



Energy Can Be Changed From One Form To Another

What I Will Be Learning In This Mastery Badge:

In this mastery badge we will discover how energy changes from one type of energy to another.

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:

- Though energy cannot be created nor destroyed, it does change from one type of energy to another.
- Sometimes it might seem like energy has been lost, but really it has just changed forms.
- Sometimes it might seem like energy is created, but really it has just changed forms.

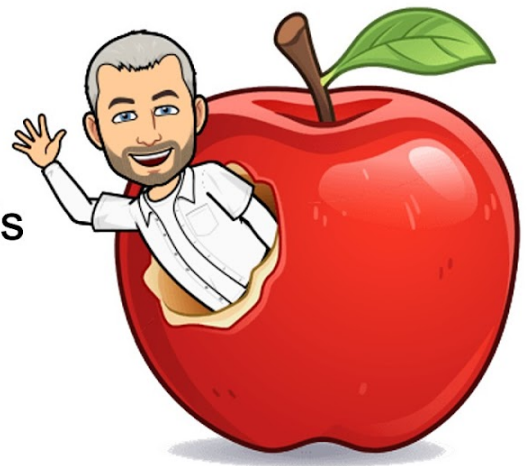
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Discovering Lab

Learning Through Hands
On Activities



Discovering How Energy Changes

Making your own discoveries.

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



Energy Can Change From One Form To Another

Energy takes many different forms and it can change from one form to another. For example, the energy stored as calories in a log can be converted into heat and light by burning the log.



Converting Calories Into Heat

As living things, we need a constant supply of energy. We obtain this energy through the food we eat, and we use the energy in a lot of different ways. For example, our bodies produce heat to keep us warm. Our nervous system produces electricity. Some living things can even produce their own light.

In this lab, we will be converting some of the calories stored in your body into electricity, mechanical energy, and then finally into heat.

Supplies:

For this lab you will need a small thermometer.



Your Nervous System Uses Electricity

The movements of your body are controlled by your brain and your brain runs on electricity. Crazy I know, but also true. Every thought you think, and every movement you make are possible because your brain produces a small amount of electricity.

Let's Make Some Internal Electricity!

This part of the lab is easy! All you have to do is think. Think of anything you want. Imagine a sunset, or recall a memory, or think about what you are going to do this afternoon. Good job! These thoughts are literally converting the food you ate from your last meal into actual electricity.

Sharks Can Sense This Electricity

Did you know that sharks can sense this electricity, and some animals, like the electric eel, can use the electricity from their bodies to shock and even kill other animals?

Now Let's Create Mechanical Energy

So far, we have converted your calories into electricity. We can also make mechanical or kinetic energy. Mechanical energy is the energy of motion or movement.

Wave your hands around, dance, run, skip! All of these actions are converting the calories from the food you ate during your last meal into mechanical energy.

Let's Create Some Heat Energy

Remember that we can measure energy. Before we do the next part of this lab, let's take a measurement.

Hold the palms of your hands together and place a thermometer between them. Record the temperature in the box provided.

Now rub your hands together as fast as you can for 60 seconds. Then place the thermometer between your hands again and record the temperature.

How did the temperature change? Be detailed.

We know that energy cannot be created. Where did the energy come from to create the heat in your hands? Be as detailed as possible.

Video Instruction

Reviewing The Teacher's
Instruction At My Own
Pace



Handsome Science Teacher One Take Videos



Good Job On Completing The Discovering Lab!
Now let's connect your discoveries to the vocabulary.
Mr. Bertoch has created a video for you to watch.

Take Your Time, Pause And Rewind As needed
You are not in a hurry! It is more important that you understand the video than that you finish it quickly. Take your time. If you don't understand something, pause the video and discuss with an adult.

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

I watched the video carefully, and understood what Mr. Bertoch taught me.
(If not, that is okay. Watch the video again, and discuss it with an adult)

What I Learned From This Video



One very powerful way to help yourself remember what you learned from the video is to summarize it in your own words and in the form of pictures.

