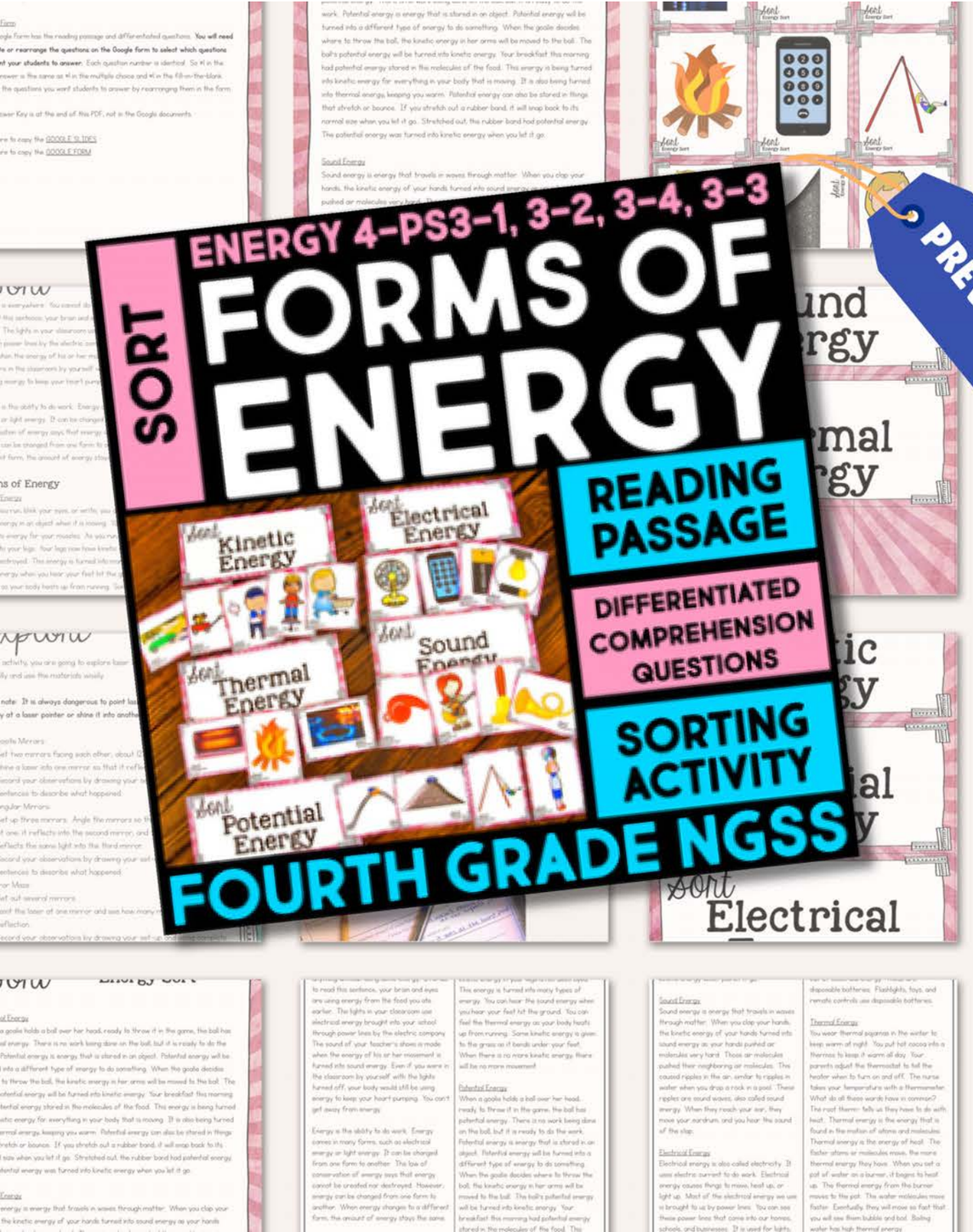


4TH GRADE

Sorting the Power Puzzle

SORT

FORMS OF ENERGY KINETIC, POTENTIAL, SOUND, ELECTRICAL, & THERMAL SORT

4th Grade Science Station

KEEP SCROLLING TO SEE WHAT'S INSIDE!

