

# Mining for Chocolate Gems

## Simple STEM Activities You Can Do at Home

<b>Purpose:</b>	The purpose of this activity is for students to investigate different attributes of rocks and understand why the mining of rocks and minerals is important. .
<b>Standard:</b>	<p><b>S3E1. Obtain, evaluate, and communicate information about the physical attributes of rocks and soils.</b></p> <p>a. Ask questions and analyze data to classify rocks by their physical attributes</p> <p><b>S6E6. Obtain, evaluate, and communicate information about the uses and conservation of various natural resources and how they impact the Earth.</b></p> <p>a. Ask questions to determine the differences between renewable/sustainable energy resources and nonrenewable energy resources (examples: nuclear: uranium, fossil fuels: oil, coal, and natural gas), and how they are used.</p>
<b>Materials:</b>	A chocolate chip cookie (Chips Ahoy work well), toothpick, paper plate or napkin
<b>Procedures:</b>	<ol style="list-style-type: none"> <li>1. Observe your chocolate mine and check for chocolate gems.</li> <li>2. Using your toothpick, carefully excavate (remove) as many chocolate gems as possible. One large chocolate gem is worth \$1000.</li> <li>3. Be as careful as possible not to damage the area surrounding your gems. The more damage that you cause, the more it will cost your mining company.</li> <li>4. After completing the mining process, calculate the total value of the chocolate gems that you removed. # of gems x \$1000 = Total value</li> <li>5. Have your teacher assign your degree of damage. Little damage - \$1000, Medium damage - \$3000, High damage - \$5000</li> <li>6. Subtract the damage costs from the value of the gems to determine your net profit with the mine.</li> <li>7. Return the cookie as close as possible to its natural state (then eat it if you want).</li> </ol>
<b>Science Behind It:</b>	<p><b>Rocks</b> are natural objects that are composed of solid crystals. Rocks are made of a mixture of <b>minerals</b>. <b>Minerals</b> are solid crystals with a definite chemical composition. Rocks and minerals that are precious or valuable are often called <b>gems</b>. Both rocks and minerals have different attributes (features) that are used to describe them including their color texture, luster, and hardness.</p> <p>When valuable rocks or minerals are discovered, a <b>mine</b> is often dug into the earth to remove these important materials. Mines can be constructed as series of deep holes or tunnels that are dug underground or they can be one giant hole that with lots of layers. To gain access to the valuable materials, it is usually necessary to remove other waste materials that are not of value to the miners.</p> <p>The building and operation of a mine often results in some negative impacts on the environment. This includes loss of habitat for plants and animals, erosion of the impacted land, and possible contamination of nearby soil, steams, and wetlands. As a result, mining should be done as carefully and protectively as possible and, after mining is complete, the land should be returned to as close to its natural state as possible.</p>
<b>Questions to Ask:</b>	<ol style="list-style-type: none"> <li>1. Choose a side and explain why you think the benefits of a mine outweighs the detriments or vice versa.</li> </ol>