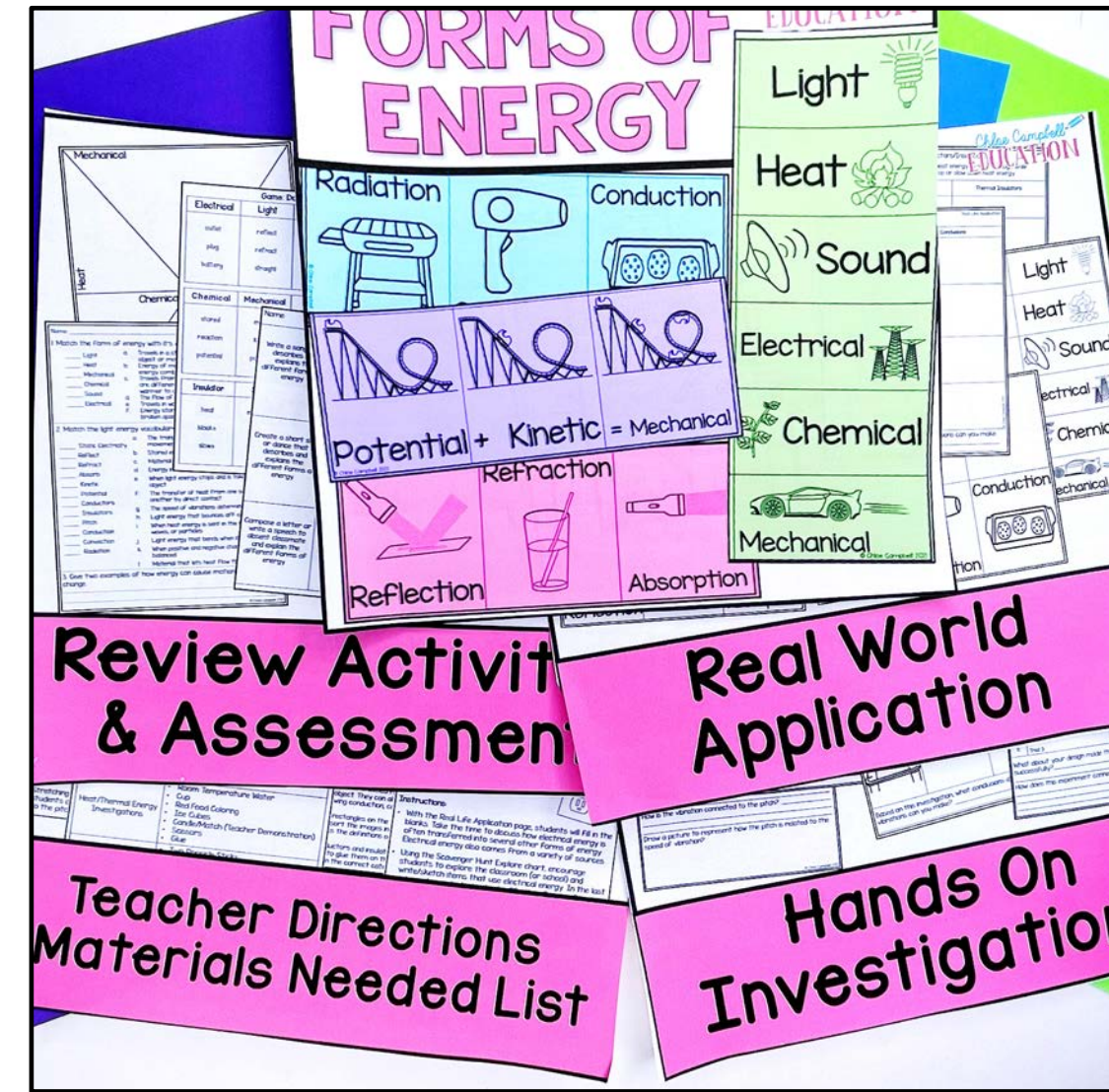


# Struggling to find a hands-on way to teach the different forms of energy?



Don't spend any more time planning, searching, or brainstorming. Everything you need is in this easy to use download!

