

Physics Labs		
<b>Acceleration</b>		
Motion Sensor	PS-2103A	
Cart with Plunger	ME-6950	MAY BE INCLUDED WITH TRACK SYSTEM
Track end stop	ME-9808	WITH TRACK SYSTEM
Track Pivot Clamp	ME-9810	WITH TRACK SYSTEM
Dynamics Track	ME-6962 OR ME-6961	
Rod and Base	ME-9355	
<b>Archimedes' Principle</b>		
Force Sensor	PS-2104	
Overflow can	SE-8568	
2 Small Cups		
String	SE-8050	
Rod Stand	ME-9355	
Right Angle Clamp	SE-9444	
Short Rod	ME-8736	
Object to Submerge		
Ruler		
Balance	SE-8756A or SE-8790	
<b>Conservation of Energy</b>		
SPARK Science Learning System	PS-2008	
Motion Sensor	PS-2103A	
Dynamics Cart with Plunger	ME-6950	OR PART OF TRACK SYSTEM
Dynamics Track	ME-6962 OR ME-6961	
Dynamics Track End Stop	ME-8971	OR PART OF TRACK SYSTEM
Dynamics Track Rod Clamp (Pivot Clamp)	ME-9810	OR PART OF TRACK SYSTEM
Rod Stand and Base	ME-9355	
Angle Indicator	ME-9495	MAY BE INCLUDED WITH TRACK SYSTEM
Balance (1 per class)	SE-8756A or SE-8790	
<b>Electromagnetic Induction</b>		
SPARK Science Learning System	PS-2008	
Voltage Probe	PS-2165	WITH PS-2008
Magnets of Different Strength (3)	EM-8648A	
Coil (200 turn)	SF-8609	PART OF SF-8616
Coil (400 turn)	SF-8610	PART OF SF-8616
Coil (800 turn)	SF-8611	PART OF SF-8616
Rod Stand and Base	ME-9355	
Three Finger Clamp	SE-9445	
Paper Sheet		
No Bounce Pad (optional)	SE-7347	
Pen		
Tape		
<b>Magnetism</b>		
SPARK Science Learning System	PS-2008	
Magnetic Field Sensor	PS-2112	
Cylindrical Neodymium Magnet (1/2" or 3/4')	EM-8648A	
PASPORT Extension Cable	PS-2500	
Meter Stick	SE-8695	
<b>Newton's First Law</b>		
SPARK Science Learning System	PS-2008	
Motion Sensor	PS-2103A	
Dynamics Cart	ME-6950	OR PART OF TRACK SYSTEM
Super Pulley With Clamp	ME-9448A	
Mass and Hanger Set	ME-8979	
Dynamics Track w/Feet	ME-6962	
String	ME-9875	
<b>Newton's Second Law</b>		
Additional Rod	ME-8636	
Force Sensor	PS-2104	
Mass and Hanger Set	ME-8979	
Motion Sensor	PS-2103A	
Right Angle Clamp	SE-9444	
Rod Stand and Base	ME-9355	
SPARK Science Learning System	PS-2008	
Spring	ME-8970	
<b>Ohm's Law</b>		
AA Batteries (2)	PI-6601	

