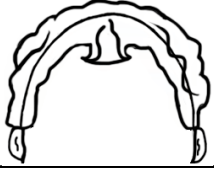

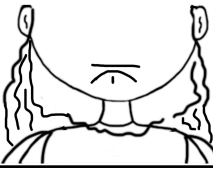
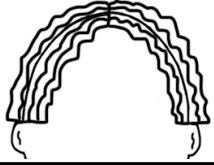


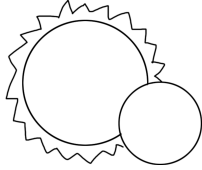
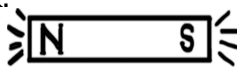

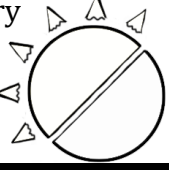

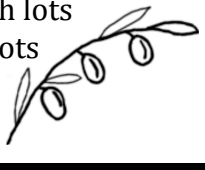




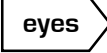

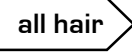







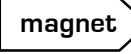

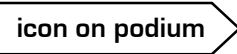

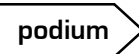





Lesson # 1: Crosscutting Concepts in Science

<p>1. Scientists observe, question, investigate, and seek to understand our universe. Explanations and descriptions often require empirical data.</p> <p>Empirical means...</p>	<p>2. Science gives us a language to communicate information about phenomena and patterns.</p> <p>Macroscopic to microscopic means...</p>	<p>3. Patterns can demonstrate a cause-and-effect relationship. Causation means a caused b.</p> <p>Which phenomena below demonstrate causation?</p>
<p>evidence-based.</p> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 10px;">hair</div>  </div>	<p>theories to data.</p> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 10px;">features</div>  </div>	<p>Every time I wash my car, it rains.</p> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 10px;">beard/cloak</div>  </div>
<p>abstract.</p> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 10px;">hair</div>  </div>	<p>very large to very small.</p> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 10px;">features</div>  </div>	<p>Helium rises so my helium balloon floats.</p> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 10px;">beard/cloak</div>  </div>
<p>4. Scientific data sometimes shows a correlation or association between observations or phenomena.</p> <p>Which events demonstrate a correlation?</p>	<p>5. Causation – a clear link showing something directing causes something else to occur.</p> <p>Find an example of causation below.</p>	<p>6. Correlation - a relationship that you see between two factors or conditions that may appear to be related.</p> <p>Find an example of a correlation below.</p>
<p>The more you study, the better your grades.</p> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 10px;">eclipse icon</div>  </div>	<p>I didn't step on any cracks in the sidewalk, so my mom didn't break her back.</p> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 10px;">magnet</div>  </div>	<p>I think waffles taste better with melted butter and blueberries.</p> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 10px;">olives</div>  </div>
<p>Combining 2 primary colors results in a secondary color.</p> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 10px;">eclipse icon</div>  </div>	<p>Pushing the brake made the car stop.</p> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 10px;">magnet</div>  </div>	<p>People who watch lots of television eat lots of junk food.</p> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 10px;">olives</div>  </div>
<p>7. <i>My dog barks for a few minutes every night. My neighbor always takes an evening walk.</i></p> <p>Do these events show causation or correlation?</p>	<p>8. <i>Grandma drinks fresh orange juice almost every morning and she is rarely sick.</i></p> <p>Do these phenomena show causation or correlation?</p>	<p>9. <i>My brother is allergic to wool. If he wears something made with wool, he gets a rash.</i></p> <p>Is this an example of causation or correlation?</p>
<p>causation</p> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 10px;">on podium</div>  </div>	<p>correlation</p> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 10px;">scientist</div> <div style="text-align: center;"> <p>Thales of Miletus</p> </div> </div>	<p>causation</p> <p>I replaced superstition with science.</p> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 10px;">Big Idea</div> </div>
<p>correlation</p> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 10px;">on podium</div>  </div>	<p>causation</p> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 10px;">scientist</div> <div style="text-align: center;"> <p>Hippocrates</p> </div> </div>	<p>correlation</p> <p>I created the physician's oath.</p> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 10px;">Big Idea</div> </div>

Lesson 1

<p>10. Scientific explanations can be revised and improved.</p> <p>TRUE or FALSE? </p>	<p>11. The term theory, as used in science, refers to a system of ideas intended to explain or illustrate general principles.</p> <p>Find an example of theory, as used in science.</p>	<p>12. To be a scientific theory, a theory must be tested a large number of times, by many different scientists in many different places.</p> <p>Scientific theories are...</p>
<p>That's FALSE. Once a theory has been around for 100 years, it becomes a scientific fact.</p> <p> Color: light brown</p>	<p>It's my theory that horses are smarter than dogs.</p> <p> Color: green</p>	<p>tested explanations based on observable events.</p> <p> Color: black</p>
<p>TRUE. New empirical data and/or technological design can reveal new insights.</p> <p> Color: gray</p>	<p>Germ theory states that some diseases are caused by germs.</p> <p> Color: brown</p>	<p>opinions based on guesses and the latest news.</p> <p> Color: red</p>
<p>13. A scientific theory in one branch of science must hold true in all of the other branches of science. The theory that all matter is made up of atoms therefore, must be true in...</p>	<p>14. System: a collection of interdependent parts enclosed within a defined boundary. There are natural and human-made (designed) systems.</p> <p>Find a true statement.</p>	<p>15. <i>All of the living things in a given area, interacting with each other, and also with their non-living environments</i></p> <p>That is the definition of...</p>
<p>astronomy, physiology, botany, but not herpetology.</p> <p> Color: green</p>	<p>The respiratory system mainly moves nutrients in the body.</p> <p> Colors: orange and black</p>	<p>a habitat.</p> <p> Color: blue</p>
<p>physics, biology, chemistry, and cosmology.</p> <p> Color: red</p>	<p>Ulna, radius, and mandible are all parts of the skeletal system.</p> <p> Colors: yellow and gray</p>	<p>an ecosystem.</p> <p> Color: pink</p>
<p>16. In science, a hypothesis is an idea or explanation that can be measured through study and experimentation.</p> <p>Find an example of a hypothesis below.</p> 	<p>17. In science, a law is a phenomenon of nature that has been shown to always occur under certain conditions.</p> <p>Find a true statement below.</p>	<p>18. Scientific relationships can be represented with math by revealing and relating links between a hypothesis and the data that is collected.</p> <p>Find a true statement below.</p>
<p>Ice cream melts faster than frozen yogurt.</p> <p> Color: black</p>	<p>If a hypothesis is proven, it becomes a theory. If the theory lasts, it becomes a law.</p> <p> Colors: orange & black</p>	<p>A good scientist is always a good mathematician.</p> <p> Color: orange</p>
<p>Skateboards are better than scooters.</p> <p> Color: orange</p>	<p>Laws often describe an observation, without saying how or why the phenomenon exists.</p> <p> Colors: brown & green</p>	<p>Math is needed to find out the gravitational force that the Earth has on the moon.</p> <p> Color: green</p>