YOU WILL LOVE THIS BECAUSE

Sort and Classify

Sorting pictures into energy categories helps students internalize the differences between kinetic, potential, sound, electrical, and thermal energy. It's hands-on classification!

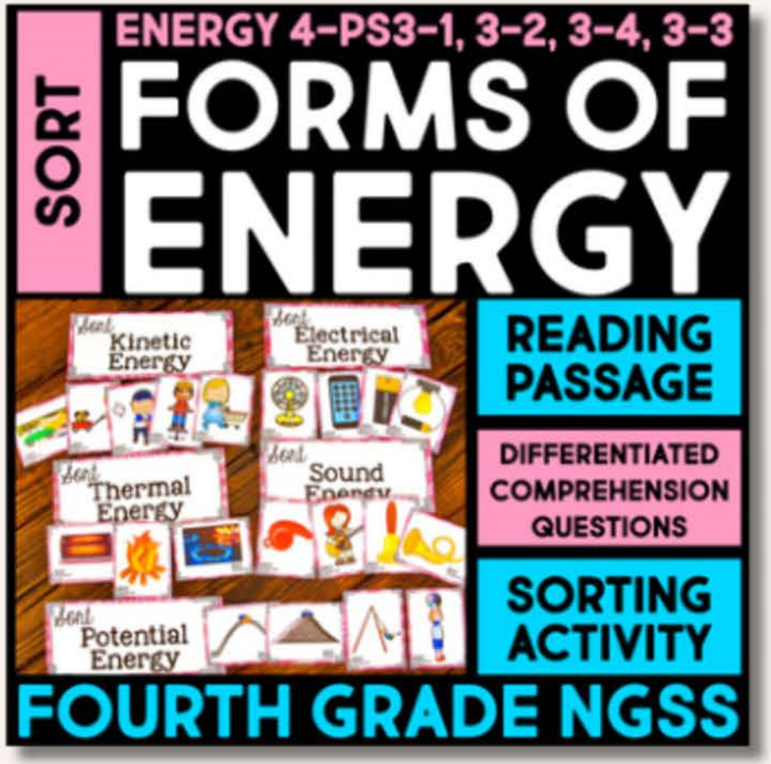
Aligned with NGSS

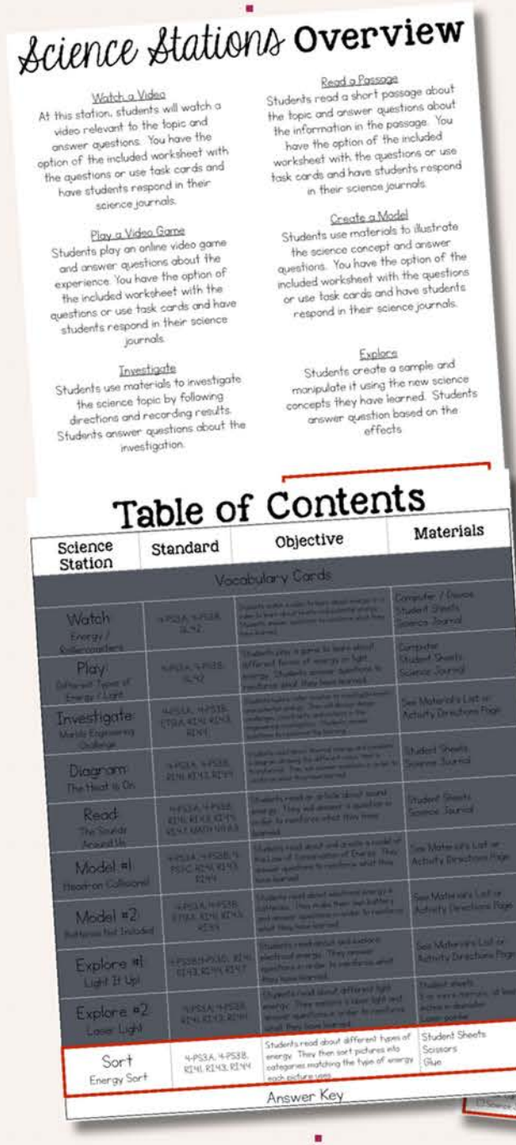
These lesson plans aren't just random; they're laser-focused on Next Generation Science Standards. No more curriculum guesswork!