Charge/Discharge Circuit Board (EM-8678)	EM-8678	
Patch Cords (4mm Banana Plug Connectors) (5)	SE-9750 or SE-9751	
SPARK Science Learning System	PS-2008	
Voltage Current Sensor	PS-2115	
<b>Speed and Velocity</b>		
Dynamics Cart	ME-6950	OR PART OF TRACK SYSTEM
Dynamics Track	ME-6962 OR ME-6961	
Dynamics Track End Stop	ME-8971	OR PART OF TRACK SYSTEM
Dynamics Track Rod Clamp (Pivot Clamp)	ME-9810	OR PART OF TRACK SYSTEM
Motion Sensor	PS-2103A	
Rod Stand and Base	ME-9355	
SPARK Science Learning System	PS-2008	
<b>Voltage</b>		
2 Different Pieces of Fruit		
Alligator Clip Adapters	SE-9756	
Bare Copper Wire		
D-Cell Battery	PI-6602	
Galvanized Nail (Zinc Coated Nail)		
SPARK Science Learning System	PS-2008	
Voltage Probe	PS-2115	WITH PS-2008
<b>Biology</b>		
<b>Acid Rain</b>		
SPARK Science Learning System	PS-2008	
Graduated pipette and pipette bulb		
pH sensor	PS-2102	
Sodium bicarbonate (NaHCO <sub>3</sub> ), 5 g		
Erlenmeyer. flask, 100-mL		
Sodium bisulfite (NaHSO <sub>3</sub> ), 5 g		
1-hole rubber stopper for flask		
Sodium nitrite (NaNO <sub>2</sub> ), 5 g		
Glass tubing for rubber stopper		
1 M HCl, 15 mL		
Flexible tubing to fit glass tubing, 20 cm		
Water or deionized water, 60 mL		
Beaker, 100-mL	SE-7287	
Wash bottle containing distilled or deionized water		
Graduated cylinder, 25-mL	SE-7712	
Balance (1 per class)	SE-8756A or SE-8790	
<b>Enzyme Action</b>		
SPARK Science Learning System	PS-2008	
Tongs		
Oxygen gas sensor	PS-2126	
Catalase Source/Yeast Suspension		
Sampling bottle (provided with the sensor)		
Hydrogen Peroxide, 3%		
Graduated cylinder, 25-mL	SE-7712	
Ice, crushed or cube		
Beaker, one liter (2)	SE-7288	
Water, 500 mL		
Beaker, 500-mL		
Water, distilled, 500 mL		
Test tube (2)		
<b>Exploring Microclimates</b>		
SPARK Science Learning System	PS-2008	
Fast Response Temperature Probe	PS-2135	WITH PS-2008
<b>Membrane Permeability</b>		
SPARK Science Learning System	PS-2008	
0.1 M sodium hydroxide (NaOH ), 15 mL		
pH sensor	PS-2102	
Starch solution		
Beaker, 250-mL	SE-7702	
Dialysis tubing, 15-cm length (2)		
Large base and support rod	ME-9355	
Wash bottle		
Clamp, utility (2)	SE-9445	
Water, distilled, 1 L		
Magnetic stirrer	SE-7700 OR SE-8831/ AND PS-2565	

Spin bar		
Binder clip		
Lugol's iodine		
String	ME-9875	
0.1 M hydrochloric acid (HCl), 15 mL		
<b>Organisms and pH</b>		
SPARK Science Learning System	PS-2008	
Disposable pipettes (2)		
pH sensor	PS-2102	
Detergent solution		
Sensor extension cable	PS-2500	
Lemon juice		
Beaker (6), 50-mL		
Distilled Water		
Beaker, 250-mL	SE-7702	
White vinegar		
Erlenmeyer. flask (2), 1-L		
Liver suspension		
Graduated cylinder, 10-mL	SE-7711	
Buffer solution		
<b>Osmosis</b>		
SPARK Science Learning System	PS-2008	
Funnel		
Barometer sensor	PS-2113A	
Quick-release connector	PART OF PS-2170	
Electronic balance	SE-8756A or SE-8790	
Dialysis tubing (2), 15 cm		
Sensor extension cable	PS-2500	
Thread (or dental floss) to tie dialysis tubing	ME-9875	
Beaker, 400-mL	SE-7716	
Plastic tubing, 5 cm		
Beaker (2), 100-mL	SE-7287	
Syrup (maple or corn), 10 mL		
Graduated cylinder, 10-mL	SE-7711	
Distilled water		
Graduated cylinder, 50-mL	SE-7289	
Paper towels		
Ring stand	ME-9355	
Test tube or 3 finger clamp	SE-9446/ SE-9445	
<b>Plant Respiration and Photosynthesis</b>		
SPARK Science Learning System	PS-2008	
Box or heavy cloth (to cover the bottle)		
CO2 sensor	PS-2110	
Aluminum foil, 1 ft.		
Sensor extension cable	PS-2500	
Lamp, 100-watt (or equivalent)		
Sampling bottle (included with sensor)		WITH PS-2110
Mint plant		(see Lab Preparation for details)
Large beaker or aquarium		(to keep the light source from heating the sample)
Water		
<b>Respiration of Germinating Seeds</b>		
SPARK Science Learning System	PS-2008	
Pea or dry bean seeds (30 per class):		
CO2 gas sensor	PS-2110	
Black, navy, white, or pinto; smaller is better		
Extension cable	PS-2500	OR PART OF PS-2121
Ice, cubed or crushed		
Sampling bottle (included with sensor)		WITH PS-2110
Water		
Beaker, 1000-mL	SE-7288	
<b>The Role of Buffers in Biological Systems</b>		
SPARK Science Learning System	PS-2008	
Large base and support rod	ME-9355	
pH sensor	PS-2102	
Utility clamp	SE-9445	
Graduated cylinder (10 mL)	SE-7711	
Magnetic stirrer	SE-7700 OR SE-8831	
Spin bar	PS-2565	

