FOURTH GRADE SCIENCE AND ENGINEERING KITS

Designing Machines (engineering kit)
Alisha visits a potato chip factory and learns how machines make work easier and how important it is to design machines that consider the health and well being of factory workers. Explore the advantages and disadvantages of four simple machines: levers, inclined planes, pulleys, and wheels and axles. Learn how ergonomics is a factor when designing machinery. Use simple machines components to design and build a loading dock. Test using spring scales and score for ergonomics.
For use in conjunction with FOSS Levers and Pulleys. This engineering kit NEEDS materials from the FOSS Levers and Pulleys kit. Kit includes teacher's guide, read-aloud story and DVD, and materials needed to build simple machines.

Designing Alarms (engineering kit)
Emily has forgotten her chore of making sure the sheep on her Australian outback ranch have enough water. Help her design an alarm that will let her know when to fill the water trough. Test materials for conductivity and suitability as switches. Use electrical schematics to design and draw a circuit. Build and test an alarm circuit that turns on a light or a buzzer. For an extra challenge, build a circuit that keeps the light on when the water trough is full and turns on the buzzer when it is empty.
For use in conjunction with FOSS Magnetism and Electricity. This engineering kit NEEDS materials from the FOSS kit. Kit includes teacher's guide, read-aloud story, and materials needed to build and test alarm circuits (when combined with materials from FOSS kit).

Levers and Pulleys (science kit)
Investigate fulcrum, effort, and load of the three classes of levers. Conduct experiments with a spring scale to measure the relationships between the parts of the lever system. Diagram common tools to determine how the tools apply levers. Use fixed, single, movable, and compound pulley systems to lift a load. Quantify effort with spring scales. Use math to determine the relationship between the number of ropes pulling on the load and the effort needed to lift it. Includes FOSS Science Readers to supplement the hands on lessons.

Magnetism and Electricity (science kit)
Explore permanent magnets including what materials are attracted and how they interact. Measure the force of attraction. Explore simple electrical circuits by constructing a circuit with a battery, motor, and switch. Test various objects in the circuit for conductivity or insulation properties. Explore the relationship between electricity and magnetism by making an electromagnet; compare the strength of electromagnets. Build a telegraph, develop a code, and use inventions for classroom communication. Includes FOSS Science Readers to supplement the hands on lessons.

Structures of Life (science kit)
Find seeds in fresh fruit and describe and compare the seed properties. Grow bean, pea, sunflower, and corn seeds and compare the effect water has on the seeds. Grow beans in a hydroponic garden to observe the complete life cycle. Observe the structures and behaviors of crayfish as you learn to care for these animals. Use a mapping technique to keep track of crayfish territorial behavior. Observe the structures and behaviors of the land snail and compare to the crayfish. Investigate the pulling power of snails by attaching loads with a harness and sled. Learn that plants and animals are living organisms that have observable structures and behaviors. Also learn that organisms have predictable life cycles and that they reproduce their own kind. Includes FOSS Science Readers to supplement the hands-on lessons.

Photovoltaics (engineering kit)
Explore photovoltaic cells to determine what is the best angle in relation to the light source to maximize power. Use aluminum foil, mirrors, magnifying lenses, and found items to maximize output. Create simple, series, and parallel circuits with solar cells and compare output. Can also be used in lieu of batteries with lessons in Magnetism and Electricity.

Astronomy (science kit)
Learn about the earth's cycles (night-day), seasons, and the moon's phases. Make and calibrate a sundial. Begin to understand the effects of gravity in space. Classify planets by their physical characteristics. Begin to appreciate the vast distances in the solar system as a scale model is built. Kit includes nightly astronomical observation journal and suggested research projects.