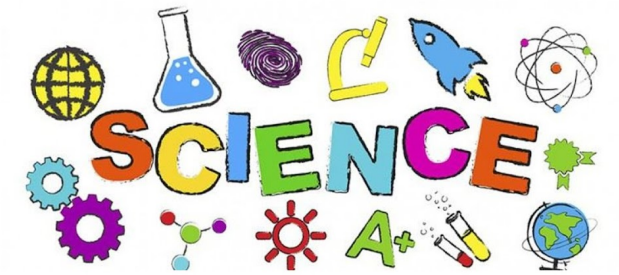
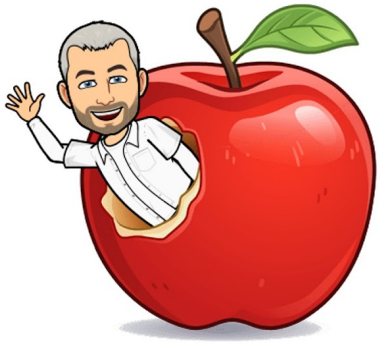




Minerals, Gems, & Rocks

What I Will Be Learning In This Mastery Badge:
In this mastery badge we will learn how matter is organized on the Earth forming minerals, rocks, and gems.

What This Packet Includes:
It is important that you complete all aspects of this packet so that you gain the knowledge and skills that we are working on.

I. **Discovering Lab**
A discovering lab is a fun, introductory lab, where we discover the knowledge on our own.

II. **Video Instruction**
You will watch a video presented by Mr. Bertoch, and answer questions about it.

III. **Literacy Practice**
Reading and writing are critical life skills, and also very important to science. You will read the assigned article and complete a writing prompt.

IV. **Applying Lab**
An applying lab is how you pass off the Mastery Badge. It serves as the quiz. It is a hands on demonstration that you have mastered the skills and content of this badge.

Key Things We Will Learn In This Mastery Badge

Some of the most important things we will learn in this mastery badge.

- What is a mineral?
- How many types of minerals are there?
- Minerals sometimes form gems.
- Minerals and gems combine to form rocks.
- Minerals, gems, and rocks are everywhere around us.

Name:_____ Date:_____

Discovering Lab

Learning Through Hands On Activities

Activity: Discovering Minerals, Gems, and Rocks

Directions: Follow the directions below.

Video Instructions Available For This Assignment. Watch this video to learn how to do this assignment, and why it is important.

Scan This QR Code To Watch Mr. Bertoch Give You Directions For This Assignment

Goal: To learn as much as you can about minerals, gems, and rocks.

Part 1: Creating A Mineral

A mineral is a pure substance

For this experiment, the mineral we will create (with an adult's help) is sugar syrup. **You must have an adult's help. As this experiment can burn you!** Under an adult's supervision, follow the directions below.

- Boil one cup of water.
- After bringing the water to a boil, slowly add 1 cup of sugar to the water, 1 tablespoon at a time.
- Continue adding sugar, until the entire mixture is thick like syrup.
- Then allow the syrup to cool for ten minutes.

Congratulations! You have created a mineral!

Not really. Sugar doesn't actually count as a mineral because it is organic. However, in all other aspects, it behaves just like a mineral. We will learn more about what makes a substance an actual mineral later on. For now, we will use it to represent minerals because it will react the same way in the rest of our experimentation.

Part 2: Creating A Gem

A gem forms when one or more minerals crystalize in a regular repeating pattern.

For this experiment, we are going to create a gem, using the mineral you made in your last experiment.

- After allowing your sugar mineral to cool for ten minutes, pour it into a glass jar. **Please be very careful. It might still be hot.**
- Take a pencil and weight (paperclips works great for this) and tie them together with a string that is just long enough to reach the bottom of your jar.
- Drop the weight and string in so that the weight just barely touches the bottom.
- Allow it to sit for several days and observe what happens. Then answer the questions below.

Congratulations! You have created a gem!

1. What did your mineral look like before it formed a gem?

2. What is a mineral?

3. What does your gem look like now that it has crystalized?

4. What is a gem?

Part 3: Creating A Rock

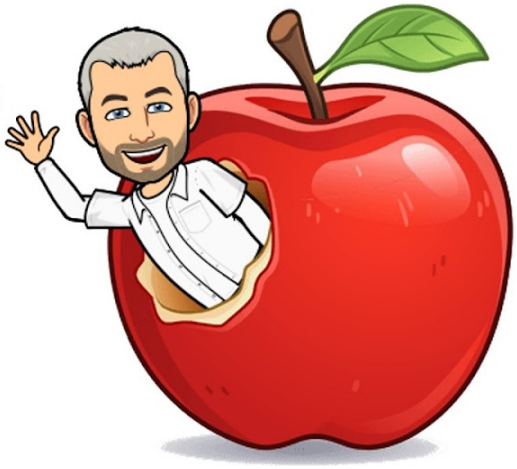
A Rock is made of two or more minerals or gems that do not have a repeating pattern.
For this experiment, we are going to use the gem you created in your last experiment to create a rock.