Beaker, 250 mL (3)	SE-7702
Wash bottle	
Club soda, 200 mL	
Distilled water, 1 L	
Vinegar, 5% acetic acid, 20 mL	

### Transpiration

Barometer	PS-2113A
Bowl	
Clamp, three-finger	SE-9445
Clamp, utility	SE-9446
Fan	
Glycerin, 1 mL	
Knife	
Large base and support rod	ME-9355
Petroleum jelly, 2 to 3 g	
Pipette (for glycerine)	
Plant seedling, 12 to 15 cm tall	
Sensor extension cable	PS-2500
SPARK Science Learning System	PS-2008
Water, 1 L	

### Chemistry

#### Absolute Zero (Gay-Lussac's Law)

SPARK Science Learning System	PS-2008	
Polystyrene cups (2)		
Sensor extension cable	PS-2500	WITH PS-2121
Rubber band		
Absolute pressure sensor	PS-2170	
Ring stand	ME-9355	
Quick-release connector	PART OF PS-2170	
Three finger clamp	SE-9445	
Barbed connector		WITH PS-2170
Crushed ice, 300 mL		
Fast response temperature sensor	PS-2135	WITH PS-2008
Room temperature water, 300 mL		
Tubing, 1 to 2 cm long		WITH PS-2113A
~45 °C water, 300 mL		
Test tube, 15 mm x 100 mm		
~55 °C water, 300 mL		
One-hole rubber stopper for test tube		
~65 °C water, 300 mL		
Beakers (s), 250-mL	SE-7702	
Glycerin, 2 drops		

#### An Acid–Base Titration

SPARK Science Learning System	PS-2008	
Ring stand	ME-9355	
Drop counter	PS-2117	
Right angle clamp	SE-9444	
pH sensor	PS-2170	
Beakers (2), 250- mL	SE-7702	
Buffer solution pH 4, 25 mL		
Disposable pipette		
Buffer solution pH 10, 25 mL		
Volumetric pipette or graduated cylinder, 10-mL	SE-7709 OR SE-7711	
Beakers (2), 50 mL for buffer solutions		
Wash bottle filled with distilled (deionized) water		
Micro stir bar	PS-2562	
Waste container		
Magnetic stirrer	SE-7700 OR SE-8831	
Distilled (deionized) water, 200 mL		
Funnel		
0.1 M Sodium hydroxide <sup>1</sup> , 100 mL		
Graduated cylinder, 100- mL	SE-7713	
0.1 M Hydrochloric acid solution <sup>2</sup> , 10 mL		(concentration unknown to students)
Burette	SE-7703	
Acetic acid solution <sup>3</sup> , 10 mL ( 0.1 M, concentration unknown to students)		
Burette clamp	SE-7714	