Real-World Connections

Abstract concepts can be daunting. Using this sorting activity to relate energy forms to students' daily experiences helps make science tangible.

ACTIVITY OVERVIEW




Science Stations Overview

Watch a Video
At this station, students will watch a video relevant to the topic and answer questions. You have the option of the included worksheet with the questions or use task cards and have students respond in their science journals.

Play a Video Game
Students play an online video game and answer questions about the experience. You have the option of the included worksheet with the questions or use task cards and have students respond in their science journals.

Investigate
Students use materials to investigate the science topic by following directions and recording results. Students answer questions about the investigation.

Read a Passage
Students read a short passage about the topic and answer questions about the information in the passage. You have the option of the included worksheet with the questions or use task cards and have students respond in their science journals.

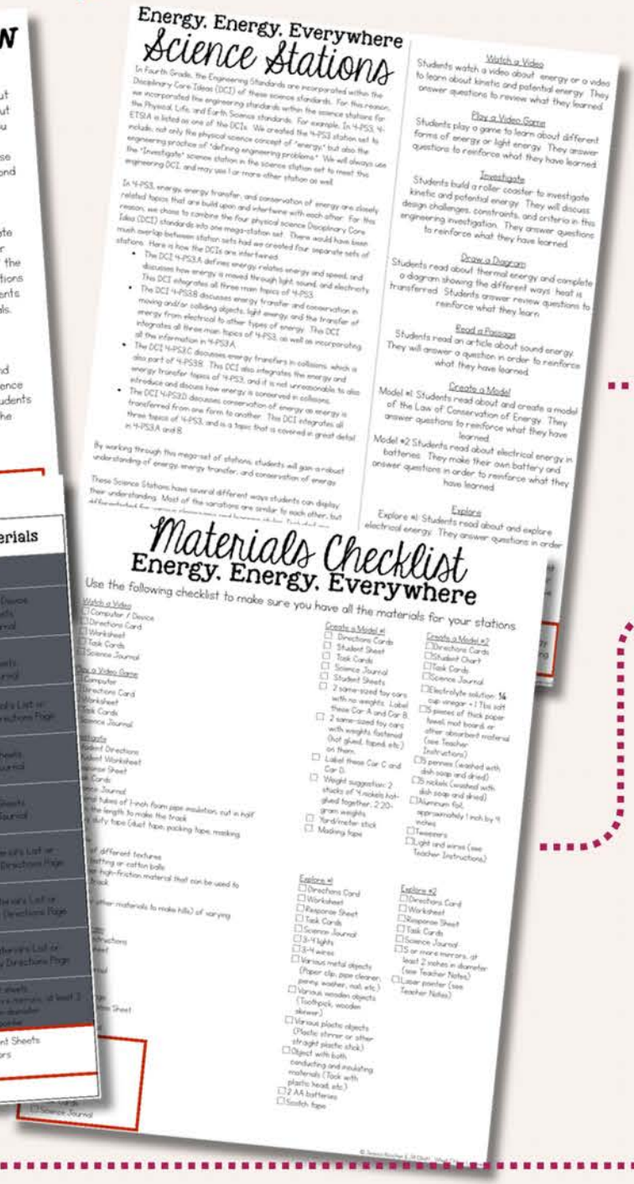
Create a Model
Students use materials to illustrate the science concept and answer questions. You have the option of the included worksheet with the questions or use task cards and have students respond in their science journals.

