



Transferring Energy From One Object To Another

What I Will Be Learning In This Mastery Badge:

In this mastery badge we will discover how energy is transferred from one object 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:

- Energy is the ability to do work.
- Energy cannot be created or destroyed.
- Energy can be transferred from one object to another.

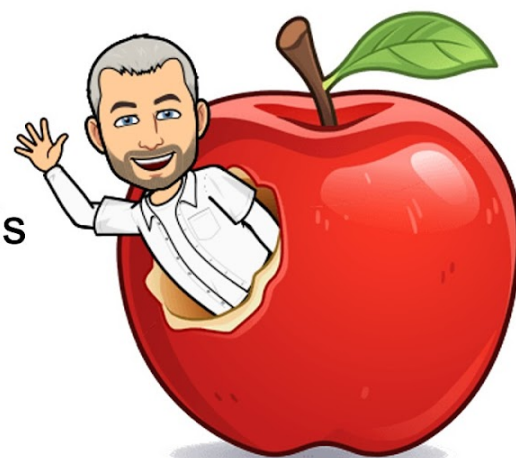
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Discovering Lab

Learning Through Hands
On Activities



Discovering How Energy Works

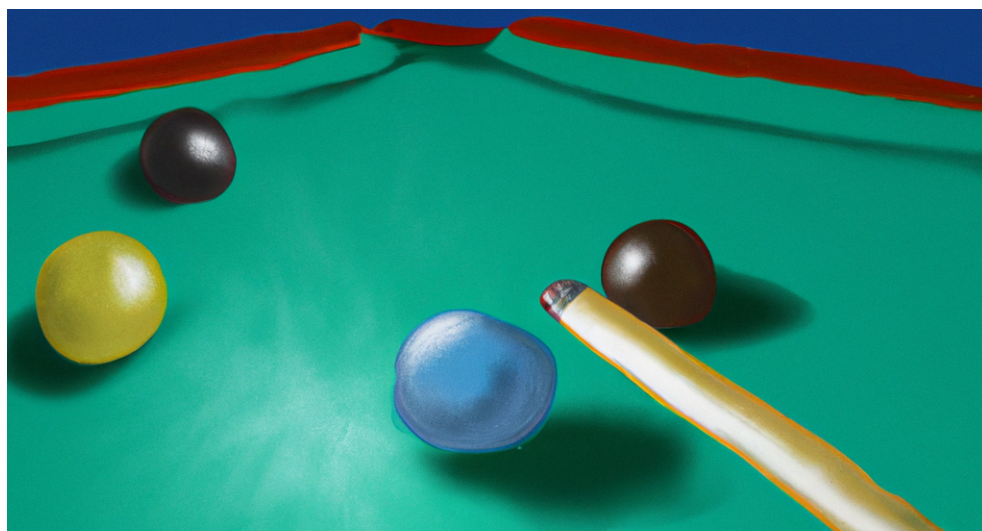
Making your own discoveries.

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



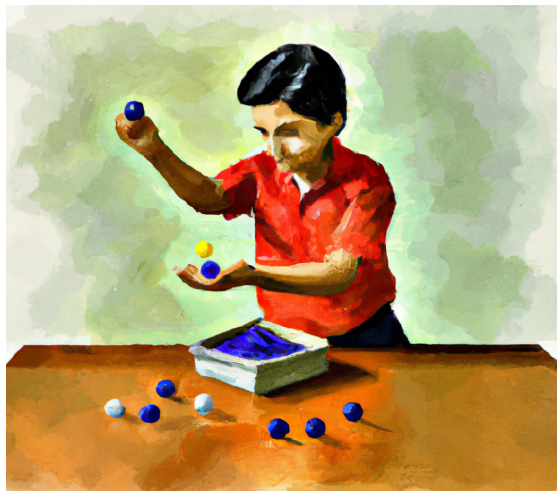
Transferring Energy From One Object To Another

Energy can't be created. Nor can it be destroyed. It can only be converted from one form to another or transferred from one object or substance to another. In this lab we will discover how energy is transferred from object to object.



Supplies:

For this lab you will need two hard balls. Baseballs, golfballs, marbles, or poolballs all would work great.



Hypothesis:

Predict what you think will happen when you roll one ball into a second ball.

Experiment To See What Happens

Place one ball in the middle of a table. Then carefully roll a second ball into it. Observe what happens.

Describe what happened when you rolled one ball into another ball. Be detailed.

In order to move an object needs to have energy. Where did each ball get energy from in order to move?

Describe how energy can be transferred from one object to another.



Questions That Make You Think:

Always answer thinking questions using complete sentences.

1. If energy can't be created, where do you think it comes from? How does an object that isn't moving get the energy it needs to start moving?

2. If energy can't be destroyed then where does it go when an object stops moving?

3. Describe what energy is in your own words.

4. Describe what would happen to the energy in an asteroid if it crashed into another asteroid.

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.

