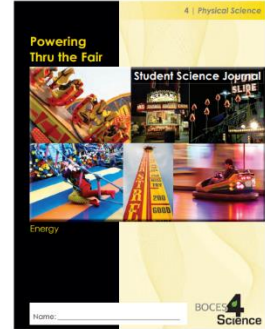


Powering Thru the Fair

Grade 4

BOCES 4 Science



1. **Mystery Bags:** Prepare a bag that contains 3 items that represent the same form of energy, and 1 item that represents a different form of energy and therefore does not belong. Use everyday items from around your home, and the table below to help you! Challenge someone at home to identify which item does not belong and why.

Forms	Definitions	Examples
Chemical	Energy that bonds particles together	Fuels (oil, gas, coal) Batteries
Electrical	Produced from the flow of charges	Power Lines Lightning
Heat	Caused by the motion of particles in matter	Melting Ice Cream Friction
Light	Visible energy that moves in waves	Sun Laser
Mechanical	Energy of moving objects	Machines Muscles
Sound	Produced by vibrating objects	Thunder Bells

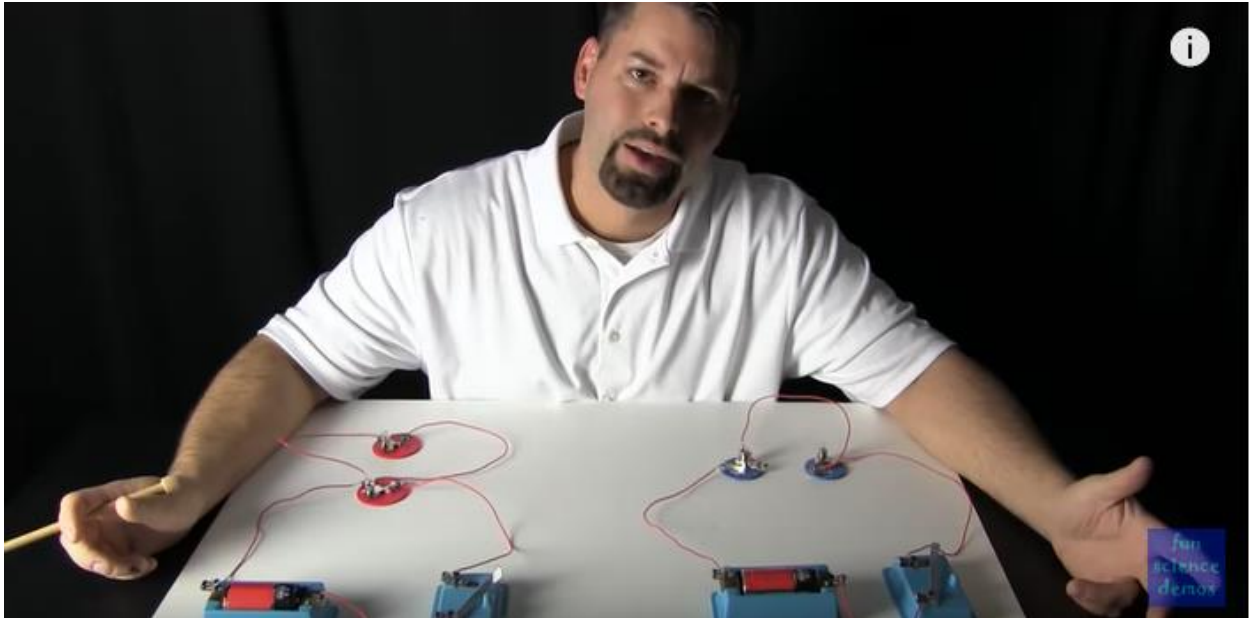
2. **Build Your Own Bumper Car:** Use rubber bands, straws, toothpicks, and bottle caps to follow the instructions in the video. Test your car once it is made!

<https://www.youtube.com/embed/hjXYVpAyYG0>



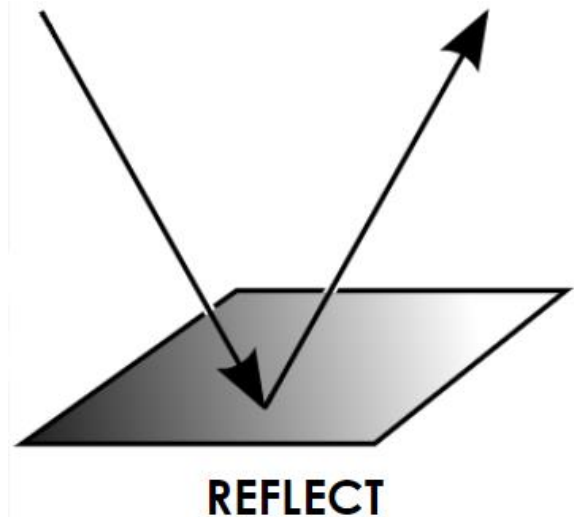
3. **Circuits:** To learn about series vs. parallel circuits, watch the video below!

<https://www.youtube.com/watch?v=XSukRnxGy5c>



4. **Reverse Engineering:** With an adult's supervision, take apart an old solar powered calculator to explore how solar energy works!

5. **Reflecting on Reflection:** Explore reflection! Set up a station with a metal mirror, a flashlight, and a dark area created by taking a box and cutting off the cardboard flaps that make up one of the short ends of the box. Cover the opposite short end of the box with a sheet of black construction paper. With the flashlight on, hold the flashlight and shine the light high up into the box. Then, holding the mirror in the other hand, intercept the light and reflect it around the inside of the box. Turn the mirror and angle the mirror to see where the reflected light ends up in the box.



6. **Energy Source Scavenger Hunt:** Take a walk or ride around your neighborhood or community. Look for evidence of these energy sources: *wind, solar, hydroelectric, geothermal, fossil fuels, biomass*

Need help? Watch this video:

<https://www.youtube.com/watch?v=y3Ci09Lt2cl>

RENEWABLE & NONRENEWABLE
ENERGY RESOURCES

7. **Alternative Fuels:** Research the following energy sources, then compare and contrast!

Ethanol from Corn
https://www.youtube.com/results?search_query=ethanol+from+corn

Biofuel from Algae
https://www.youtube.com/results?search_query=biofuel+from+algae

