

## SWE AGILENT AFTER SCHOOL KITS 10/2010 (HAVE RED KITS)

1	<b>Breathtaking Models:</b>	In the Breath Taking Models kit, students will explore the process of breathing and investigate two models that help to visualize and explain the process. Students will build and experiment with a couple of different models that depict the process of breathing. They will explore the lungs and create some very engaging models of the breathing process. The take home is a cool plastic dome, with diaphragm attached and when pulled it enlarges the two balloon lungs inside the dome. The unit also encourages measurement.
2	<b>Catch A Thief:</b>	This activity encourages students to use their investigative and problem solving skills to solve a crime. Using paper chromatography the students reveal the underlying composition of the four suspects' pens and, utilizing the same scientific process on the ransom note, they identify the criminal. At the end of the session a second crime is provided as a take-home activity.
3	<b>Deep Sea Divers:</b>	The principles of flotation, air pressure and density are introduced in this activity. Students build their divers using balloons, paper clips, and weights and place them in a one-liter bottle for 'deep sea diving'. The session includes some measurement and data collection and produces great many questions for the students to take away with them.
4	<b>Electronic Matching Game:</b>	Building this electronic game enhances the student's knowledge of circuits and electrical flows. Each has the opportunity to construct their own game, which serves as an electronic checker for matching correct questions and answers. The students can create their own sets of Q&A for challenging family and friends.
5	<b>Invisible Forces:</b>	For hundreds of years we have been fascinated by the mysterious behavior of magnets, compasses, and electricity. Students will have the opportunity to study these behaviors and 'see' the invisible forces at work. They will also build their own electric motors.
6	<b>Kalimba (Thumb Piano):</b>	In this session, students explore the fundamentals of sound through the vibration of metal and wood. Each student builds their own thumb piano and has the opportunity to discover the concepts of vibration, frequency and pitch. Sheet music is provided near the end of the session to allow the students to begin to master their new musical instruments.
7	<b>Lighthouse:</b>	Students build lamp assemblies and create their own lighthouses. From these houses, light rays emerge and are used for studying the behaviors and properties of light. Student experiments include the reflection, refraction, and the convergence of their light rays.
8	<b>Newton's Rocket Car:</b>	The focus of the student's work in this session is on the careful assembly of a balloon-powered car that provides a practical application of Newton's third law of motion. After they have completed their cars and considered the importance of axles, bearings, and symmetry they will have a lot of fun racing them around the room.
9	<b>Night &amp; Day:</b>	Students create their own model of the earth, spinning on its axis and changing its seasonal position relative to the sun. They will observe the cause and effect relationship that these movements have on our days and nights,our years,&our lives.
10	<b>Oil Spill:</b>	The earth has many sources of energy. From renewable sources like the sun and the wind...to non-renewable ones like coal and oil. In the Oil Spill unit students will create their own model of an ocean, river, or lake and allow an oil spill to occur. They will investigate many different materials and attempt to contain and clean up the spill. In the end they will have first hand thoughts about oil and the environment and end the unit with a look at less risky sources for their next unit...solar energy.
11	<b>Oobleck: have instructions</b>	As students take part in this activity, they learn to think like scientists as they investigate the properties of a strange substance called Oobleck. Once the team has determined the key characteristics of the substance, they are given the challenge of designing a craft capable of handling these strange properties.

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12	<b>Owl Pellets:</b>	This hands-on investigation allows students to take apart their own owl pellets and classify the bones, skulls, and other skeletal remains of mice, shrews, and small birds. They carefully observe and match the remains while engaged in discussions about the food web, animal behavior and skeletal anatomy.
13	<b>Periscopes:</b>	This activity introduces the students to the basic properties of reflection. They experiment with mirrors, reflecting geometric shapes and symmetrical words and images. The session continues with each student constructing their own periscope and having a great time finding ways to apply the tool.
14	<b>Pieces of Earth (2-part kit):</b>	This project provides for two separate sessions. In the sessions, students will explore pieces of earth and find 12 important rocks and minerals. They will observe and analyze properties of minerals and develop an understanding of the rock cycle.
15	<b>Solar Energy:</b>	The earth has many sources of energy. From renewable sources like the sun and the wind...to non-renewable ones like coal and oil, the earth provides for our need of energy to warm our homes, power our factories, and keep our cars moving. In this unit students will explore the energy provided by the sun. Each student will construct a vehicle that utilizes a solar panel, motor, and other components to power their alternative energy car. A sunny day and flat, smooth surfaces on which to run the cars will be needed for optimal performance.
16	<b>Steady Hand Game:</b>	In this session, students explore the fundamentals of electricity. They build an electrical circuit that includes an energy source, resistance, a light and a switch. The completed assembly is also a steady hand game that students will have fun playing and demonstrating to family and friends
17	<b>Time Shadows:</b>	In this session, the students are provided an opportunity to build their own sundials and simulate the 'time shadow' created by the rotating Earth. The shape of the earth, their location on it and how a compass works are considered in the session. Flashlights are provided in the event that a 'school yard' demonstration is not possible.
18	<b>Airplanes:</b>	Since the beginning of time, man has looked to the sky and dreamt of flying. In this unit, students will build their own model airplane. They will assemble wings and fins and stabilizers. Crafting their own rubber band powered plane, they will experiment with the effects of ailerons, elevators and rudders on the movement of the plane through the air.
New	<b>Catapult:</b>	The catapult is a unit in the physical sciences. Each student builds their own simple machine and experiments with particle dynamics. Objects of various mass are used so that students can observe, predict and measure the distance that the objects are propelled by the catapult. The unit is complete with a strong math and measurement section, which includes constructing bar charts.
New	<b>Weather Station: have completed model only</b>	Students build their own 'weather-proof' weather station and can set them up at home, monitor local weather conditions and learn about the importance of tracking temperature, accumulated rainfall, wind direction, wind speeds, and cloud formations. The more they use their stations, the more they will understand the relationship between this data and the weather changes that occur throughout each month, season and year. Math and measurement are a critical, underling component in this project.
New	<b>Hydro Lift:</b>	Hydro Lift is a great unit in the physical sciences. Each student builds their own simple hydro lift which demonstrates the basic principles of hydraulics. Their project will enable them to observe the way force is moved from one place to another and measure the movements that many familiar hydraulic machines demonstrate. Math and measurement are a critical, underling component in this project.

Most are available at Youth Exploration in Science <http://www.yescience.com/>