<b>Boyle's Law</b>		
SPARK Science Learning System	PS-2008	
Absolute pressure sensor	PS-2170	
Syringe1, 20-mL or 60-mL	SE-7561OR SE-7562	
Tubing, 1 to 2 cm long		
Quick-release connector	PART OF PS-2170	
Glycerin, 2 drops		
<b>Concentration of a Solution (Beer's Law)</b>		
SPARK Science Learning System	PS-2008	
Volumetric pipettes (2), 10-mL	SE-7709	
Colorimeter	PS-2121	
Pipette bulb or pump		
Extension cable	PS-2500	OR PART OF PS-2121
Non-abrasive cleaning tissue		
Glass cuvettes with caps (6)	SE-8739	WITH PS-2121
0.80 M copper(II) sulfate solution, 30 mL		
Test tubes (6), 20 mm x 150 mm		
Unknown copper(II) sulfate solution2, 10 mL		
Test tube rack		
Distilled (deionized) water, 30 mL		
Beakers (2), 100 mL	SE-7287	
<b>Diprotic Titration: Multi-Step Chemical Reactions</b>		
SPARK Science Learning System	PS-2008	
Right angle clamp	SE-9444	
Drop counter	PS-2117	
Beakers, 250-mL	SE-7702	
pH sensor	PS-2170	
Disposable pipette		
Buffer solution, pH 4, 25 mL		
Graduated cylinder, 100-mL	SE-7287	
Buffer solution, pH 10, 25 mL		
Graduated cylinder, 50-mL	SE-7289	
Beakers (2), 50-mL for buffer solutions		
Wash bottle filled with distilled (deionized) water		
Micro stir bar	PS-2562	
Waste container		
Magnetic stirrer	SE-7700 OR SE-8831	
Distilled (deionized) water, 200 mL		
Funnel		
1.0 M Hydrochloric acid solution, 50 mL		
Ring stand	ME-9355	
Sodium carbonate solution, 40 mL (0.5 M, concentration unknown to students)		
Burette	SE-7703	
Burette clamp	SE-7714	
<b>Electrochemical Battery</b>		
SPARK Science Learning System	PS-2008	
Copper strip		
Voltage probe	PS-2165	WITH PS-2008 OR PS-2170
Zinc strip		
Alligator clip adapters (1 black, 1 red)	SE-9756	
Magnesium strip		
Beakers (2), 50-mL		
Two or more of the following metal strips: lead, iron, nickel, or tin		
Graduated cylinder, 50mL	SE-7289	
0.1 M sodium chloride solution, 5-10 mL		
Thick string or yarn, 20 cm		
0.1 M hydrochloric acid, 50 mL		
Wash bottle and waste container		
Lemon		
Knife to cut fruit		
Tomato		
<b>Evidence of a Chemical Reaction</b>		
SPARK Science Learning System	PS-2008	
Weighing paper		
Fast response temperature sensor		WITH PS-2008
White vinegar, 2 mL		
Hotplate	SE-8830	
Calcium carbonate, ~0.2 g		

Graduated cylinder, 100 -mL	SE-7713	
1.0 M citric acid solution, 2 mL		
Graduated cylinder, 10-mL	SE-7111	
1.0 M sodium bicarbonate solution, 2 mL		
Beakers (2), 250-mL	SE-7702	
0.5 M copper sulfate solution, 2 mL		
Test tubes (7), 15-mm x 100-mm		
1.0 M sodium hydroxide solution, 2 mL		
Test tube rack		
0.05 M silver nitrate solution, 2 mL		
Wash bottle filled with distilled (deionized) water		
0.1 M sodium chloride solution, 2 mL		
Beaker for collecting waste rinse water		
Lauric acid, ~0.5 g		
Test tube holder	SE-9446	
Colored drink powder, ~0.2 g		
Spatula		
Effervescent tablet		
Stir rod		
Water, 250 mL		
Balance	SE-8756A or SE-8790	
<b>Heats of Reaction and Solutions</b>		
SPARK Science Learning System	PS-2008	
Wash bottle and waste container		
Temperature sensor	PS-2153	WITH PS-2170
Stir rod		
Beaker, 250-mL	SE-7702	
Sand paper or steel wool, 1 piece		
Simple calorimeter (polystyrene cup)		
Sodium hydroxide, 1 g		
Digital balance	SE-8756A or SE-8790	
Ammonium chloride, 1 g		
Graduated cylinder, 50-mL	SE-7289	
Magnesium metal ribbon, 0.10 g		
Spatula		
1.0 M hydrochloric acid solution, 25 mL		
Weighing paper		
Distilled (deionized) water, 50 mL		
<b>Intermolecular Forces</b>		
SPARK Science Learning System	PS-2008	
Methanol, 5 mL		
Stainless steel temperature sensor	PS-2153	WITH PS-2125
Ethanol, 5 mL		
Graduated cylinder, 10-mL	SE-7111	
Propanol, 5 mL		
Test tubes (6), 15-mm x 100-mm		
Butanol, 5 mL		
Stoppers (6), to fit test tubes		
2-propanol, 5 mL		
Test tube rack		
2-butanol, 5 mL		
Wash bottle and waste container		
Masking tape (2), 6-cm strips		
<b>Percent Oxygen in Air</b>		
SPARK Science Learning System	PS-2008	
Stir rod		
Sensor extension cable	PS-2500	WITH PS-2121
Beaker, 150-mL	SE-7701	
Absolute pressure sensor	PS-2169	
Beaker, 500-mL	SE-7717	600 mL
Quick-release connector		WITH PS-2170
Steel wool, fine mesh (#000), 1.0 g		
Barbed connector		
White vinegar, 50-60 mL		
Tubing, 1 to 2 cm long		WITH PS-2170
Glycerin, 2 drops		
Test tube, 25-mm x 150-mm		
Paper towels		