# Forms of Energy

## Includes:

- Light Energy
- Heat Energy
- Sound Energy
- Mechanical Energy
- Electrical Energy
- Chemical Energy
- Electrical Conductors/Insulators
- Static Electricity
- Potential and Kinetic Energy
- Energy Transfers



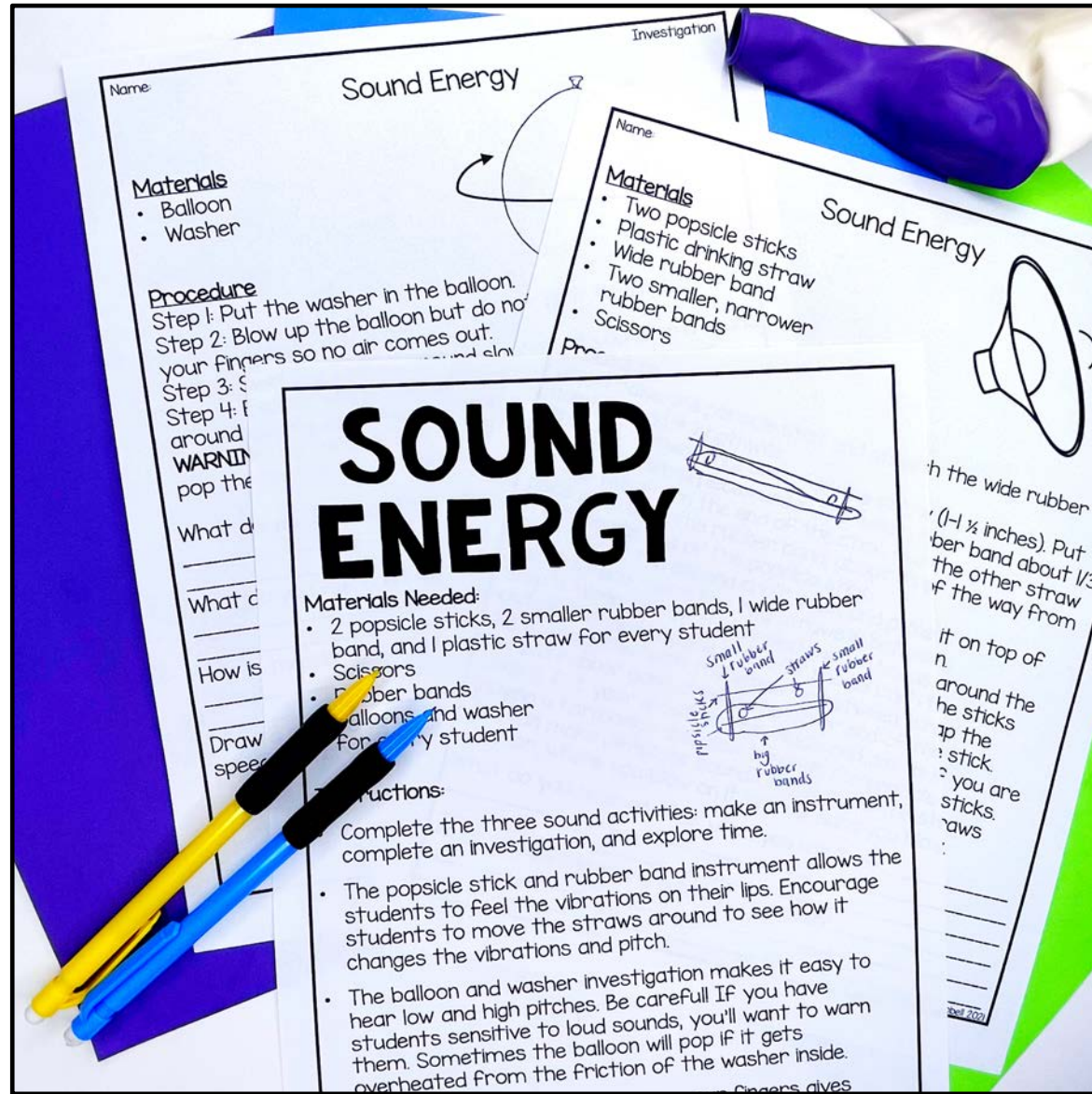
# Forms of Energy

## Includes:

- Teacher Directions
- Foldable Notes
- Investigations
- Sorts
- Real Life Applications
- Scavenger Hunt
- Graphic Organizer
- Review Games
- Discussion Questions
- Vocabulary Cards
- Unit Project
- Exit Slips
- Unit Assessment
- Mastery Checklist

