterial_Transformation_Kit)
- Liver detox
(<http://www.scientificamerican.com/article.cfm?id=bring-science-home-liver-helping-enzymes>)
- Worm toxicology testing
(http://www.niehs.nih.gov/health/assets/docs_p_z/toxicity_testing_with_california_blackworms_alcohol.pdf)

Biology - Miscellaneous

- Dissections - frog, cow heart, cow eye
- Use ultraviolet light to kill bacteria
- Build a double helix using a kit or candy
- Contrast animal to plant cells
- Pond water under microscope
- Protein denaturation
- Show how muscles work by modeling arm and leg
(http://www.teachengineering.org/view_activity.php?url=http://www.teachengineering.org/collection/wpi/_activities/wpi_hydraulic_arm/hydraulic_joy.xml)
- Balloon lung (<http://biology.about.com/od/biologylabhowtos/ht/lungmodel.htm>)

Miscellaneous

- Poking a skewer through a balloon (<http://www.youtube.com/watch?v=xp0zrswNoVM>)

Good Compilation Sites

- Engineering projects for kids:

<http://constructionmanagementdegree.org/blog/2010/100-awesome-engineering-projects-for-kids/>

- ScienceBob engineering/science projects:
<http://www.sciencebob.com/experiments/index.php>
- Biglearning engineering projects: <http://www.biglearning.com/treasureengineering.htm>
- PBS Kids activities: <http://pbskids.org/zoom/activities/sci/>
- PBS Kids Designsquad: <http://pbskids.org/designsquad/parentseducators/index.html>
- Cornell Physics: <http://courses2.cit.cornell.edu/physicsdemos/index.php>,erc
- MIT Physics: <http://techtv.mit.edu/>
- Steve Spangler engineering/science projects: <http://www.stevespanglerscience.com/>
- Weird Science Kids: <http://www.weirdsciencekids.com/FunExperiments.html>
- Small list of chemical reactions: <http://www1.chem.leeds.ac.uk/delights/texts/>
- Magnetism and electricity demos: <http://buphy.bu.edu/~duffy/electricity.html>
- Haverford E&M demos:
http://www.haverford.edu/physics/demonstrations/electricity_and_magnetism.htm
- Steve Spangler Science: <http://www.stevespanglerscience.com/video?viewall=1>
- Simanek physics demos: <http://www.lhup.edu/~dsimanek/scenario/demos.htm>
- UCSF Science and Health Education Partnership: <http://seplessons.ucsf.edu/>
- Science Buddies science fair project ideas:
http://www.sciencebuddies.org/science-fair-projects/project_ideas.shtml
- MAKE Magazine: <http://makezine.com/projects/>