One-hole rubber stopper to fit test tube

## Earth Science

### Air Pollution and Acid Rain

SPARK Science Learning System	PS-2008	
Graduated pipette and pipetting bulb	ASSORTED	
pH sensor (1)	PS-2169	
Graduated cylinder, 10- or 100-mL	SE-7711 OR SE-7713	
Erlenmeyer flask, 50-mL (1)		
Sodium bicarbonate (NaHCO <sub>3</sub> ), 5 g		
1-hole rubber stopper for flask (1)		
Sodium bisulfite (NaHSO <sub>3</sub> ), 5 g		
Glass tubing for rubber stopper (1)		
Sodium nitrite (NaNO <sub>2</sub> ), 1.5 g		
Flexible Teflon tubing to fit glass tubing, 20 cm (1)		
1 M HCl (15-mL)		
Beaker 40-mL (1)		
Water or deionized water, 1 L		
Balance or mass scale (1/class)	SE-8756A or SE-8790	
Wash bottle containing distilled or deionized water (1)		
Goggles; aprons or lab coats, gloves		

### How Do Oceans and Lakes Help Support Life on Earth?

Dry sand (200ml)		
Meteorology records on the Web		
Meter stick	SE-8695	
Plastic cups - 200ml or 100oz (2)		
Room temperature water -200ml		
SPARK Science Learning System	PS-2008	
Table or stool to clamp lamp		
Temperature sensor	PS-2153	WITH PS-2169
Utility lamp with clip (150W)		
World map or globe		

### Hydrogen Bonding of H<sub>2</sub>O

Beaker, 1-L	SE-7288	
Buret clamp (2)	SE-7714	
Crushed ice from freezer, 300 mL		
gumdrops, 36		
Hot plate	SE-8830	
protective gear		
Sitring rod		
Small tripod base and rod	SE-9451	
SPARK Science Learning System	PS-2008	
Temperature sensor	PS-2153	WITH PS-2169
toothpicks, 24		

### Insolation and the Seasons

3-fingered clamp	SE-9448A	
Black construction paper		
Cardboard, 15 x 15 cm		
Drinking straw		
Glue		
Protractor		
Scissors		
Small tripod base & rod	SE-9451	
SPARK Science Learning System	PS-2008	
Stainless steel temperature sensor	PS-2153	WITH PS-2169
Tape		

### Monitoring the Quality of Natural Water Bodies

Appropriate chemical test kit (optional)		
Beaker, 100-mL or larger	SE-7287	
GPS sensor (optional)	PS-2175	
Labels and pens, duct tape		
Large test tube (18 x 150 mm)		
Lint-free laboratory tissue		
Long-handled sampling device		
pH standards (pH 4 and pH 7 or 10)		
Pipette		
SPARK Science Learning System	PS-2008	
temperature, and dissolved oxygen sensors)		

