Introduction

Soon it will be your mother's birthday, and you have decided to buy her a birthstone ring. You know your mother's birthstone is an emerald because she was born in May. When you visit a jewelry store, you discover a vast assortment of emerald rings. Some of the emeralds are set in gold, some in silver. Many of the emeralds have a deep and clear green color, while others have more interesting cuts that make the stone sparkle. You also notice that some of the rings are in your price range, whereas others are so expensive you do not even ask to have them taken out of the case. When you ask a salesperson why there is such a difference in emerald prices, she replies that the less expensive emeralds were created in the laboratory. How can you create an emerald in a laboratory? Why are natural emeralds and other gemstones so expensive? Why do some of the emeralds have a deeper green color? In this WebQuest, you'll find out the answers to these questions as you do some research into the nature of the minerals called gemstones.

Task

Your job in this WebQuest is to decide whether a gemstone created in a laboratory is the same as a gemstone that occurs naturally. You will have to find out how natural gemstones form and what their chemical, physical, and optical properties are. You will find out how natural gemstones are treated to correct their flaws or bring out their colors. You will research the different processes used to create gemstones in a laboratory. Then you will have to compare the prices and properties of created gemstones to those of naturally occurring gemstones and decide if created gemstones are the same as their natural counterparts.

Once you've done your research, you will make a decision about what kind of ring to buy your mother. You will have to prepare a statement in which you give your reasons for your choice. Your goal is to choose a beautiful emerald ring that will retain its value for a long time to come.
**Process**

Check out the Web sites below to help you decide what you think about the differences between natural gemstones and gemstones created in a laboratory. If a created gemstone has the exact same chemical and physical properties as a natural gemstone, can it be considered the same as a natural gemstone? If not, why not? Is a natural gemstone really "natural" if it has received treatment to enhance its color or correct tiny fractures? Should a jewelry store tell customers when they are looking at created rather than natural gemstones?

Now that you know more about gemstones, write a paragraph in which you state your preference for buying your mother a ring with a natural or a created gemstone. Justify your preference by discussing quality of the gemstone and what the value of the gemstone will be in the future. Be sure to support your preference with factual information from your Internet research.

**Resources**

Look at these Web sites to find the information that will enable you to make an informed decision about which type of emerald ring to purchase for your mother. Keep in mind that not all Web sites are written specifically for students. Some of what you read might be challenging.

Natural Gemstones Geologic Environment  

Crystals: More than meets the eye: Gems  
[http://www.yale.edu/ynhti/curriculum/units/1989/6/89.06.07.x.html](http://www.yale.edu/ynhti/curriculum/units/1989/6/89.06.07.x.html)

Electronic Gemstone Library  
[http://www.cigem.ca/510.html](http://www.cigem.ca/510.html)

Emerald  
[http://www.minerals.net/gemstone/gemstone/emerald/emerald.htm](http://www.minerals.net/gemstone/gemstone/emerald/emerald.htm)

Gemology: Physical, Chemical and Optical Properties  

Gemstone Enhancement Manual  
[http://www.cigem.ca/368.html](http://www.cigem.ca/368.html)

Emeralds and Gemstones: Treatment Methods  

Emeralds  
[http://www.emeralds.com/education/history.html](http://www.emeralds.com/education/history.html)
Geolite Gems and Jewelry
http://www.geolite.com/lab-grow.htm

Visit this site to see how emeralds are grown by the hydrothermal method.
http://www.gemsuite.com/gemstones/emeralds/created_emeralds.html

How are created or synthetic emeralds made?
http://jewelry.about.com/od/syntheticgemstones/Synthetic_Gemstones_Fact_About_Popular_Synthetic_Gems.htm

Evaluation

Read this rubric to determine how you will be scored in this WebQuest.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task</td>
<td>The task was not completed.</td>
<td>It appears that some effort was made to complete the task, but major ideas are missing.</td>
<td>The task was completed as assigned, but some of the rationale for the plan was faulty.</td>
<td>The task was completed with great attention to detail and thorough documentation.</td>
</tr>
<tr>
<td>Process</td>
<td>The process was not followed.</td>
<td>The research was complete, but the plan could have been better organized.</td>
<td>All the steps of the process were followed and the plan was good.</td>
<td>It is clear that much effort went into the project. The plan is very detailed.</td>
</tr>
<tr>
<td>Paragraph</td>
<td>Paragraph was not completed, or it appeared that little effort went into the project.</td>
<td>Paragraph was well researched but lacked some key features needed for accomplishing the task.</td>
<td>Paragraph and decision were well thought out and included arguments that were clearly supported by research.</td>
<td>Paragraph was organized and arguments were well supported. It is evident that much research went into the project.</td>
</tr>
</tbody>
</table>

Conclusion

In the process of completing this WebQuest, you've become informed about the availability of natural gemstones and how they are treated, how gemstones are created in the laboratory, and the differences between these types of gemstones. You have developed critical thinking skills as you have explored the different factors involved in this decision-making process. You have read information to answer key questions and formed an educated opinion. Finally, you have written a statement about your choice for a present for your mother. Would you purchase a gemstone for yourself? What kind of gemstone would you buy?