

Exploring Creation with Physical Science by Dr. Jay L. Wile

Schedule for Edition 2 ~Donna Young

Checklists with Page Numbers

<p>1 Module 1: The Basics</p> <ul style="list-style-type: none"><input type="checkbox"/> 1 Introduction<input type="checkbox"/> 1 Atoms and Molecules<input type="checkbox"/> 1 Experiment 1.1: Atoms and Molecules<input type="checkbox"/> 7 Measurement and Units<input type="checkbox"/> 8 The Metric System<input type="checkbox"/> 10 Manipulating Units<input type="checkbox"/> 11 Converting Between Units<input type="checkbox"/> 14 Converting Between Systems<input type="checkbox"/> 15 Experiment 1.2: Cubits and Fingers<input type="checkbox"/> 17 Concentration<input type="checkbox"/> 17 Experiment 1.3: Concentration <p>25 Module 2: Air</p> <ul style="list-style-type: none"><input type="checkbox"/> 25 Introduction<input type="checkbox"/> 25 The Air and Humidity<input type="checkbox"/> 25 Experiment 2.1: Evaporation and Temperature<input type="checkbox"/> 28 The Composition of Air<input type="checkbox"/> 30 Experiment 2.2: Oxygen and Fire<input type="checkbox"/> 32 Carbon Dioxide in the Air<input type="checkbox"/> 33 Experiment 2.3: Carbon Dioxide and the Greenhouse Effect<input type="checkbox"/> 36 Global Warming<input type="checkbox"/> 41 Parts Per Million<input type="checkbox"/> 42 Ozone<input type="checkbox"/> 44 Air Pollution <p>55 Module 3: The Atmosphere</p> <ul style="list-style-type: none"><input type="checkbox"/> 55 Introduction<input type="checkbox"/> 55 Atmospheric Pressure<input type="checkbox"/> 56 Experiment 3.1: Atmospheric Pressure<input type="checkbox"/> 60 The Layers of Earth's Atmosphere<input type="checkbox"/> 62 The Homosphere<input type="checkbox"/> 66 What Is Temperature?<input type="checkbox"/> 66 Experiment 3.2: Seeing the Effect of Changing Temperature<input type="checkbox"/> 69 The Temperature Gradient in the Homosphere<input type="checkbox"/> 69 The "Hole" in the Ozone Layer<input type="checkbox"/> 73 The Heterosphere	<p>81 Module 4: The Wonder of Water</p> <ul style="list-style-type: none"><input type="checkbox"/> 81 Introduction<input type="checkbox"/> 81 The Composition of Water<input type="checkbox"/> 81 Experiment 4.1: The Chemical Composition of Water<input type="checkbox"/> 85 Chemical Formulas<input type="checkbox"/> 86 Water's Polarity<input type="checkbox"/> 86 Experiment 4.2: Water's Polarity<input type="checkbox"/> 90 Water as a Solvent<input type="checkbox"/> 90 Experiment 4.3: Solvents and Solutes<input type="checkbox"/> 93 Hydrogen Bonding in Water<input type="checkbox"/> 95 Experiment 4.4: Comparing Solid Water to Solid Butter<input type="checkbox"/> 97 Water's Cohesion<input type="checkbox"/> 97 Experiment 4.5: Water's Cohesion<input type="checkbox"/> 99 Experiment 4.6: The Forces Between Molecules<input type="checkbox"/> 100 Hard Water and Soft Water <p>105 Module 5: The Hydrosphere</p> <ul style="list-style-type: none"><input type="checkbox"/> 105 Introduction<input type="checkbox"/> 107 The Parts of the Hydrosphere and the Hydrologic Cycle<input type="checkbox"/> 109 Experiment 5.1:Evaporation, Condensation, and Precipitation<input type="checkbox"/> 113 The Ocean<input type="checkbox"/> 116 Glaciers and Icebergs<input type="checkbox"/> 116 Experiment 5.2: Ice and Salt<input type="checkbox"/> 120 Groundwater and Soil Moisture<input type="checkbox"/> 122 Surface Water<input type="checkbox"/> 122 Atmospheric Moisture<input type="checkbox"/> 122 Experiment 5.3: Cloud Formation<input type="checkbox"/> 126 Water Pollution	<p>131 Module 6: Earth and the Lithosphere</p> <ul style="list-style-type: none"><input type="checkbox"/> 131 Introduction<input type="checkbox"/> 132 The Crust<input type="checkbox"/> 133 The Mantle<input type="checkbox"/> 133 Experiment 6.1: How Sound Travels Through Different Substances<input type="checkbox"/> 136 Experiment 6.2: A Simulation of Plastic Rock<input