Towel		
Turbidity sensor	PS-2122	
Wading boots (optional)		
Wash bottle containing distilled or deionized water		
Water quality sensor	PS-2169	
Weather sensor or barometric pressure sensor	PS-2113A/PS-2154A/PS-2174	
Wide-mouth sampling jar or small plastic bucket		
<b>Radiation Energy Transfer</b>		
SPARK Science Learning System	PS-2008	
Radiation cans (half of them painted)	TD-8570A	
Temperature sensor (2)	PS-2153	WITH PS-2169
Insulated pad (2)		
Water, room temperature (0.5 L)		
Protective gear		
Heat lamp (or 150-W lamp)		
Graduated cylinder, 100-mL	SE-7287	
<b>Soil pH</b>		
beaker, 100-mL (4/group)	SE-7287	
deionized or distilled water (60 mL per sample)		
digging tool		
graduated cylinder, 100-mL	SE-7287	
paper towels		
permanent marker		
pH sensor (1/group)	PS-2169	
pH standard solutions (pH 4 and 7)		
plastic zip lock bag (3/student or group) 1		
SPARK Science Learning System	PS-2008	
stirring rod		
wash bottle containing deionized or distilled water (1)		
waste container (1)		
<b>Soil Salinity</b>		
SPARK Science Learning System	PS-2008	
Graduated cylinder, 100-mL	SE-7287	
Conductivity sensor (1/group)	PS-2169	
Wash bottle containing deionized or distilled water (1)		
Plastic zip lock bags, 1-L; 3/student		
Waste container (1)		
Digging tool		
Deionized or distilled water (60 mL per sample)		
Stirring rod		
Permanent marker		
Beaker 100-mL (4/group)	SE-7287	
Paper towels		
conductivity sensor (1/group)	PS-2169	
Graduated cylinder, 100-mL	SE-7287	
<b>Specific Heat of Land Versus Water</b>		
SPARK Science Learning System	PS-2008	
Small tripod, base, and rod	SE-9451	
Buret Clamp	SE-9446	
Temperature sensors (2 stainless steel or 2 fast re	PS-2153	WITH PS-2169
Disposable insulated cup (2) and lid		
response)		
Mass balance or scale (1 per class)	SE-8756A or SE-8790	
Beaker, glass, 500 mL		
Water, 750 mL		
Test tube, glass, 18 x 250 mm (large)		
Tongs		
Beakers, glass (2), 250 mL	SE-7702	
Stirring rod		
Sand, 200 g		
Hot plate	SE-8830	
Heat lamp or 150 W incandescent lamp		
<b>Water Treatment</b>		
SPARK Science Learning System	PS-2008	
Soda bottle, empty, 500-mL		
Water quality sensor (or pH and conductivity sensors)		
Paper napkins, dinner, white, smooth (12)		
Turbidity sensor	PS-2122	

Paper towels, kitchen, white, roll (several)  
 Beaker (4), 150-mL SE-7701  
 Swimming pool water clarifier solution, 4% (2 mL)  
 Beaker, 50-mL  
 "Wastewater" sample, 500 mL  
 Beaker, large (waste container)  
 Wash bottle containing water  
 Test tube, 18-mm OD or more  
 Activated charcoal, 2 g  
 Pipette and bulb  
 Water  
 Stirring rod  
 Lint-free lab tissue

## Elementary

### What are Endothermic and Exothermic Reactions?

SPARK Science Learning System	PS-2008	
Calcium Chloride		
Temperature sensor	PS-2135	WITH PS-2008
Sodium Chloride (salt)		
Glass beakers		

### How Do Measuring and Feeling Temperature Compare?

#### Teacher

SPARK Science Learning System	PS-2008	
Plastic cups – 12 oz.		
Temperature sensor	PS-2135	WITH PS-2008
Paper or cardboard sheet for fan (21 cm x 28cm or 8-1/2" x 11")		
Warm and cool tap water		

#### Group

SPARK Science Learning System	PS-2008	
Plastic cups – 12 oz.		
Temperature sensor	PS-2135	WITH PS-2008
Paper or cardboard sheet for fan (21 cm x 28 cm or 8-1/2" x 11")		
Warm and cool tap water		