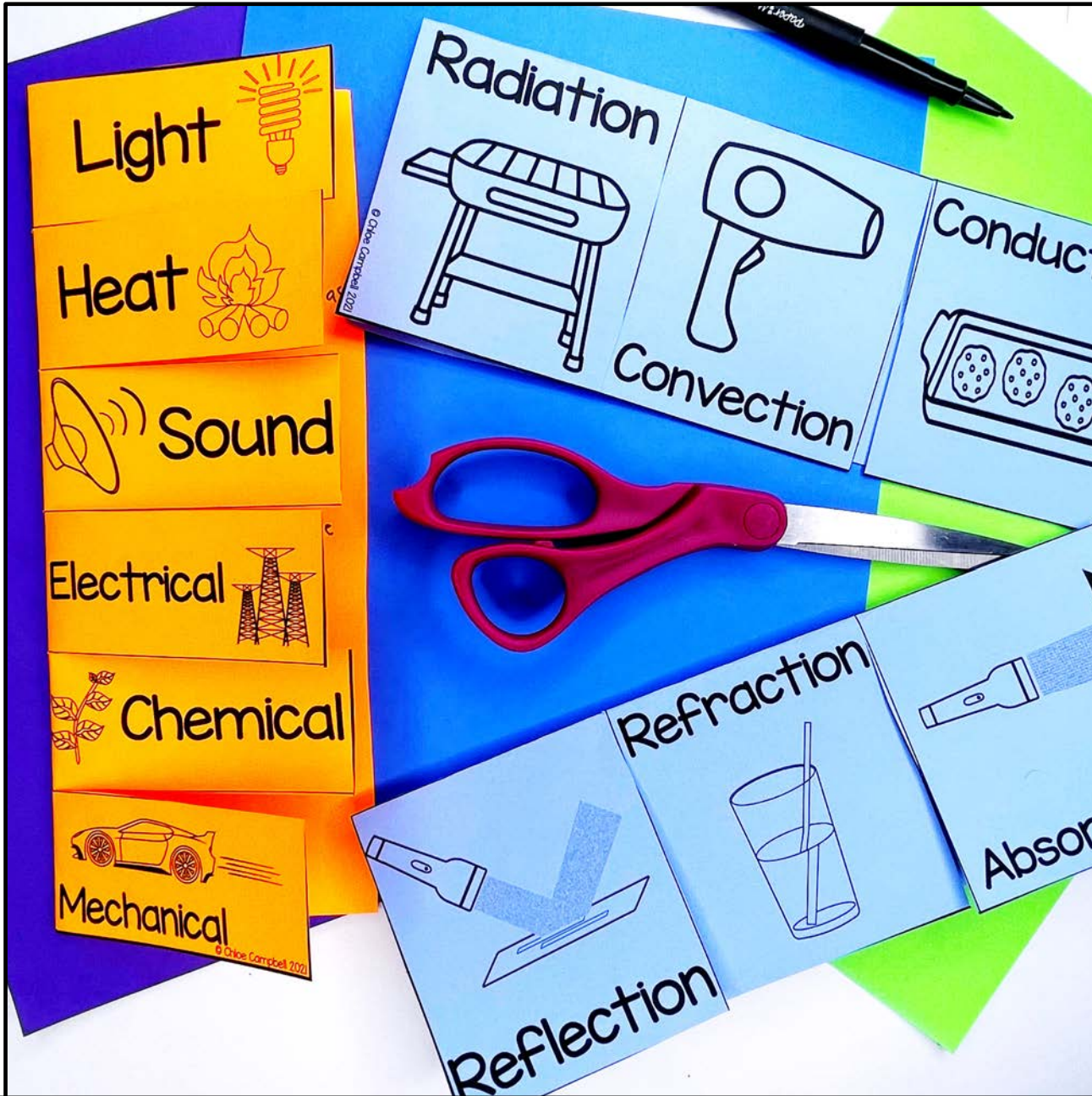
# Teacher Directions Pages

- Learning Goals
- Materials Needed
- Specific Directions for All Parts of Lesson





# Foldable Notes






# Hands-On Investigations

## Light Energy



### LIGHT ENERGY



**Materials Needed:**


- Scissors
- Clear cup with water
- pencils
- Black construction Paper
- Mirror or something shiny
- Flashlight
- Glue

**Instructions:**

- Create the Foldable and absorption.
- Complete the investigation to use a mirror and a cup of water and black construction paper to tell stories about all of the ways that light travels. Cut off the paper.

