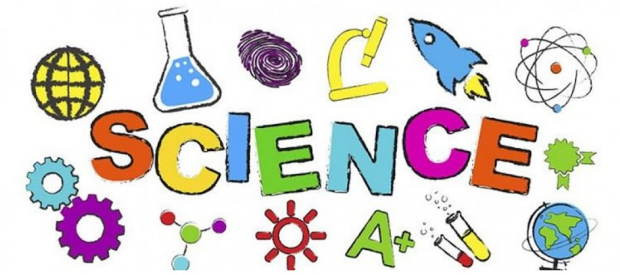


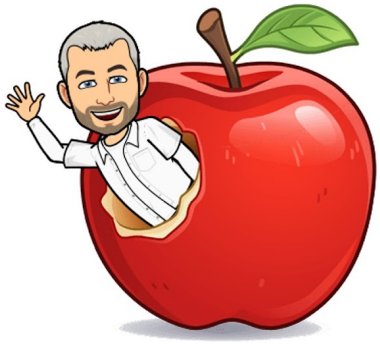


Plate Tectonics

What I Will Be Learning In This Mastery Badge:
In this mastery badge we will learn about the structure of the Earth's crust and how it is broken into plates. We will also look at boundaries between plates and how they interact with each other.

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:

- The Crust of The Earth
- Plates
- Subduction Zones & Trenches
- Mid-Oceanic Rifts / Ridges

Name:_____ Date:_____

Discovering Lab

Learning Through Hands On Activities

Activity: Discovering Plate Tectonics

Directions: Follow the steps below to discover how rocks are alike and how they are different.

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

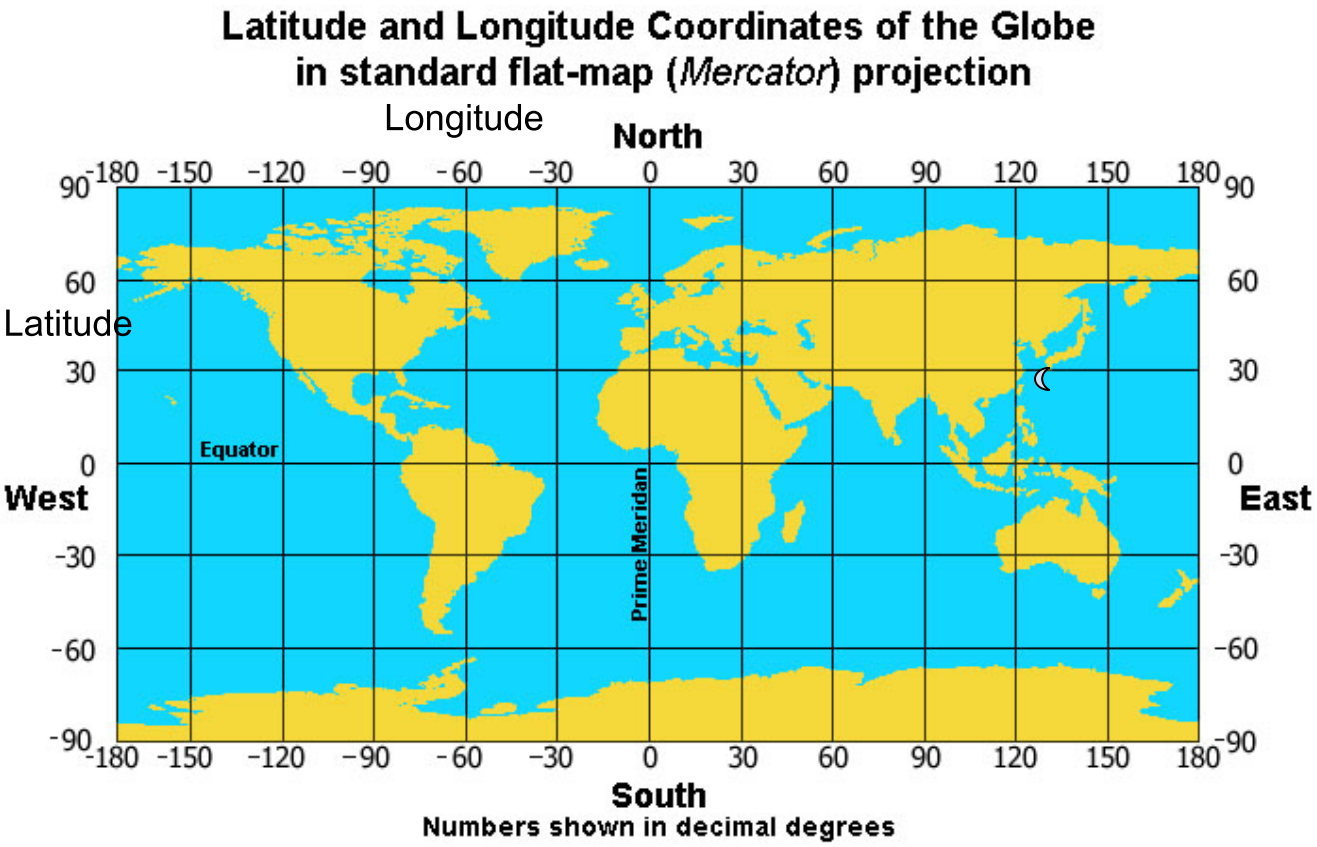
Goal: To learn as much as you can about plate tectonics.