Explore
Students create a sample and manipulate it using the new science concepts they have learned. Students answer question based on the effects

Table of Contents

Science Station	Standard	Objective	Materials
Vocabulary Cards			
Watch: Energy / Rollercoasters			Computer / Device, Student Sheets, Science Journal
Play: Different Types of Energy / Light			Computer, Student Sheets, Science Journal
Investigate: Marble Engineering Challenge			See Material's List or Activity Directions Page
Diagram: The Heat Is On			Student Sheets, Science Journal
Read: The Sounds Around Us			Student Sheets, Science Journal
Model #1: Electron Collisions!			See Material's List or Activity Directions Page
Model #2: Batteries Not Included			See Material's List or Activity Directions Page
Explore #1: Light It Up!			See Material's List or Activity Directions Page
Explore #2: Laser Light			Student sheets, 3 or more mirrors, at least 2 inches in diameter, Laser pointer (see Teacher Notes)
Sort: Energy Sort	4-PS3A, 4-PS3B, RI.4.1, RI.4.3, RI.4.4	Students read about different types of energy. They then sort pictures into categories matching the type of energy each picture uses	Student Sheets, Scissors, Glue

Answer Key


Energy. Energy. Everywhere
Science Stations

In Fourth Grade, the Engineering Standards are incorporated within the Disciplinary Core Ideas (DCI) of these science standards. For this reason, we incorporated the engineering standards within the science stations for the Physical, Life, and Earth Science standards. For example, in 4-PS3, 4-ETS1A is listed as one of the DCIs. We created the 4-PS3 station set to include, not only the physical science concept of "energy," but also the engineering practice of "defining engineering problems." We will always use engineering DCI, and may use 1 or more other station as well.

In 4-PS3, energy, energy transfer, and conservation of energy are closely related topics that are build upon and intertwine with each other. For this reason, we chose to combine the four physical science Disciplinary Core Ideas (DCI) standards into one mega-station set. There would have been much overlap between station sets had we created four separate sets of stations. Here is how the DCIs are intertwined.

- The DCI 4-PS3A defines energy relates energy and speed, and discusses how energy is moved through light, sound, and electricity. This DCI integrates all three main topics of 4-PS3.
- The DCI 4-PS3B discusses energy transfer and conservation in moving and/or colliding objects, light energy, and the transfer of energy from electrical to other types of energy. This DCI integrates all three main topics of 4-PS3, as well as incorporating all the information in 4-PS3A.
- The DCI 4-PS3C discusses energy transfers in collisions, which is also part of 4-PS3B. This DCI also integrates the energy and energy transfer topics of 4-PS3, and it is not unreasonable to also introduce and discuss how energy is conserved in collisions.
- The DCI 4-PS3D discusses conservation of energy as energy is transferred from one form to another. This DCI integrates all three topics of 4-PS3, and is a topic that is covered in great detail in 4-PS3A and B.

By working through this mega-set of stations, students will gain a robust understanding of energy, energy transfer, and conservation of energy.

These Science Stations have several different ways students can display their understanding. Most of the variations are similar to each other, but differentiated for common misconceptions and learning styles. Included are:

Watch a Video
Students watch a video about energy or a video to learn about kinetic and potential energy. They answer questions to reviewe what they learned.

Play a Video Game
Students play a game to learn about different forms of energy or light energy. They answer questions to reinforce what they have learned.

Investigate
Students build a roller coaster to investigate kinetic and potential energy. They will discuss design challenges, constraints, and criteria in this engineering investigation. They answer questions to reinforce what they have learned.

Draw a Diagram
Students read about thermal energy and complete a diagram showing the different ways heat is transferred. Students answer review questions to reinforce what they learn.

Read a Passage
Students read an article about sound energy. They will answer a question in order to reinforce what they have learned.

Create a Model
Model #1: Students read about and create a model of the Law of Conservation of Energy. They answer questions to reinforce what they have learned.

Model #2 Students read about electrical energy in batteries. They make their own battery and answer questions in order to reinforce what they have learned.

