

FOSS ENERGY MODULE—WEEK 4D

Hello Students, Teachers, and Families,

This package includes **Home/School activities for Energy Investigation 4—Energy Transfer and Investigation 5—Waves**. During school closures, the FOSS team will be expanding the **Home/School Connection Center** on the FOSS website <https://www.fossweb.com>.

Families can access Home/School Connections and many other resources (multimedia, streaming video, and *FOSS Science Resources* interactive e-book) on FOSSweb through the class pages set up by the teacher. The teacher will need to provide the class username and password for full access.

If the teacher has not set up Class Pages, families can still access the **Home/School Connections Center** page from the main FOSSweb login page. No registration is necessary for this access.

The Home/School Connections for each module are active investigations that can be conducted at home (inside or outdoors). New activities are added to FOSSweb each Friday.

For reading science content at home when you can't get to a library, we **recommend NSTA's Interactive eBooks**. Many of these books are on our recommended books lists, and all of these books are full of fantastic content. As of today, NSTA has made this content entirely free for the time being. No login required!

<https://www.nsta.org/ebooks/>

In addition, we recommend going to the website for your local city or county library. Many libraries offer ebooks through multiple providers.

If you haven't used FOSSweb resources before, here's how.

For Students and Families: To sign in to FOSSweb, use the user name and password provided by your teacher. This might be a Common Class or Individual Student login. Here's a short video to get you started on FOSSweb

For Student Sign in Video: <https://youtu.be/Fcfjbt7Li2k>

For FOSSweb help: <https://www.fossweb.com/student-parent-help>.

FOR TEACHERS: For help in setting up and using Class Pages, use the Walk-through Videos on FOSSweb: <https://www.fossweb.com/fossweb-walkthrough-videos>

Visit the Home/School Connection for each module you teach, select the specific assignments that will be most relevant to your students at this point in instruction. Communicate with families about which content you are assigning through the Class Pages Notes on FOSSweb or through any other established parent communication channel your school has in place.

Tech support on FOSSweb: <https://www.fossweb.com/contact-us#jotform>

Sincerely, The FOSS Team at the Lawrence Hall of Science

HOME/SCHOOL CONNECTION—WEEK 4, A

Investigation 4: Energy Transfer

Investigate rolling balls down slopes

Materials

- Different size balls
- Cardboard used for a ramp
- Outdoor space

Suggested Procedure

1. Collect different size balls. Find a space outdoors. Think about creating a slope.
2. Investigate working with different variables of starting position, size of the ball, height of slope, distance rolled, timing and speed.
3. In your notebook collect data on each of your trials with each of your variables.
 - How does starting position affect the speed of a ball rolling down a ramp?
 - How does different size balls affect the speed of a ball rolling down the ramp?
 - How does different heights of a slope affect the speed of a ball rolling down the ramp? Explain your thinking in your notebook.

Read "Potential and Kinetic Energy at Work" in *FOSS Science Resources: Energy eBook*

To access the interactive eBook, login to FOSSweb. Click on the Energy Module, and go to the Media Library. Click on the eBook.

Read "Potential and Kinetic Energy at Work"

View the Streaming Video, *All about the Transfer of Energy*

To access the streaming videos, login to FOSSweb, click on the Water and Climate Module, and go to the Media Library. Click on the Streaming Videos. View the video, *All about the Transfer of Energy*, Chapters 1–6.

What happens to energy when objects collide? Why do car collisions cause so much damage?

HOME/SCHOOL CONNECTION—WEEK 4, B

Investigation 5: Waves

Research Renewable Energy

What are the sources of alternative energy in your region? Are there any solar or wind farms or geothermal or hydroelectric plants in your area? Do you know of a friend or family member who knows a lot about any of these ways to produce electricity? Or do you know of anyone who has an electric car? Can you interview them and find out how they work? Maybe you can interview them by phone or online? Record in your notebook what you learn.

Read "Alternative Sources of Energy " in FOSS Science Resources: Energy eBook

To access the interactive eBook, login to FOSSweb. Click on the Energy Module, and go to the Media Library. Click on the eBook.

HOME/SCHOOL CONNECTION—WEEK 4, C

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Investigation 5: Waves

Engineering with Solar Energy—Construct and Test a Solar Oven

Materials

- Pizza box or shoe box
- Outdoor space
- Aluminum foil
- Clear plastic wrap
- Tape
- Scissors
- Black construction Paper
- Newspaper

Suggested procedure

Here are some ideas to consider but there are a lot of ways to improve these design ideas. This is just to get you started. You could improve this design and cook things all summer long.

- Wrap the inside of your box with aluminum foil to help reflect the sunlight into the box. Fit black construction paper on the bottom of the box to help absorb the sun's energy.
- Fold or crumble newspaper to use on the inside edges on the box for insulation to hold in the sun's heat. Use tape to hold in place.
- You need to get sunlight inside the box. Cut a large window on the top lid of the box. Tape plastic wrap to the underside of the top lid of the box. Be sure the plastic wrap is tight and taped down on all four edges to for a seal to keep the sun's heat in the box.
- Give it a try on a sunny day. Find the sunniest location. Think about the angle of the box to get the best sun into the box. Think about how to orient the box so you always have direct sun and no shade.
- You might explore adding extra reflector panels on the side in order to focus more sunlight into the box thus increasing the temperature in the box.
- What can you try to make: granola and frozen berries, smores, grilled cheese, baked potatoes, roasted apples with cinnamon. Be creative.
- Share your design: take a picture or video, and send it to a classmate and your teacher.