type="checkbox"/> 138 The Earth's Core<input type="checkbox"/> 140 Experiment 6.3: Making an Electromagnet<input type="checkbox"/> 144 Plate Tectonics<input type="checkbox"/> 145 Experiment 6.4: A Model of Plate Tectonics<input type="checkbox"/> 148 Earthquakes<input type="checkbox"/> 151 Mountains and Volcanoes <p>157 Module 7: Factors That Affect Earth's Weather</p> <ul style="list-style-type: none"><input type="checkbox"/> 157 Introduction<input type="checkbox"/> 157 Factors That Influence Weather<input type="checkbox"/> 157 Clouds<input type="checkbox"/> 160 Experiment 7.1: A Long-Term Weather Experiment<input type="checkbox"/> 161 Earth's Thermal Energy<input type="checkbox"/> 165 Latitude and Longitude<input type="checkbox"/> 166 Uneven Thermal Energy Distribution<input type="checkbox"/> 172 Air Masses <p>181 Module 8: Weather and Its Prediction</p> <ul style="list-style-type: none"><input type="checkbox"/> 181 Introduction<input type="checkbox"/> 181 Precipitation<input type="checkbox"/> 183 Thunderstorms<input type="checkbox"/> 186 Experiment 8.1: Making Your Own Lightning<input type="checkbox"/> 190 Tornadoes and Hurricanes<input type="checkbox"/> 194 Weather Maps and Weather Prediction<input type="checkbox"/> 198 Interpreting the Results of Experiment 7.1 and Making Your Own Weather Predictions<input type="checkbox"/> 199 Experiment 8.2: Turning Experiment 7.1 into a Weather Prediction Tool
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<p>203 Module 9: An Introduction to the Physics of Motion</p> <ul style="list-style-type: none"> <input type="checkbox"/> 203 Introduction <input type="checkbox"/> 203 Mechanics: The Study of Motion, Forces, and Energy <input type="checkbox"/> 206 Speed: How Quickly Motion Occurs <input type="checkbox"/> 208 Velocity: Speed and Direction <input type="checkbox"/> 209 Experiment 9.1: The Importance of Direction <input type="checkbox"/> 212 Acceleration: The Rate of Change in Velocity <input type="checkbox"/> 218 The Acceleration Due to Gravity <input type="checkbox"/> 219 Experiment 9.2: The Acceleration Due to Gravity is Independent of the Object Falling <input type="checkbox"/> 221 Experiment 9.3: Measuring Height With a Stopwatch <p>229 Module 10: Newton's Laws</p> <ul style="list-style-type: none"> <input type="checkbox"/> 229 Introduction <input type="checkbox"/> 229 Sir Isaac Newton <input type="checkbox"/> 230 Newton's First Law of Motion <input type="checkbox"/> 231 Experiment 10.1: Two Experiments Demonstrating Newton's First Law <input type="checkbox"/> 235 Experiment 10.2: An Experiment to See How Well You Understand Newton's First Law <input type="checkbox"/> 237 Friction <input type="checkbox"/> 237 Experiment 10.3: Friction <input type="checkbox"/> 240 Newton's Second Law of Motion <input type="checkbox"/> 244 Static and Kinetic Friction <input type="checkbox"/> 246 Newton's Third Law of Motion <input type="checkbox"/> 247 Experiment 10.4: Newton's Third Law <p>255 Module 11: Forces in Creation - Part 1</p> <ul style="list-style-type: none"> <input type="checkbox"/> 255 Introduction <input type="checkbox"/> 255 The Four Fundamental Forces of Creation <input type="checkbox"/> 255 The Gravitational Force <input type="checkbox"/> 260 Force and Circular Motion <input type="checkbox"/> 260 Experiment 11.1: Force and Circular Motion <input type="checkbox"/> 263 A Fictional Force <input type="checkbox"/> 265 The Gravitational Force at Work in Our Solar System <input type="checkbox"/> 269 Comets <input type="checkbox"/> 272 Hey, What About Pluto? <input type="checkbox"/> 274 What Causes the Gravitational Force? <input type="checkbox"/> 274 Experiment 11.2: The "Bent Space and Time" Theory of Gravity <input type="checkbox"/> 276 Experiment 11.3: The Graviton Theory of Gravity <input type="checkbox"/> 278 A Brief History of Our View of the Solar System 	<p>285 Module 12: Forces in Creation - Part 