Explore
Explore #1: Students read about and explore electrical energy. They answer questions in order

Materials Checklist
Energy. Energy. Everywhere

Use the following checklist to make sure you have all the materials for your stations

Watch a Video
- ☐ Computer / Device
- ☐ Directions Card
- ☐ Worksheet
- ☐ Task Cards
- ☐ Science Journal

Play a Video Game
- ☐ Computer
- ☐ Directions Card
- ☐ Worksheet
- ☐ Task Cards
- ☐ Science Journal

Investigate
- ☐ Student Directions
- ☐ Student Worksheet
- ☐ Response Sheet
- ☐ Task Cards
- ☐ Science Journal
- ☐ Four tubes of 1-inch foam pipe insulation, cut in half the length to make the track
- ☐ Duct tape (duct tape, packing tape, masking tape)
- ☐ Four different textures that line the track (bubble wrap, cardboard, felt, wax paper, etc.)
- ☐ Marbles
- ☐ Other materials to make hills of varying heights

Create a Model #1
- ☐ Directions Cards
- ☐ Student Sheet
- ☐ Task Cards
- ☐ Science Journal
- ☐ Student Sheets
- ☐ 2 same-sized toy cars with no weights. Label these Car A and Car B.
- ☐ 2 same-sized toy cars with weights fastened (hot glued, taped, etc.) on them.
- ☐ Label these Car C and Car D.
- ☐ Weight suggestion: 2 stacks of 4 nickels hot-glued together, 2 20-gram weights
- ☐ Yardstick or stick
- ☐ Masking tape

Create a Model #2
- ☐ Directions Cards
- ☐ Student Chart
- ☐ Task Cards
- ☐ Science Journal
- ☐ Electrolyte solution: 16 cup vinegar + 1 Tbs salt
- ☐ 5 pennies of thick paper towel, mat board, or other absorbent material (see Teacher Instructions)
- ☐ 5 pennies (washed with dish soap and dried)
- ☐ 5 nickels (washed with dish soap and dried)
- ☐ Aluminum foil, approximately 1 inch by 1 inches
- ☐ Tweezers
- ☐ Light and wires (see Teacher Instructions)

Explore #1
- ☐ Directions Card
- ☐ Worksheet
- ☐ Response Sheet
- ☐ Task Cards
- ☐ Science Journal
- ☐ 3-4 lights
- ☐ 3-4 wires
- ☐ Various metal objects (Paper clip, pipe cleaner, penny, washer, nail, etc.)
- ☐ Various wooden objects (Toothpick, wooden skewer)
- ☐ Various plastic objects (Plastic stirrer or other straight plastic stick)
- ☐ Object with both conducting and insulating materials (Tack with plastic head, etc.)
- ☐ 2 AA batteries
- ☐ Switch (optional)

Explore #2
- ☐ Directions Card
- ☐ Worksheet
- ☐ Response Sheet
- ☐ Task Cards
- ☐ Science Journal
- ☐ 3 or more mirrors, at least 2 inches in diameter (see Teacher Notes)
- ☐ Laser pointer (see Teacher Notes)