- Wait several days, until your gem has fully formed.
- Fill a bowl with chocolate chips.
- With an adult's supervision place the bowl into the microwave for 30 seconds.
- Stir and repeat until the chocolate chips are completely melted.
- Dip the gem you made in your last experiment into the chocolate, completely covering it.
- Allow the chocolate to harden.

Congratulations! You have created a geode, which is a type of rock.

1. How is a rock different than a gem?

2. Why do you think gems are often so much prettier than rocks?



Handsome Science Teacher One Take Videos

Now that you have completed the Discovering Lab let's watch the video that goes with it. In this video Mr. Bertoch will help connect the discoveries that you made during the lab to the broader concepts covered under this badge, and will also introduce the vocabulary that goes with these concept.

Take Your Time, Pause And Rewind As needed

You are not in a hurry! It is more important that you understand the concepts in this video than that you finish it quickly. Take your time. If you don't understand something, pause the video and use the Internet or other resources to look up the concept that has you confused.

When you finish this video, you should have a good understanding of the concepts that have been taught. If you find yourself confused, rewind, and rewatch.

The Video For This Mastery Badge Can Be Opened Using This QR Code

This Mastery Badge includes one video:

Watch The Assigned Science Video

Scan This QR Code To Open And Watch The Assigned Video For This Mastery Badge

Check Point

Let's make sure that you really did take your time and watch the video carefully! Remember that it is important to hold yourself accountable to a high standard and to take pride in your own success as a learner.

I watched the video carefully and paused to look up anything I didn't understand.

Recording Your Learning

On the next page, you will record your learning and connect it to things you already know.

Ten Things I Learned From This Video

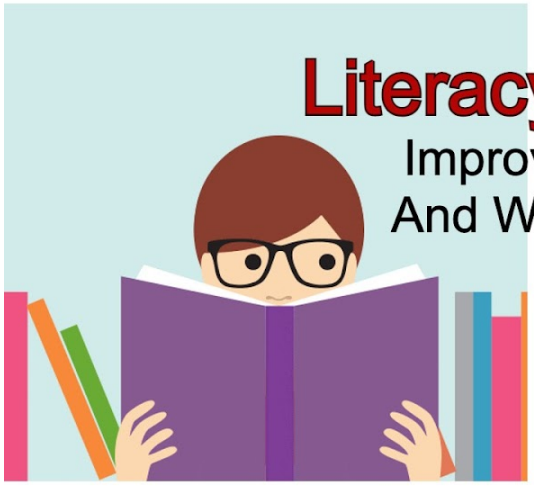
A powerful tool to help you retain what you learn is to take notes. Notes give you something that you can look back at later, to quickly remind your brain reinforcing the memories for the concepts you have learned. Record ten things that you learned or that you perhaps already knew that were discussed in this video.

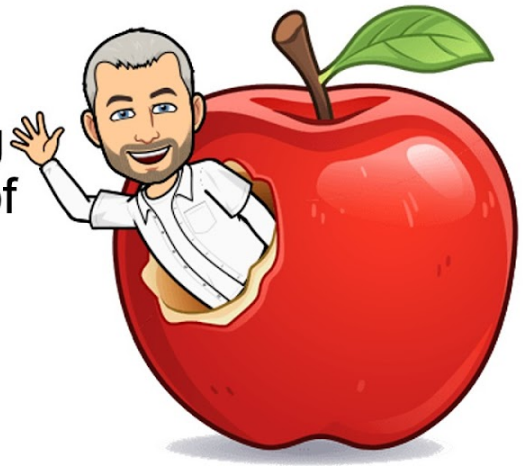
1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

Now, Let's Connect These New Concepts To Things You Already Knew

Another great way to help your brain retain new things is to connect these new concepts to other things that you already know. This gives your mind a place to store the new knowledge. Imagine that you are placing the new knowledge on a shelf in your brain next to facts that are already in there.

Write a paragraph explaining how the concepts taught in this video relate to things you already knew. There are no wrong answers. What are some things that you already knew that this video reminded you of?





Activity: Reading And Writing About The Formation of The Earth

Directions: Reading and writing are very important life skills. Good scientists must be able to learn through reading and communicate their own discoveries through writing.

Video Instructions Available For This Assignment. Watch this video to learn how to do this assignment, and why it is important.

Scan This QR Code To Watch Mr. Bertoch Give You Directions For This Assignment

1. **Practice Reading For Understanding**
   Read the article below **for understanding**. Reading for understanding means that you take your time and monitor your own learning. If you get to the end of a sentence and you do not remember or understand what you read, **re-read it.**

2. **Practice Writing To Communicate**
   Complete the writing prompt below. Do your very best to write clearly so that others will understand what you are saying. This means using correct spelling, grammar, and writing, taking your time to think about the best ways to clearly communicate to others the main ideas that you are trying to get across to them.

