



Mixtures A STEM Lab

What I Will Be Learning In This Mastery Badge:

In this mastery badge we will learn about how different types of compounds are mixed together to create mixtures. We will learn to identify various mixtures and to distinguish between elements, compounds, and mixtures.

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:

- Review Elements
- Review Compounds
- What Is a Mixture?
- Types of Mixtures
- Examples of Mixtures

Name: _____

Date: _____



Discovering Lab

Learning Through Hands On Activities



Activity: Discovering Mixtures

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 mixtures

Create A Mixture

Using cereal, candy, legos, or anything else, create a mixture. To do this, simply put different types, colors, and shapes into the same container. When we mix different things together we call the substance that forms a mixture.

Draw A Picture

Create a picture of your mixture showing what it looks like.

Observe Your Mixture

Write a few sentences describing what your mixture looks like. Be detailed.

Atoms combine to form new compounds which are made up of molecules. However, molecules can be mixed in the same container without combining. Notice: Did the objects you mixed together combine to form any new substances, or did they remain as separate pieces of cereal, legos, skittles, etc.

Try To Explain What You Observed:

Scientists sometimes have to explain difficult things to others. See if you can explain what you have discovered about mixtures. How are they like compounds? How are they different? It is okay if you need to refer to online articles, or books to help you clarify your thoughts. Research is very important in science.

Final Questions:

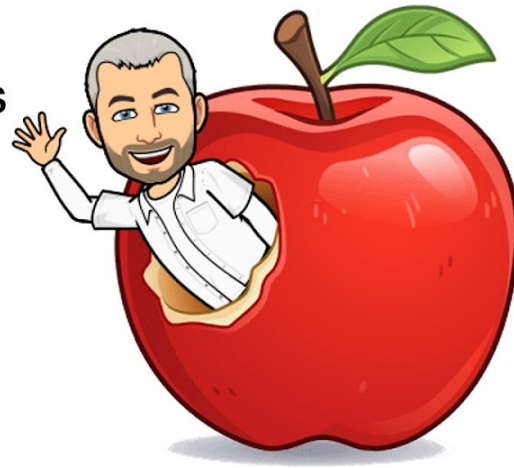
1. In your own words explain what an element is.

2. Explain how elements combine to form compounds.

3. Explain how compounds combine to form mixtures.

Video Instruction

Reviewing The Teacher's Instruction At My Own Pace



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.

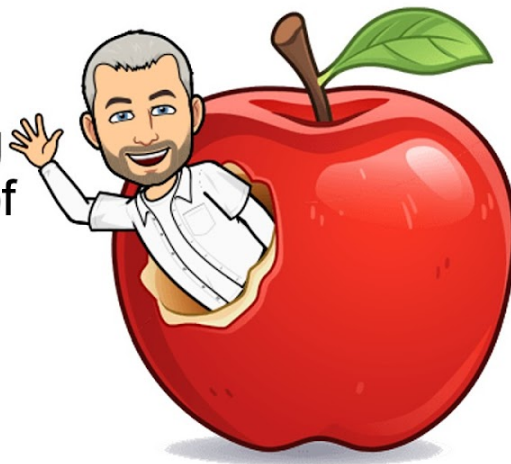
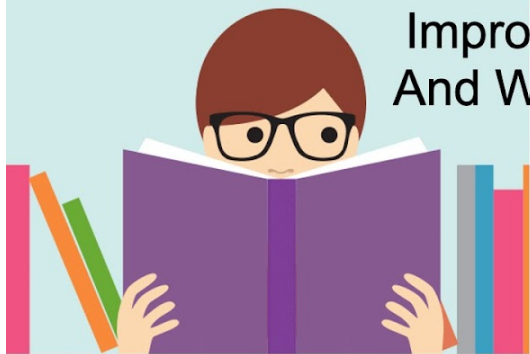
Now, Let's Connect These New Concepts To Things You Already Knew

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?

Literacy Practice

Improving Our Reading
And Writing In Search of
Knowledge



Activity: Reading And Writing About Atoms

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/mixtures/>

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 describing what a mixture is. Share a few examples of different kinds of mixtures from the article.

Name: _____

Date: _____



Applying Lab

Proving That We Can Do It Ourselves



Activity: Creating And Separating Mixtures

Directions: Follow the instructions below to create and separate mixtures.



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 create and separate mixtures.

Creating And Separating Three Mixtures

In this lab you are going to create three mixtures. To do this you will need water, sand, salt, and sugar.

Step 1. Pour water into three cups.

Step 2. Add a generous amount of salt to one of these cups, and label it with the word 'Salt.'