**How Does Light Travel?**

Using the materials listed, identify ways to show light when it is reflected, refracted, and absorbed. Draw a sketch in the boxes below and explain in words what you observed.

	Reflect	Refract	Absorb
Draw a Sketch			
Observations		The pencil looked bent in the water.	

What other materials and procedures could you use to see light being reflected, refracted, and absorbed?

How do you see light travel most often?

If nothing is in the way, how does light travel?

### SOUND ENERGY

**Materials**

- Balloon
- Washer

**Procedure**

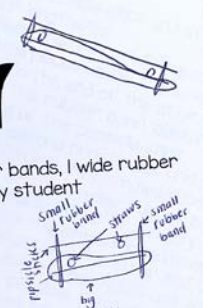
Step 1: Put the washer in the balloon.  
Step 2: Blow up the balloon but do not pop it.  
Step 3: ...  
Step 4: ...

**Sound Energy**

**Materials**

- Two popsicle sticks
- plastic drinking straw
- Wide rubber band
- Two smaller, narrower rubber bands
- Scissors

**SOUND ENERGY**



**Materials Needed:**

- 2 popsicle sticks, 2 smaller rubber bands, 1 wide rubber band, and 1 plastic straw for every student
- Scissors
- Rubber bands
- Balloons and washer for every student

**Instructions:**

- Complete the three sound activities: make an instrument, complete an investigation, and explore time.
- The popsicle stick and rubber band instrument allows the students to feel the vibrations on their lips. Encourage students to move the straws around to see how it changes the vibrations and pitch.
- The balloon and washer investigation makes it easy to hear low and high pitches. Be careful! If you have students sensitive to loud sounds, you'll want to warn them. Sometimes the balloon will pop if it gets overheated from the friction of the washer inside.

## Sound Energy





# Hands-On Investigations

Static Electricity  
Energy



Situation	Potential Kinetic
	The ball is showing stored energy
	The person is showing stored energy

**MECHANICAL ENERGY**

Materials Needed:

- Mini marshmallows
- Rubber bands
- Plastic spoons
- Popsicles

**Kinetic**

- Energy in motion
- Doing work

**Potential**

**MECHANICAL ENERGY**

connection create

on with them

ore

age, ask students

ure lots of examples of poten

at they use every day!

Mechanical  
Energy



**STATIC ELECTRICITY**

Materials Needed:

- Balloons

Instructions:

- Give students time to work with balloons. Encourage them to rub the balloons on their hair, skin, desk, etc. This time is all for exploration so students can create their own car static electricity boxes so they can create their own static electricity.
- Read the positive to create attraction.

Name: \_\_\_\_\_

Situation	Static Electricity
Rub the balloon against your clothing.	
Rub the balloon against your hair.	

Based on these situations, what conclusions can you make about static electricity?

P. Chase Campbell 2010



# Hands-On Investigations

## Electrical Energy



### ELECTRICAL ENERGY

Instructions:

- With the Real Life Application page, students fill in the blanks. Take the time to discuss how electrical energy is often transferred into several other forms. Electrical energy also comes from many different sources.
- Using the Scavenger Hunt Exploration page, students explore the classroom for items that use electrical energy. Write/sketch items that use electrical energy in the column, have students check off each item also produced.

Electrical energy is the flow of electric charge through a conductor and can come from a variety of sources.

Batteries have chemical energy that turns into electricity.

Solar panels take radiant energy and turn it into electricity.

Fossil fuel power plants burn coal or oil to create heat. This heat is then turned into steam to drive turbines which create electricity.

Windmills take moving air and turn it into electricity.

Hydroelectric power plants turn moving water into electricity.

Nuclear power plants take heat from nuclear reactions and turn it into electricity.

### CHEMICAL ENERGY

Materials Needed:

- Zipper storage bag
- Vinegar
- Toilet Paper
- Baking Soda

Instructions:

- Discuss the life application picture +
- Complete this column...