### How Do Oceans and Lakes Help Support Life on Earth?

SPARK Science Learning System	PS-2008	
Temperature sensor	PS-2135	WITH PS-2008
Utility lamp with clip (75W, 100W, or sunlamp)		
Table or stool to clamp lamp		
Plastic cups - 200ml or 100oz (2)		
Meter stick	SE-8695	
Dry sand (200ml)		
Room temperature water -200ml		
Meteorology records on the Web		
World map or globe		

### Why is Some Clothing Warmer than Others?

SPARK Science Learning System	PS-2008	
2 Plastic bottles		
Temperature sensor	PS-2135	WITH PS-2008
Funnel (to fill bottles)		
Hot water		
Clothing materials: cotton, Polar Tec, wool sock		

### How Do You Use Electricity to Light up a Bulb?

SPARK Science Learning System	PS-2008	
9V Battery, fully to partially charged	PI-660	
Voltage sensor	PS-2165	WITH PS-2008 OR PS-2170
D Cell battery, fully to partially charged	PI-6602	
AA batteries (3), fully to partially charged	PI-6601	
Miniature holiday light bulb with stripped wire ends (non-LED) (1)		
Binder clip (1)		

### What Happens When Ice Melts and Then Water Boils?

SPARK Science Learning System	PS-2008	
Temperature sensor	PS-2135	WITH PS-2008
Hotplate	SE-8830	
100 mL Glass beaker	SE-7287	
Crushed ice (50 mL)		
Chopstick		

Tape  
Tongs or gloves  
Goggles

### What Happens When you Mix Warm Water and Cool Water?

SPARK Science Learning System	PS-2008	
4 large foam cups		
Temperature sensor	PS-2135	WITH PS-2008
Ice water		
2 Empty film canisters		
Warm water		
1 Small foam cup		

### What are the Temperatures in my Environment?

SPARK Science Learning System	PS-2008	
Temperature Sensor	PS-2135	WITH PS-2008

### What Can Conduct Electricity?

SPARK Science Learning System	PS-2008	
Medium binder clip		
Voltage sensor	PS-2165	WITH PS-2008 OR PS-2170
Plastic spoon		
AA Battery, V fully charged	PI-6601	
Mechanical pencil lead (1)		
Miniature holiday light bulb with stripped wire ends (non-LED)		
Alligator clips (2)	SE-9756	
Pieces of wire with stripped ends (2)		
Paper clip		
Eraser (1)		
Penny (1)		
Piece of chalk (1)		
Tape		
Clay		
Thick rubber band		

### What is an Electric Circuit?

SPARK Science Learning System	PS-2008	
Medium binder clip		
Voltage sensor		
Alligator clips (2) or pieces of wire	SE-9756	
AA Batteries (2) – fully charged to partially charged	PI-6601	
Mechanical pencil lead (1)		
Miniature holiday light bulb with stripped wire ends (2) (non-LED)		
Thick rubber band		

## Middle School

### Acid Rain and Plant Growth

#### Teacher

SPARK Science Learning System	PS-2008	
Rainwater (or samples of local soil)		
pH sensor	PS-2102	
Ruler		
Bean seeds (15)		
Paper towels		
Distilled water		
Goggles		
Permanent marker		
Vinegar		
Small, plastic cups, 9 oz. (5-10)		
Nail		
Re-sealable small plastic bags (3)		
Several pieces of chalk		

#### Students

SPARK Science Learning System	PS-2008	
Small, plastic cups, 9 oz. (5-10)		
pH sensor	PS-2102	
Re-sealable small plastic bags (3)		
Bean seeds (15)		
Rainwater (or samples of local soil)		
Distilled water		
Ruler		
Permanent marker		

Paper towels  
 Bean seeds (15)  
 Goggles

**Are You Speeding?**

SPARK Science Learning System PS-2008  
 Reflector (optional) 648-07373  
 Motion sensor PS-2103A

**Bright Lights**

Teacher

SPARK Science Learning System PS-2008  
 Meter stick SE-8695  
 Light sensor PS-2106A  
 Ping Pong™ ball  
 Lamp, with incandescent lightbulb without a shade  
 Utility knife or small awl  
 Small scissors  
 Sheet of white paper  
 Clear and frosted incandescent lightbulbs (optional)