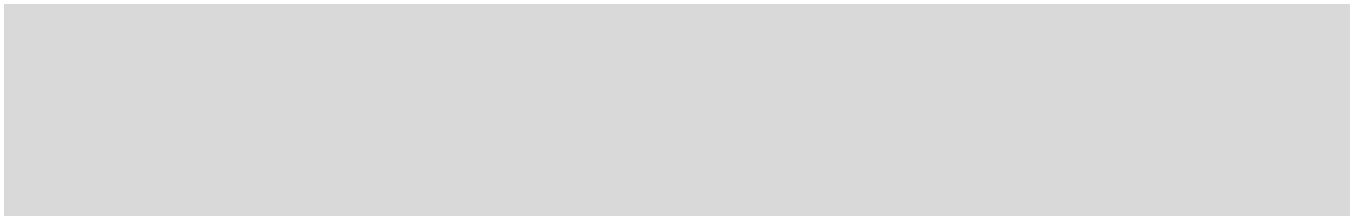
Step 3. Add a generous amount of sugar to a second cup and label it 'Sugar'.

Step 4. Add a generous amount of sand to a third cup, and label it 'Sand'.

Problem:


In the video, we learned that mixtures can be separated physically, without having to do any chemical reactions to them. We just created three mixtures. Sugar water, saltwater, and sand water. What could you do to separate your mixtures back to their original ingredients?

How can you remove sand from water? How can you remove the salt? How can you remove the sugar? There are no wrong answers here. Scientists don't always have someone to tell them how to do an experiment. This is your opportunity to come up with your own ideas.

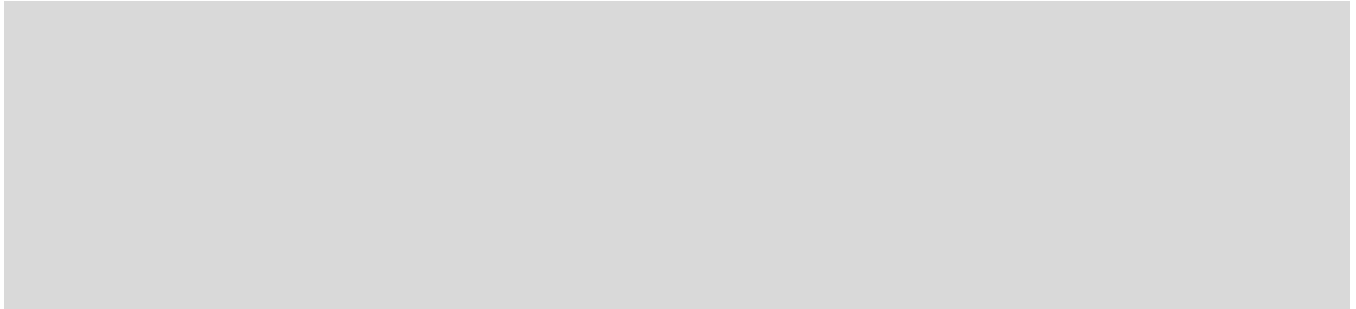


Try Your Best:

Try to remove the sugar, salt, and sand from your water. Describe what happened below.



Draw a diagram showing how you removed each of the substances from the water.

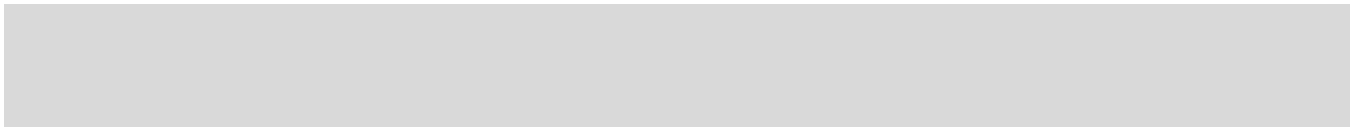
**Hints:**

Sometimes it is helpful to reverse the problem and think about it from another angle. Instead of trying to figure out how to remove the salt or sand from the water, consider how you might remove the water from the salt or the sugar.

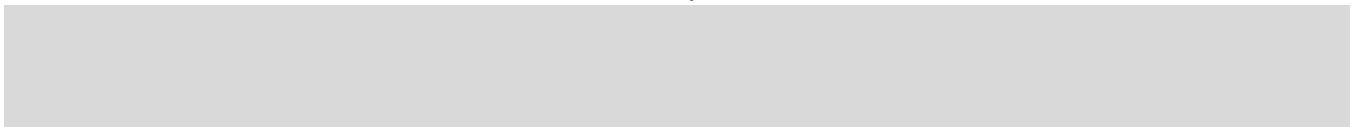
Final Questions:

Answer each of the following final questions using complete sentences.

1. Why are some mixtures harder to separate than others?

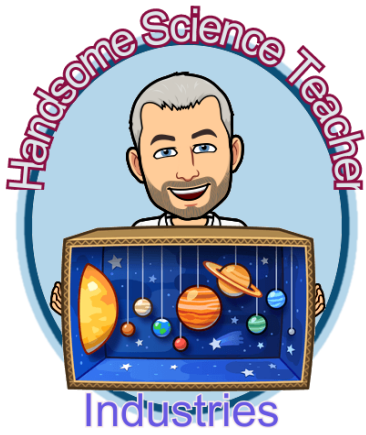


2. What is the difference between a mixture, a compound, and an element?



3. What are the different kinds of mixtures? Which are homogeneous? Which are heterogeneous?





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 and 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.