Collecting And Analyzing Data About Volcanic Eruptions

Scientists collect and analyze data to identify patterns and better understand how things work. For this lab you will need to collect data about volcanic eruptions and plot your data on the map that is provided on the next page.

There are many excellent websites that track volcanic eruptions. Use a search engine to find a reliable website that keeps track of volcanic eruptions around the world.

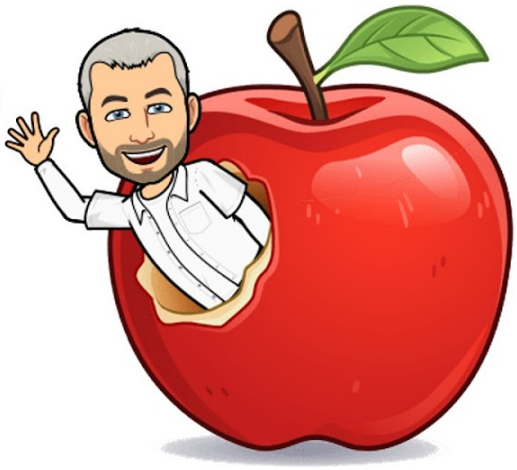
Plot the 30 most recent eruptions on the map



Analyze Your Data

Now that you have collected your data it is important to examine it, looking for any patterns that might be present. There are not wrong answers here. What matters is only that the answer you give is supported by the data you collected.

What patterns do you see in your data? In other words, what pattern is there on the map?



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

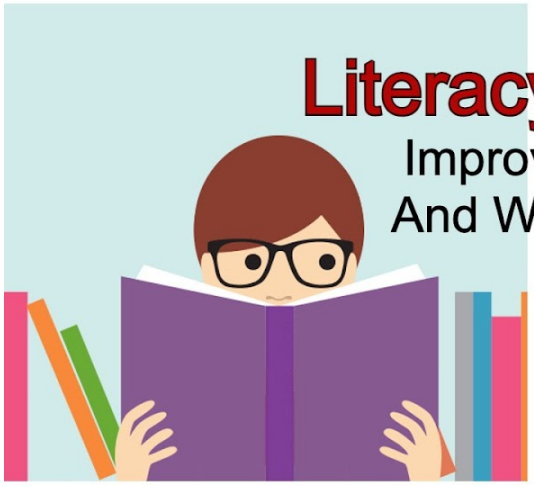
A powerful tool to help you retain what you learn is to take notes. Notes give you something that you can look back at later, to quickly remind your brain reinforcing the memories for the concepts you have learned. Record ten things that you learned or that you perhaps already knew that were discussed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