Article:

Read The Assigned Article Carefully For Understanding.
https://handsomescienceteacher.com/Online-science-classes-kids/where-do-gems-come-from/

Scan This QR Code To Open And Read The Article That Goes With This Mastery Badge

Check Point

Let’s make sure that you really did read for understanding! Remember that it is important to hold yourself accountable to a high standard and to take pride in your own success as a learner.

I Read For Understanding. I did not skim the article. I understood the material that the article discussed.

Quiz Time

Complete the quiz at the end of the article and post your score in the box below. Your goal is to get at least 75% on the quiz. Did you accomplish this goal?

%

Now Let’s Write To Communicate

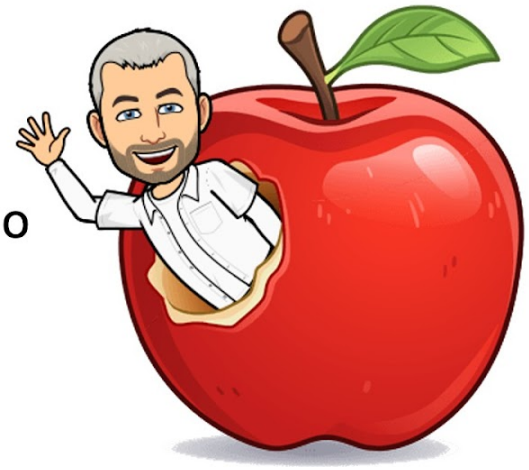
Remember that when you write to communicate you are taking your time, and explaining the topic in a detailed and concise way. Don’t rush! You are not in a hurry. Think about what you are going to say, and plan how you will say it. So that someone else who reads your paragraphs will understand them easily.

Writing Prompt: Write two paragraphs explaining how gems form.

Name:_____ Date:_____

Applying Lab

Proving That We Can Do It Ourselves



Activity: Creating A Textbook Diagram

Directions: Follow the instructions below to create a textbook diagram showing how minerals combine to form gems and rocks.

Video Instructions Available For This Assignment. Watch this video to learn how to do this assignment, and why it is important.

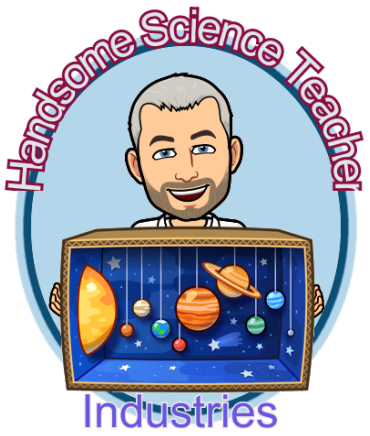
Scan This QR Code To Watch Mr. Bertoch Give You Directions For This Assignment

Goal: To demonstrate your understanding of how minerals combine to form gems and rocks.

Create A Diagram, Showing How Minerals Combine To For Gems & Rocks.
Include each of the following.

- Picture of at least two minerals forming in magma.
- Picture of the magma cooling, and of the minerals crystalizing into gems.
- Picture of some of the minerals and gems combining to form rocks.
- Labels and descriptions, explaining what is happening.
- Make sure your diagrams are in color.
- Make sure all the artwork is your original work.

Complete This Assignment On A Separate Blank Piece of Paper or Within Computer Software.



Congratulations! You Have Completed The Entire Mastery Badge
You have worked really hard to earn this mastery badge. More importantly, you have worked hard to earn your knowledge!

Time To Evaluate Your Work
Check each of the following to evaluate your work:

1. Did you do every assignment?
2. Did you read the assigned article?
3. Did you watch the assigned video?
4. Did you answer all the questions using complete sentences?
5. Are your answers accurate?

My Self-Evaluation:
Based on the criteria listed above, I believe I have passed off this Mastery Badge because… (Be detailed ans specific)

Mastery Badge Counselor Evaluation:
I have reviewed this student's work. Based on the criteria listed above I hereby certify that they have passed off the Mastery Badge because… (Be detailed and specific) Note: Any adult may serve as a Mastery Badge Counselor, so long as they are committed to ensuring the highest standards of excellence.

Student's Signature	**Date**	**Signature of Mastery Badge Counselor**	**Date**

Certificate For Your Homeschool Records

The following certificate which has been awarded through self-evaluation by the student, and also certified by a mastery badge counselor proves that the student listed thereon has completed all the work and has mastered all the concepts for the specified topic.

Keep this on file as evidence of your successful completion of this topic.
If audited by the State, these certificates stand as evidence that you have worked on and successfully completed a rigorous science curriculum.