2</p> <ul style="list-style-type: none"> <input type="checkbox"/> 285 Introduction <input type="checkbox"/> 285 James Clerk Maxwell <input type="checkbox"/> 286 The Electromagnetic Force <input type="checkbox"/> 286 Experiment 12.1: Electrical Attraction and Repulsion <input type="checkbox"/> 290 Photons and the Electromagnetic Force <input type="checkbox"/> 291 How Objects Become Electrically Charged <input type="checkbox"/> 291 Experiment 12.2: Making and Using an Electroscope <input type="checkbox"/> 295 Electrical Circuits <input type="checkbox"/> 299 Resistance <input type="checkbox"/> 299 Experiment 12.3: Current and Resistance <input type="checkbox"/> 302 Switches and Circuits <input type="checkbox"/> 303 Series and Parallel Circuits <input type="checkbox"/> 305 Magnetism <input type="checkbox"/> 306 Permanent Magnets <p>313 Module 13: The Forces in Creation - Part 3</p> <ul style="list-style-type: none"> <input type="checkbox"/> 313 Introduction <input type="checkbox"/> 313 The Structure of the Atom <input type="checkbox"/> 320 The Periodic Table of the Elements <input type="checkbox"/> 325 The Strong Force <input type="checkbox"/> 327 Radioactivity <input type="checkbox"/> 330 The Dangers of Radioactivity <input type="checkbox"/> 332 The Rate of Radioactive Decay <input type="checkbox"/> 334 Radioactive Dating <p>341 Module 14: Waves and Sound</p> <ul style="list-style-type: none"> <input type="checkbox"/> 341 Introduction <input type="checkbox"/> 341 Waves <input type="checkbox"/> 344 Sound Waves <input type="checkbox"/> 344 Experiment 14.1: The Medium Through Which Sound Waves Travel <input type="checkbox"/> 347 The Speed of Sound <input type="checkbox"/> 347 Experiment 14.2: The Speed of Sound <input type="checkbox"/> 351 The Speed of Sound in Other Substances <input type="checkbox"/> 353 Sound Wavelength and Frequency <input type="checkbox"/> 353 Experiment 14.3: Wavelength and Sound <input type="checkbox"/> 355 The Doppler Effect <input type="checkbox"/> 356 Experiment 14.4: The Doppler Effect <input type="checkbox"/> 357 The Volume of Sound <input type="checkbox"/> 358 Experiment 14.5: The Amplitude of a Sound Wave <input type="checkbox"/> 361 Uses of Sound Waves 	<p>367 Module 15: Light</p> <ul style="list-style-type: none"> <input type="checkbox"/> 367 Introduction <input type="checkbox"/> 367 The Dual Nature of Light <input type="checkbox"/> 370 Wavelength and Frequency of Light <input type="checkbox"/> 370 Experiment 15.1: Seeing Different Wavelengths of Light <input type="checkbox"/> 374 Reflection <input type="checkbox"/> 374 Experiment 15.2: The Law of Reflection <input type="checkbox"/> 377 Refraction <input type="checkbox"/> 378 Experiment 15.3: Refraction of Light <input type="checkbox"/> 380 Experiment 15.4: The "Magical" Quarter <input type="checkbox"/> 383 Lenses <input type="checkbox"/> 385 The Human Eye <input type="checkbox"/> 388 How We Perceive Color <input type="checkbox"/> 388 Experiment 15.5: How the Eye Detects Color <input type="checkbox"/> 389 Adding and Subtracting Colors <p>397 Module 16: An Introduction to Astrophysics</p> <ul style="list-style-type: none"> <input type="checkbox"/> 397 Introduction <input type="checkbox"/> 397 The Sun <input type="checkbox"/> 401 Nuclear Energy <input type="checkbox"/> 404 Classifying the Stars in the Universe <input type="checkbox"/> 409 Variable Stars <input type="checkbox"/> 411 Measuring the Distance to Stars <input type="checkbox"/> 413 Galaxies <input type="checkbox"/> 414 An Expanding Universe <input type="checkbox"/> 416 Experiment 16.1: An Expanding Universe <input type="checkbox"/> 418 Summing It All Up <p>423 Glossary 433 Appendix A 449 Appendix B 481 Appendix C 489 Index</p>
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Lab Supply List

Module #1	Module #2	Module #4