Science Station Overview

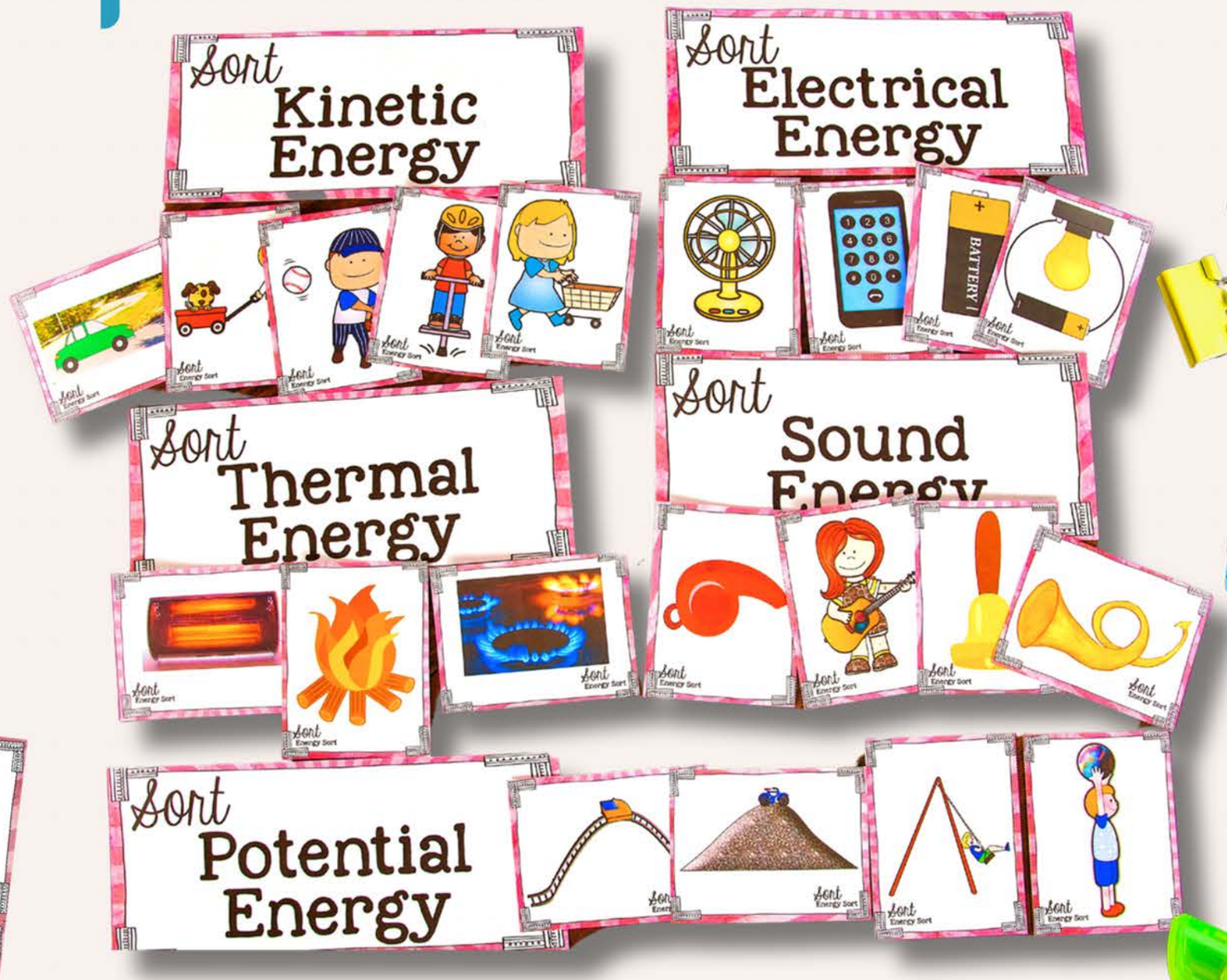
Background Information

Materials Checklist

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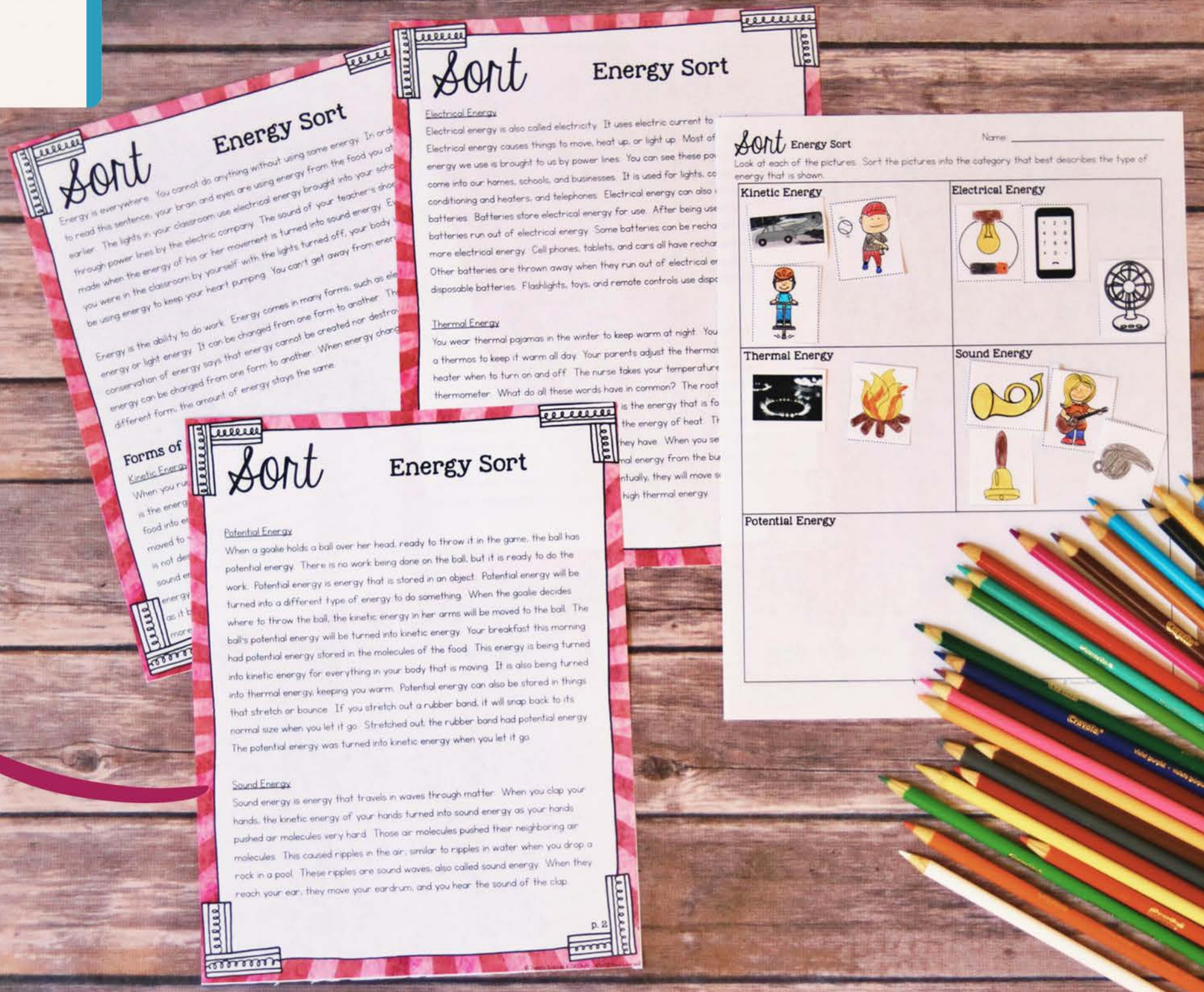
SORT


Sort
Digital Resources
Google Slides
When you click on the link you will be asked to COPY the document to your Google Drive. The Google Slides resources have the sort worksheet with color cards.
Google Form
The Google Form has the reading passage and differentiated questions. You will need to delete or rearrange the questions on the Google form to select which questions you want your students to answer. Each question number is identical. So #1 in the short answer is the same as #1 in the multiple choice and #1 in the Fill-in-the-blank. Choose the questions you want students to answer by rearranging them in the form.
The Answer Key is at the end of th in the Google documents.
Click here to copy the GOOGLE
Click here to copy the GOOGL
#5 Sort Energy Sort
How do they kinetic and potential energy work together?
a. The potential energy in a still object is turned into kinetic energy when it begins moving
b. The potential energy in a moving object is turned into kinetic energy when it
c. The potential energy in a moving ob turned into a kinetic energy by friction
d. The potential energy in a still object into a kinetic energy by friction
#7 Sort Energy Sort
What is true about electricity?
a. It is a type of potential energy.
b. It uses current to cause things to move, heat up, or light up.
c. It is a type of atomic energy.
d. It uses atomic current to cause molecules to combine.
#6 Sort Energy Sort
What is sound energy?
a. Energy that is stored in an object
b. Energy that travels in waves through matter
c. Energy in an object when it is moving
d. Energy that is found in the motion of atoms and molecules


Sort Kinetic Energy
Sort Electrical Energy
BATTERY
Sort Thermal Energy
Sort Sound Energy
Sort Potential Energy

EXPLORE

Enhance critical thinking and promote collaboration with hands-on learning and visual learning aids.