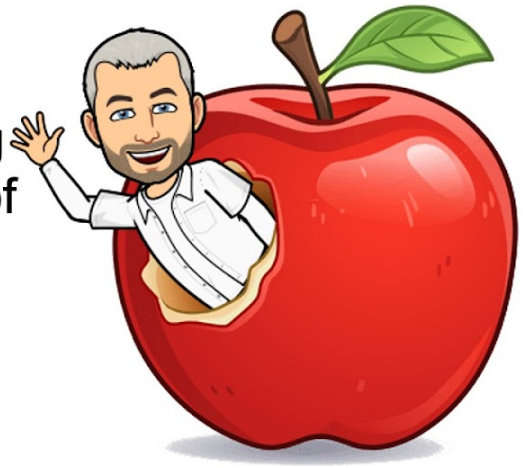
1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

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 Biomes

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/plate-tectonics/

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

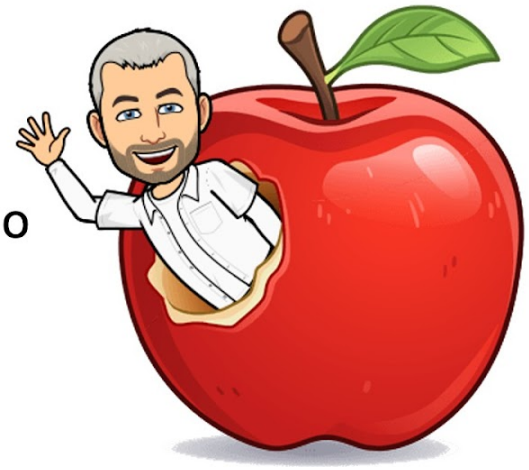
Remember that when you write to communicate you are taking your time, and explaining the topic in a detailed and concise way. Don't rush! You are not in a hurry. Think about what you are going to say, and plan how you will say it. So that someone else who reads your paragraphs will understand them easily.

Writing Prompt: Write two paragraphs in your own words describing how plates move, and each type of plate boundary.

Name:_____ Date:_____

Applying Lab

Proving That We Can Do It Ourselves



Activity: Applying Plate Tectonics

Directions: In this lab, you are going to recreate tectonic plates using graham crackers.

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 how plates move.

Take a single graham cracker. Place it on a table or desk. Keeping it flat on the table, try to pull it apart in opposite directions.

1. Explain what happened to your cracker when you pulled it apart.

2. Why do you think your cracker did this?

3. How does this relate to the crust of the Earth?

4. What kind of boundary is created when the crust pulls apart?

Take two graham crackers and lay them next to each other on a flat surface. Keeping them flat against the table or desk, push them toward each other.

5. Explain what happened to your crackers when you pushed them together.

6. Why do you think your crackers did this?

7. How does this relate to the crust of the Earth?

8. What kind of boundary is created when two tectonic plates collide?

Final Questions:
Answer each question using complete sentences.

1. **Where are rifts (also called ridges) located?**

2. **Explain in detail how rifts (ridges) form. Explain what rifts do to the crust.**

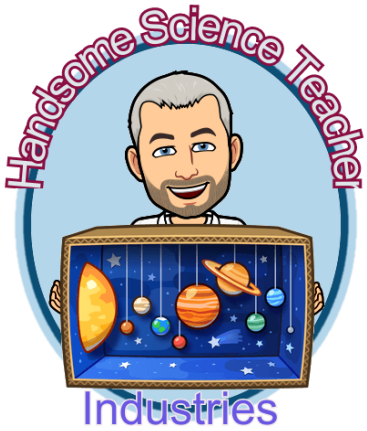
3. **Where are trenches located?**

4. **Explain in detail how trenches form. Explain what trenches do to the crust.**

5. **Which type of crust is denser? Which type is less dense?**

6. **Which type of crust is older? Which type is younger?**

7. **What is a tectonic plate? Are they under the crust or part of the crust?**



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.