<ul style="list-style-type: none"> <input type="checkbox"/> Eye protection such as goggles or safety glasses <input type="checkbox"/> A small, clear glass (like a juice glass) <input type="checkbox"/> Baking soda <input type="checkbox"/> Tap water <input type="checkbox"/> A 9-volt battery (the kind that goes in a radio, smoke detector, or toy. DO NOT use an electrical outlet, as that would be quite dangerous! A 1.5-volt flashlight battery will <i>not</i> work.) <input type="checkbox"/> Two 9-inch pieces of insulated wire. The wire itself must be copper. <input type="checkbox"/> Scissors <input type="checkbox"/> Some tape (preferably electrical tape, but cellophane or masking tape will work.) <input type="checkbox"/> A spoon for stirring <input type="checkbox"/> A long piece of string <input type="checkbox"/> A large tabletop (like the top of a kitchen table or a big desk) <input type="checkbox"/> A person to help you <input type="checkbox"/> Some cellophane tape <input type="checkbox"/> A pencil <input type="checkbox"/> Vinegar <input type="checkbox"/> 6 Tums® tablets (You can use another antacid tablet, but it must have calcium carbonate as its active ingredient.) <input type="checkbox"/> Measuring cups <input type="checkbox"/> 3 large glasses (They each must be able to hold at least 2 cups of liquid.) 	<ul style="list-style-type: none"> <input type="checkbox"/> Eye protection such as goggles or safety glasses <input type="checkbox"/> A small glass, like a juice glass <input type="checkbox"/> Two cotton balls <input type="checkbox"/> Tap water <input type="checkbox"/> A bulb thermometer (It must be able to read room temperature and slightly higher, and it must have a bulb at the end.) <input type="checkbox"/> A small piece of plastic such as a Ziploc® bag or a square cut from a trash bag. <input type="checkbox"/> A reasonably large glass or jar <input type="checkbox"/> A candle (DO NOT use a lighter or any other gas or alcohol burner. You must use a candle in order to keep the experiment safe.) <input type="checkbox"/> Matches <input type="checkbox"/> 2 cups of hydrogen peroxide (sold at any drugstore) <input type="checkbox"/> Baker's yeast <input type="checkbox"/> A bottle (A plastic, 1-liter soda pop bottle, for example) <input type="checkbox"/> A balloon <input type="checkbox"/> A teaspoon <input type="checkbox"/> A large, clear Ziploc® freezer bag (It needs to be large enough so that the thermometer can be "zipped" inside it.) <input type="checkbox"/> Sunny windowsill (If it's not sunny today, just wait until it is.) <input type="checkbox"/> Vinegar <input type="checkbox"/> Baking soda <p>Module #3</p> <ul style="list-style-type: none"> <input type="checkbox"/> Eye protection such as goggles or safety glasses <input type="checkbox"/> Stove <input type="checkbox"/> Frying pan <input type="checkbox"/> Two empty, 12-ounce aluminum cans (like soda pop cans) <input type="checkbox"/> Two bowls <input type="checkbox"/> Water <input type="checkbox"/> Ice cubes <input type="checkbox"/> Tongs <input type="checkbox"/> Plastic bottle (The best volume would be 1 quart or 1 liter, but any size will work.) <input type="checkbox"/> Balloon 	<ul style="list-style-type: none"> <input type="checkbox"/> Eye protection such as goggles or safety glasses <input type="checkbox"/> Water <input type="checkbox"/> New 9-volt battery <input type="checkbox"/> Two test tubes (You can purchase these at a hobby store. If you cannot get them, skip the experiment or use the tubes that florists put on the stems of cut flowers.) <input type="checkbox"/> Juice glass (It must be deep enough so that when it is nearly full of water, the battery can stand vertically in the glass and still be fully submerged in the water.) <input type="checkbox"/> Epsom salts (You can get these at any drugstore or large supermarket.) <input type="checkbox"/> Tablespoon <input type="checkbox"/> Vegetable oil <input type="checkbox"/> A Styrofoam® or paper cup <input type="checkbox"/> A comb <input type="checkbox"/> A pen <input type="checkbox"/> Five glasses <input type="checkbox"/> Two stirring spoons <input type="checkbox"/> Paper towel <input type="checkbox"/> A measuring spoon that measures ½ teaspoon <input type="checkbox"/> Sugar <input type="checkbox"/> Table salt <input type="checkbox"/> Canola oil (cooking oil other than olive oil) <input type="checkbox"/> Olive oil <input type="checkbox"/> Stick of butter or margarine (It must be fresh from the refrigerator so that it is solid.) <input type="checkbox"/> Ice cube <input type="checkbox"/> Stove <input type="checkbox"/> Saucepan <input type="checkbox"/> Knife (A serrated one works best. You will use it to cut the butter.) <input type="checkbox"/> Bowl <input type="checkbox"/> Metal paper clip (Use a standard-sized paper clip, a big one will probably not work.) <input type="checkbox"/> Toilet paper <input type="checkbox"/> Dish soap <input type="checkbox"/> Scissors <input type="checkbox"/> A smooth glass surface (The underside of a drinking glass works well.) <input type="checkbox"/> Wax (A candle will work.) <input type="checkbox"/> Sink

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<p>Module #5</p> <ul style="list-style-type: none"> <input type="checkbox"/> Eye protection such as goggles or safety glasses <input type="checkbox"/> Water <input type="checkbox"/> Salt <input type="checkbox"/> Ice <input type="checkbox"/> Tablespoon <input type="checkbox"/> Teaspoon <input type="checkbox"/> Small saucepan <input type="checkbox"/> Saucepan lid or frying pan lid larger than the saucepan used <input type="checkbox"/> Large bowl (It should not be plastic, as it will get hot.) <input type="checkbox"/> Potholders <input type="checkbox"/> Zippered plastic sandwich bag <input type="checkbox"/> Stove <input type="checkbox"/> Measuring cup <input type="checkbox"/> Plastic bowl that holds more than 2 cups of water <input type="checkbox"/> Freezer <input type="checkbox"/> Small plate <input type="checkbox"/> Strainer <input type="checkbox"/> Small glass or cup <input type="checkbox"/> A clear, plastic 2-liter bottle (the kind that soda pop comes in) with the lid <input type="checkbox"/> A match <p>Module #6</p> <ul style="list-style-type: none"> <input type="checkbox"/> Eye protection such as goggles or safety glasses <input type="checkbox"/> Two metal spoons <input type="checkbox"/> About 3 feet of string, (Nylon kite string is ideal, but any reasonably strong string will work.) <input type="checkbox"/> Thread and yarn do not work well.) <input type="checkbox"/> Large sink with a plug <input type="checkbox"/> Water <input type="checkbox"/> A shallow pan (a pie pan, for example) <input type="checkbox"/> Cornstarch <input type="checkbox"/> Measuring cups <input type="checkbox"/> A 1.5-volt battery, ONLY size: AA, A, C, or D <input type="checkbox"/> Tape (Electrical tape works best, but cellophane tape will do.) <input type="checkbox"/> Large iron nail (at least 3 inches long) <input type="checkbox"/> Metal paper clip <input type="checkbox"/> 2 feet of 20 gauge insulated wire <input type="checkbox"/> A hard-boiled egg (You might want a second in case you mess up the first time.) <input type="checkbox"/> A butter knife <input type="checkbox"/> A marker 	<p>Module #7</p> <ul style="list-style-type: none"> <input type="checkbox"/> Daily local weather information source that contains: <p>High and low temperatures for yesterday High and low atmospheric (sometimes called “barometric”) pressure for yesterday. Amount of precipitation for yesterday If you have a hard time finding this information, check the course website I described in the “Student Notes” at the beginning of the book. You will find links to websites that contain it.