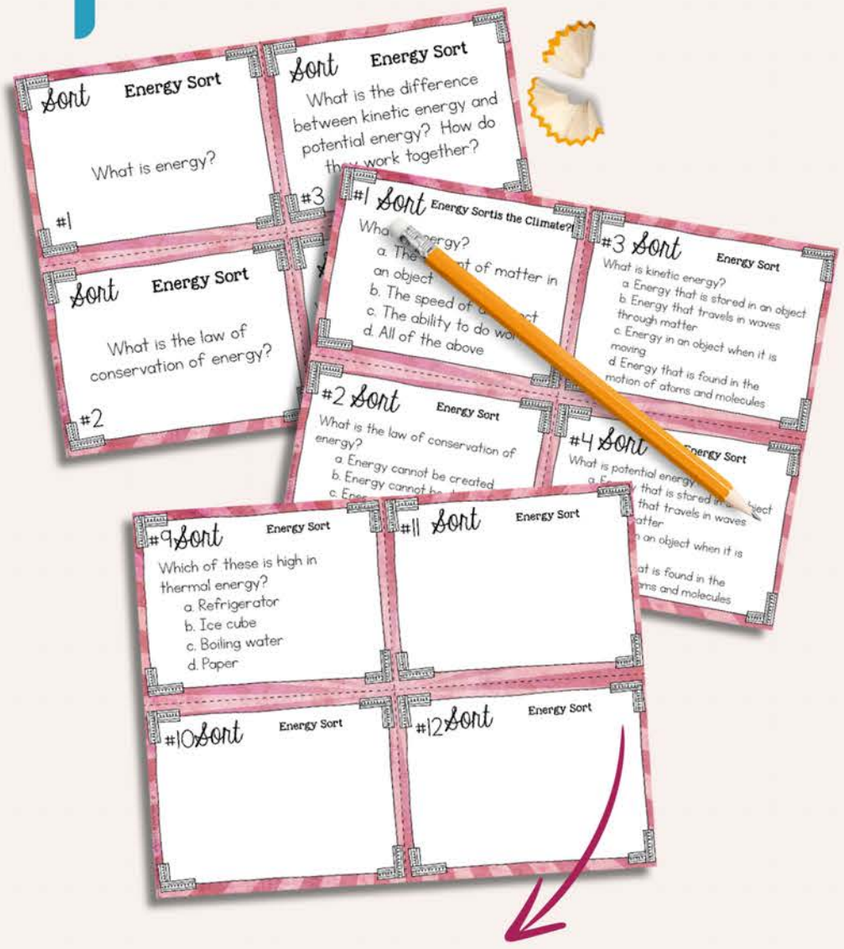
Differentiated Questions



SHORT ANSWER

BLACK AND WHITE WORKSHEET

FILL-IN-THE BLANK



TASK CARDS:
SHORT ANSWER & MULTIPLE CHOICE

TEACHERS LOVE IT!

My students loved using this as a review for our bundle. They challenged each other and collaborated on each topic. This is a wonderful addition to your activity set. It helps to build connections. I also used it with other students who had learning gaps.

Summer P.



My students enjoyed using this resource. A few of the pictures were more difficult to identify if you had to copy them in black and white. It was a quick, easy way to determine if the students could identify different kinds of energy found in different objects.

Mary K.



My passion is making learning accessible to all students.
I love scaffolding learning, breaking down the concepts and building them up so that students can see the connections.
I love figuring out the small components that build up to the big ideas and helping students see it all.



teach MATH | teach SCIENCE | teach READING | teach WRITING

What I have LEARNED