Chemical Energy

Materials:

- Zipper storage baggies (sandwich size)
- Vinegar
- 3-4 squares of toilet paper
- Baking Soda

Procedure

Step 1: Put 1 tablespoon of baking soda in a zipper storage baggie. Fold the sides of the baggie to make a "time-release packet".

Step 2: Pour 1/2 cup of vinegar into a glass. Drop the time-release packet into the glass. Watch what happens.

Step 3: Read all of this step BEFORE you do this a couple of ways: zip the baggie closed before the fizzing gets started, zip the baggie closed, then zip the rest of the way closed OR you can put the time-release packet into the mouth of the bag, hold it out of the vinegar by pinching the sides of the bag, zip the baggie closed, and drop the packet into the vinegar.

What happened to the...  
soda into the...

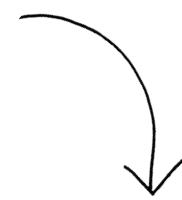


## Chemical Energy



# Hands-On Investigations

Light Energy



**Heat/Thermal Energy**

How can we prove that this statement is true?  
Heat travels from one place to another when there are different temperatures, always moving from \_\_\_\_\_ to \_\_\_\_\_ things.

How Does Heat Travel?  
Heat travels from one place to another when there are different temperatures, always moving from \_\_\_\_\_ to \_\_\_\_\_.

Conduction	Convection	Radiation
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**HEAT ENERGY**

Materials Needed:

- Scissors
- Room temperature water
- Cups
- Red Food coloring
- Ice cubes
- Candle/match
- Glue

Procedure

- Have a room temperature cup of water. Put in 2 drops of red food coloring.
- Add 2 ice cubes into the water.
- What do you observe?

1. Rub your hands together and feel the heat.

2. Place an ice cube in your hand and feel the heat.

3. What happens to the ice cube?

Conduction

Convection

Radiation

Heat energy is radiated or sent in the form of rays.

Heat Energy

**How Does Light Travel?**

Light travels in a \_\_\_\_\_ line until it interacts with an object or moves from one material to another.

Definition	Reflect Light energy that bounces off a surface	Refract Light energy that bends	Absorb Light energy stops & taken in by object
Examples			
Example			

Reflection

Refraction

Absorption



# Review Activities

## REVIEW ACTIVITIES

### Instructions:

- Ask students to draw and label each of the forms of energy on a separate sheet of paper. This is a great activity for students who are good at drawing.
- Introduce the game, "Energy Transfer" with a vocabulary word. Each team member guesses the word from the words listed. The student's goal is to guess the word "electrical". However, the teacher is giving clues about the word.






Mechanical

Heat

## ENERGY TRANSFERS

### Instructions:

- Use the pictures to identify the type of energy that is shown.
- On the grid, check the type of energy shown in the picture.
- How many types of energy can you find?

Name:	Energy Transfers						Real Life Application
	Electrical	Light	Heat	Sound	Chemical	Mechanical	
	/	/	/	/	/	/	
	/		/	/	/	/	
	/	/	/	/	/	/	
	/	/	/	/	/	/	
	/	/	/	/	/	/	

## REVIEW ACTIVITIES

in groups of 3-5 for this activity. Place each card in a baggie for each group. Give each group two talking chips of some sort (e.g., paper chips, etc.). One chip is read.

### Discussion Cards

What source of electrical energy do you think is the most important? Why?

Describe what happens during static electricity. When was a time you've experienced static electricity?

What has been your favorite part from the forms of energy unit?

What is the difference between heat energy and light energy?

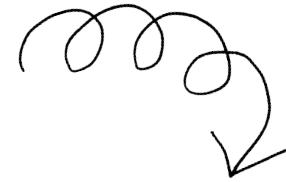
How can you remember the differences between the forms of energy?

What is your least favorite form of energy?



# Quick Assessments

Use the included simple exit ticket questions to measure your students' learning at the end of the lesson.



**BONUS:** Includes a Mastery Checklist. You can easily keep track of students who need extra practice and students who are ready to move on to the next lesson in one easy place!

Name: \_\_\_\_\_

What's the difference between reflection, refraction, and absorption?

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Name: \_\_\_\_\_

Give two examples of how electrical energy can be used.

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Name: \_\_\_\_\_

What happens when two items have the same charge?

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