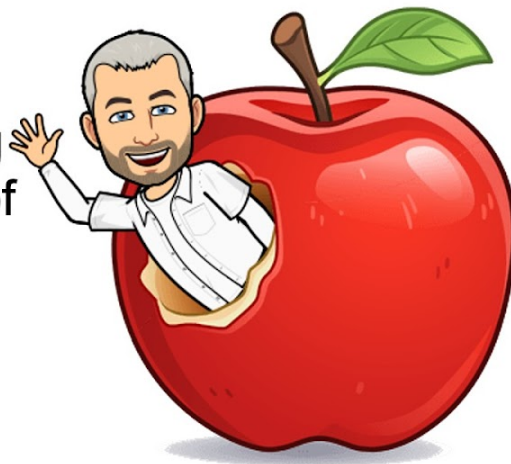
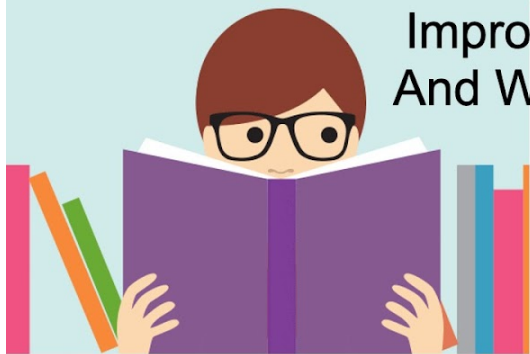
Write one sentence in your own words explaining what you learned from the video. Then draw a picture of something you learned from the video.

What I learned from this video (One Sentence):

A picture of something I learned from the video:

Literacy Practice

Improving Our Reading
And Writing In Search of
Knowledge



Activity: Reading And Writing



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.



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.



Read The Assigned Article Carefully For Understanding.

<https://handsomescienceteacher.com/Online-science-classes-kids/energy-can-be-changed-from-one-form-to-another/>

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

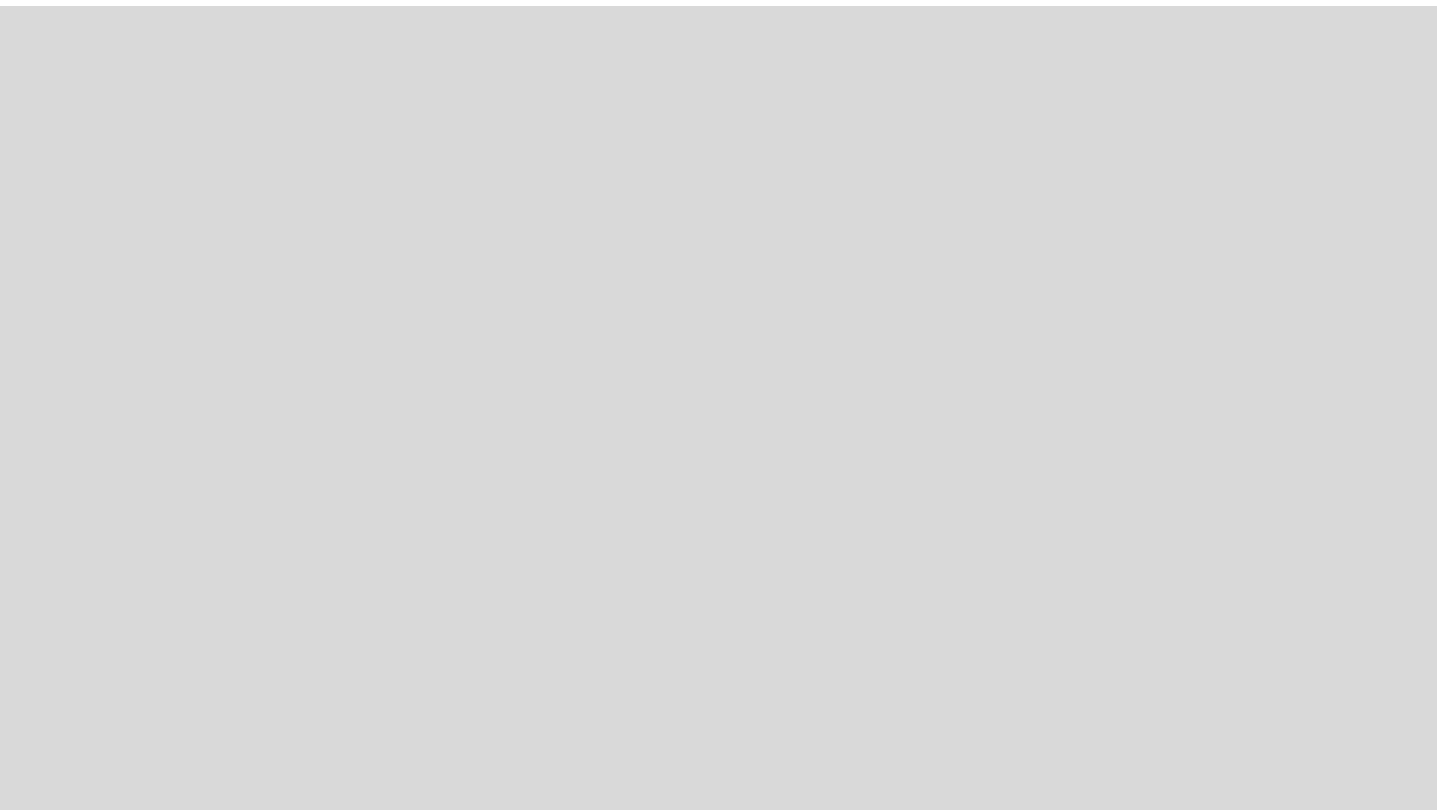
Complete the quiz at the end of the article and post your score in the box below. Your goal is to get at least 75% on the quiz. Did you accomplish this goal?