</p> <p>Module #8</p> <ul style="list-style-type: none"> <input type="checkbox"/> Eye protection such as goggles or safety glasses <input type="checkbox"/> Balloon <input type="checkbox"/> Dark room <input type="checkbox"/> A source that gives you the weather forecast for tomorrow <p>Module #9</p> <ul style="list-style-type: none"> <input type="checkbox"/> Eye protection such as goggles or safety glasses <input type="checkbox"/> At least four eggs <input type="checkbox"/> Two pieces of reasonably strong cardboard (like the cardboard found on the back of writing tablets) <input type="checkbox"/> Several books <input type="checkbox"/> A pair of scissors <input type="checkbox"/> A large tray or cooking sheet <input type="checkbox"/> Newspapers or paper towels <input type="checkbox"/> Kitchen table <input type="checkbox"/> A large (at least 21 cm by 27 cm), heavy book <input type="checkbox"/> A small (about 3 cm by 3 cm) piece of paper <input type="checkbox"/> A stopwatch (must read hundredths of a second) <input type="checkbox"/> A chair or small stepladder <input type="checkbox"/> A ball or rock (something heavy so that air resistance won’t be a factor) <input type="checkbox"/> A tape measure (A meter-stick or yardstick will work, if you do not have a tape measure.) 	<p>Module #10</p> <ul style="list-style-type: none"> <input type="checkbox"/> Eye protection such as goggles or safety glasses <input type="checkbox"/> A coin <input type="checkbox"/> A 3-inch by 5-inch index card (note that I listed the units) <input type="checkbox"/> A small glass (like a juice glass) <input type="checkbox"/> A raw egg <input type="checkbox"/> A hard-boiled egg <input type="checkbox"/> Aluminum pie pan <input type="checkbox"/> A pair of scissors <input type="checkbox"/> A marble or other small ball <input type="checkbox"/> An unfinished board that is at least 2 feet long <input type="checkbox"/> A block eraser <input type="checkbox"/> An ice cube <input type="checkbox"/> A small block of wood <input type="checkbox"/> A relatively flat rock <input type="checkbox"/> Sandpaper <input type="checkbox"/> Several books <input type="checkbox"/> A ruler <input type="checkbox"/> A plastic, 2-liter bottle (like the kind soda pop comes in) <input type="checkbox"/> A stopper that fits the bottle (It could be rubber or cork, but you cannot use the screw-on cap. It has to be something that plugs up the opening of the bottle but can be pushed out by a pressure buildup inside the bottle. Modeling clay can work as well. You could also try a large wad of gum, as long as the gum has dried out and has the texture of firm rubber.) <input type="checkbox"/> A cup of vinegar <input type="checkbox"/> Two teaspoons of baking soda <input type="checkbox"/> Aluminum foil <input type="checkbox"/> Four pencils
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<p>Module #11</p> <ul style="list-style-type: none"><input type="checkbox"/> Eye protection such as goggles or safety glasses<input type="checkbox"/> A mechanical pen<input type="checkbox"/> A black marker<input type="checkbox"/> Thin string or thread (preferably white)<input type="checkbox"/> Five metal washers, all the same size<input type="checkbox"/> Stopwatch<input type="checkbox"/> Scissors<input type="checkbox"/> A soft seat cushion from a couch (A soft bed will work as well.)<input type="checkbox"/> A bowling ball (A heavy rock will work as well.)<input type="checkbox"/> A marble<input type="checkbox"/> Two balls (Baseball-sized balls are best, but any will do.)<input type="checkbox"/> Two people to help you<input type="checkbox"/> A large, open space <p>Module #12</p> <ul style="list-style-type: none"><input type="checkbox"/> Eye protection such as goggles or safety glasses<input type="checkbox"/> Three balloons (Round balloons work best, but any kind will do.)<input type="checkbox"/> Thread<input type="checkbox"/> Cellophane tape<input type="checkbox"/> A clear glass<input type="checkbox"/> A plastic lid that fits over the glass. This lid can be larger than the mouth of the glass, but it cannot be smaller. The top of a margarine tub or something similar works quite well.