Students

SPARK Science Learning System PS-2008  
 Meter stick SE-8695  
 Light sensor PS-2106A  
 Ping Pong™ ball  
 Lamp, with incandescent lightbulb without a shade  
 Small scissors  
 Clear and frosted incandescent lightbulbs  
 Sheet of white paper

**Exploring Environmental Temperatures**

Teacher

Thermometer that measures temperature in Celcius PS-2135 WITH PS-2008  
 Thermometer SE-9084A

Student

SPARK Science Learning System PS-2008  
 Temperature sensor PS-2135 WITH PS-2008

**Mapping the Ocean Floor**

Teacher

SPARK Science Learning System PS-2008  
 Classroom objects for simulated ocean floor (books, etc.)  
 Motion sensor PS-2103A

Student

SPARK Science Learning System PS-2008  
 classroom objects for simulated ocean floor (books, etc.)  
 Motion sensor PS-2103A

**Operation Deep Freeze**

Teacher

SPARK Science Learning System PS-2008  
 Hot plate SE-8830  
 Temperature sensor PS-2135 WITH PS-2008  
 Measuring spoons  
 Erlenmeyer flask (250-mL)  
 Graduated cylinder (100 mL) SE-7287  
 One-hole stopper  
 Table Salt  
 Distilled water  
 Goggles  
 Ice cubes (at least 5)

Student

SPARK Science Learning System PS-2008  
 Hot plate SE-8830  
 Temperature sensor PS-2135 WITH PS-2008  
 Measuring spoons  
 Erlenmeyer flask (250-mL)  
 Graduated cylinder (100mL) SE-7287  
 One-hole stopper  
 Table Salt  
 Distilled water  
 Goggles

**Recovery Heart Rate**

<u>Teacher</u>		
Clock or timer with seconds displayed	ME-1234	
<u>Student</u>		
SPARK Science learning System	PS-2008	
Heart rate sensor	PS-2105	
Chair		
Comfortable foot attire and exercise clothing		

#### Soil Characteristics

<u>Teacher</u>		
SPARK Science Learning System	PS-2008	
Samples of local soil		
pH sensor	PS-2102	
Ruler		
Paper towels		
Distilled water		
Goggles		
Permanent marker		
Vinegar		
Small, plastic cups, 9 oz. (5-10)		
Re-sealable small plastic bags (3)		
Small gardening spade		

<u>Student</u>		
SPARK Science Learning System	PS-2008	
Small, plastic cups, 9 oz. (5-10)		
pH sensor	PS-2102	
Re-sealable small plastic bags (3)		
Samples of local soil		
Distilled water		
Ruler		
Permanent marker		
Paper towels		
Goggles		
Small gardening spade		

#### Thermoregulation of Body Temp

<u>Teacher</u>		
SPARK Science Learning System	PS-2008	
Chair (for ankle temperature reading)		
Temperature sensor	PS-2135	WITH PS-2008
<u>Student</u>		
SPARK Science Learning System	PS-2008	
Chair (for ankle temperature reading)		
Temperature sensor	PS-2135	WITH PS-2008

#### Varying Lights

<u>Teacher</u>		
SPARK Science Learning System	PS-2008	
Voltage probe	PS-2165	WITH PS-2008
String of holiday "mini" lights (non-LED)		
Wire strippers		
<u>Student</u>		
SPARK Science Learning System	PS-2008	
Voltage probe	PS-2165	WITH PS-2008
String of holiday "mini" lights (non-LED)		
Wire strippers		

#### Varying Reaction Rates

SPARK Science Learning System	PS-2008	
Temperature Probe	PS-2135	WITH PS-2008
Four AlkaSeltzer tablets		
Plastic cups (200 mL capacity)		
Ice cubes		

#### Why Do We Brush Our Teeth?

<u>Teacher</u>		
Beaker or glass Mason jar		
Chicken thigh bones (2)		
Raw eggs in shell (2)		
Vinegar		
<u>Student</u>		
SPARK Science Learning System	PS-2008	
pH sensor	PS-2102	

Vinegar sample

Distilled water

Beakers

Samples of juice and soda pop

Goggles