%

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 sentences will understand them easily.

Writing Prompt: Write two sentences describing how energy can be changed from one form to another.



Name: _____

Date: _____



Applying Lab

Proving That We Can Do
It Ourselves



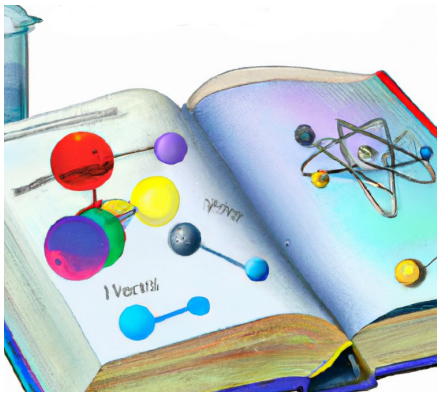
Applying Energy Conversion

Applying What We Have Learned.

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



Writing A Textbook Article



You have been hired by Acme Textbook Incorporated to write articles for an upcoming fourth-grade science textbook.

Topic:

The topic you have been assigned is energy conversion.

Write a 2-3 paragraph textbook article explaining how energy can be converted from one type of energy to another. Share a few examples, such as how light can be converted to heat, or how sound can be converted to vibrations.

Use a separate piece of paper to complete this assignment.



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.



The certificate features a decorative border with a repeating floral pattern. In the top-left corner, there is a circular logo with a cartoon man's face and the text "Handsome Science Teacher" in a pink arc above him and "Industries" in blue below him. The man is holding a tablet displaying a solar system with planets and stars. The main title "Mastery Badge Certificate" is centered in a large, bold, black font. Below the title, the topic "Topic: Converting Energy" is written in a purple font. A line for the student's name is preceded by "Student Name:". The central text reads: "This certificate certifies that the person named above has completed all of the requirements to earn this Mastery Badge." At the bottom, there are two horizontal lines for signatures. The left line is labeled "MASTERY BADGE COUNSELOR SIGNATURE" and the right line is labeled "DATE AWARDED". In the bottom-right corner, there is a smaller version of the "Handsome Science Teacher" logo.

Mastery Badge Certificate

Topic: Converting Energy

Student Name: _____

This certificate certifies that the person named above has completed all of the requirements to earn this Mastery Badge.

MASTERY BADGE COUNSELOR SIGNATURE

DATE AWARDED