<input type="checkbox"/> A paper clip<input type="checkbox"/> Aluminum foil<input type="checkbox"/> A pair of pliers<input type="checkbox"/> A 1.5-volt battery (Any AA-, C-, or D-cell battery will work. Do not use any battery other than one of those, though, because a higher voltage can make the experiment dangerous.)<input type="checkbox"/> Scissors <p>Module #13</p> <p>There are no experiments in Module #13.</p>	<p>Module #14</p> <ul style="list-style-type: none"><input type="checkbox"/> Eye protection such as goggles or safety glasses<input type="checkbox"/> Plastic wrap<input type="checkbox"/> Scissors<input type="checkbox"/> Tape<input type="checkbox"/> Candle (It needs to be either in a candleholder or able to stand up securely on its own.)<input type="checkbox"/> Match<input type="checkbox"/> Plastic 1-liter or 2-liter bottle (the kind soda pop comes in)<input type="checkbox"/> Large pot<input type="checkbox"/> Wooden spoon<input type="checkbox"/> Large bowl<input type="checkbox"/> Rice<input type="checkbox"/> Two medium-sized rocks<input type="checkbox"/> A person to help you<input type="checkbox"/> A stopwatch<input type="checkbox"/> A 250-meter stretch of sidewalk, pavement, gravel road, or lawn that is relatively straight<input type="checkbox"/> A tape measure, meter-stick, or yardstick<input type="checkbox"/> Water<input type="checkbox"/> Glass or plastic bottle (A glass bottle is best, and 2-liter is the ideal size. It must have a narrow neck. A jar will not work well.)<input type="checkbox"/> A car with a horn and a parent to drive the car<input type="checkbox"/> A straight street (It could be the one you live on, but it might work better to find one away from peoples' homes.)<input type="checkbox"/> Eye protection such as goggles or safety glasses<input type="checkbox"/> If you have access to a stringed instrument such as a violin, guitar, cello, or banjo, use it for this experiment. If you do not have access to such an instrument, you will need:<ul style="list-style-type: none"><input type="checkbox"/> Rubber band<input type="checkbox"/> Plastic tub (like the kind that margarine or whipped cream comes in)	<p>Module #15</p> <ul style="list-style-type: none"><input type="checkbox"/> Eye protection such as goggles or safety glasses<input type="checkbox"/> A flat pan, like the kind you use to bake a cake<input type="checkbox"/> A flat mirror, the mirror can be very small, but it needs to be flat. You can always tell if a mirror is flat by looking at your reflection in it. If the image you see in the mirror is neither magnified nor reduced, the mirror is flat.<input type="checkbox"/> A sunny window (A flashlight will work, but it will not be as dramatic.)<input type="checkbox"/> Five plain white sheets of paper<input type="checkbox"/> Water<input type="checkbox"/> A pen<input type="checkbox"/> A protractor<input type="checkbox"/> A ruler<input type="checkbox"/> A flashlight<input type="checkbox"/> Black construction paper or thin cardboard<input type="checkbox"/> Tape<input type="checkbox"/> A dark room<input type="checkbox"/> A square or rectangular glass or clear plastic pan (If you have a flat bottle, it will work as well. It just needs to be something with clear, flat sides that can hold water.)<input type="checkbox"/> Milk<input type="checkbox"/> Spoon<input type="checkbox"/> Quarter<input type="checkbox"/> Bowl that is reasonably deep and not transparent<input type="checkbox"/> Pitcher or very large glass to hold the water<input type="checkbox"/> A bright red marker (A crayon will also work, but a marker is better.) <p>Module #16</p> <ul style="list-style-type: none"><input type="checkbox"/> Balloon<input type="checkbox"/> A marker (You need to be able to write on the balloon with the marker.)
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