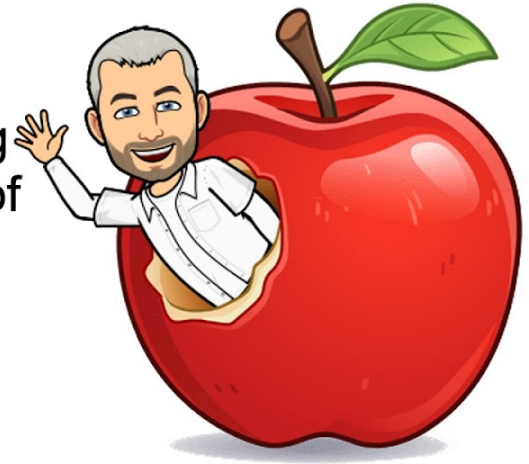
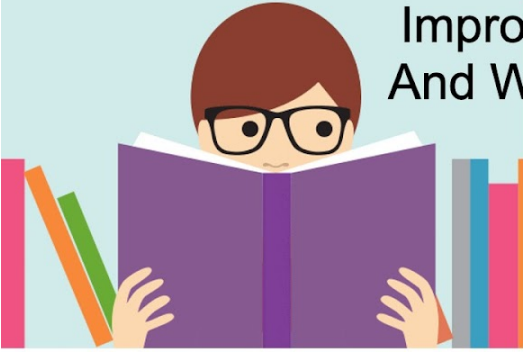
Write one sentence in your own words explaining what you learned from the video. Then draw a picture of something you learned from the video.

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-transferred-from-one-object-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 transferred from one object to another.

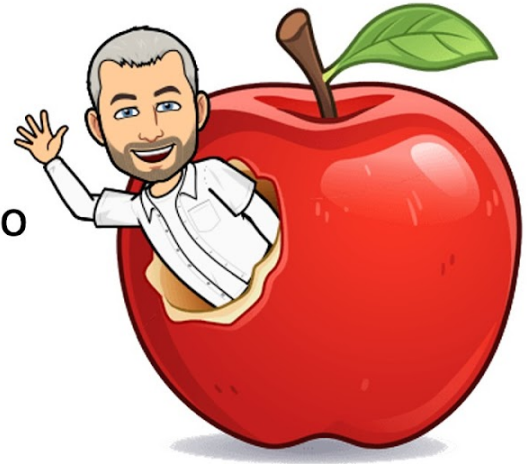
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Applying Lab

Proving That We Can Do
It Ourselves



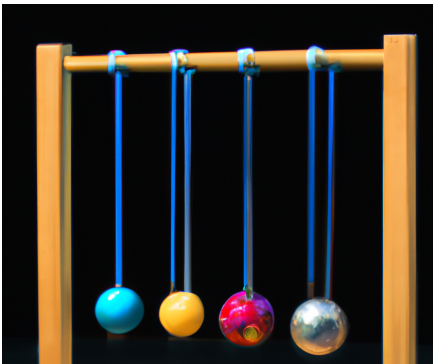
Applying Energy & Objects

Applying What We Have Learned.

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



Build Your Own Newton's Cradle



A great tool for showing how energy can be passed back and forth between different objects is a Newton's cradle. In this lab you will build your own Newton's cradle using marbles, string, hot glue, and sticks.

Supplies

For this lab you will need 2-4 marbles, string, hot glue, styrofoam, and sticks. Popsicle sticks, pencils, and skewers all work great.

Build Your Newton's Cradle

1. Build a frame for your Newton's cradle using the styrofoam as a base.
Press two sticks down into the styrofoam, and then tape or hot glue a third stick across the top so that it is suspended between them.
2. Cut one piece of string for each marble.
3. Using hot glue attach a marble to the end of each piece of string.
4. Tie the strings to the crossbar (top stick) of your frame, making sure that each marble hangs at the same height.



Note: This is a simple design. If you really want to get the full effect of a Newton's cradle you can modify the design slightly, so that there is room for the marbles to pass between two sticks leaning against each other as shown in the picture. Which will allow you to swing the marbles further.

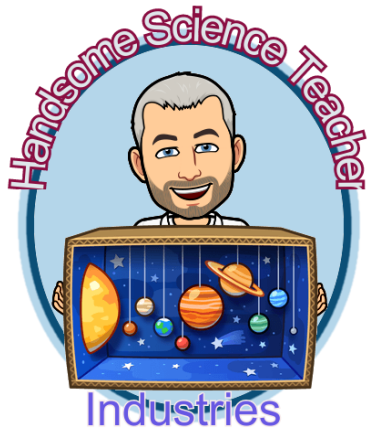
Test Your Cradle, Observe What Happens

Pull one of the marbles out to the side and release it, allowing it to swing back down and hit the other marbles. Observe what happens, and record the results.

Where is the first marble getting its energy from? What happens to it when you lift it into the air? Be detailed.

When you let go, and the first marble hits into a second marble, what happens to the energy that it had? Where does the energy in the first marble go?

Explain why energy cannot be created or destroyed. Explain moves from object to object.



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.

