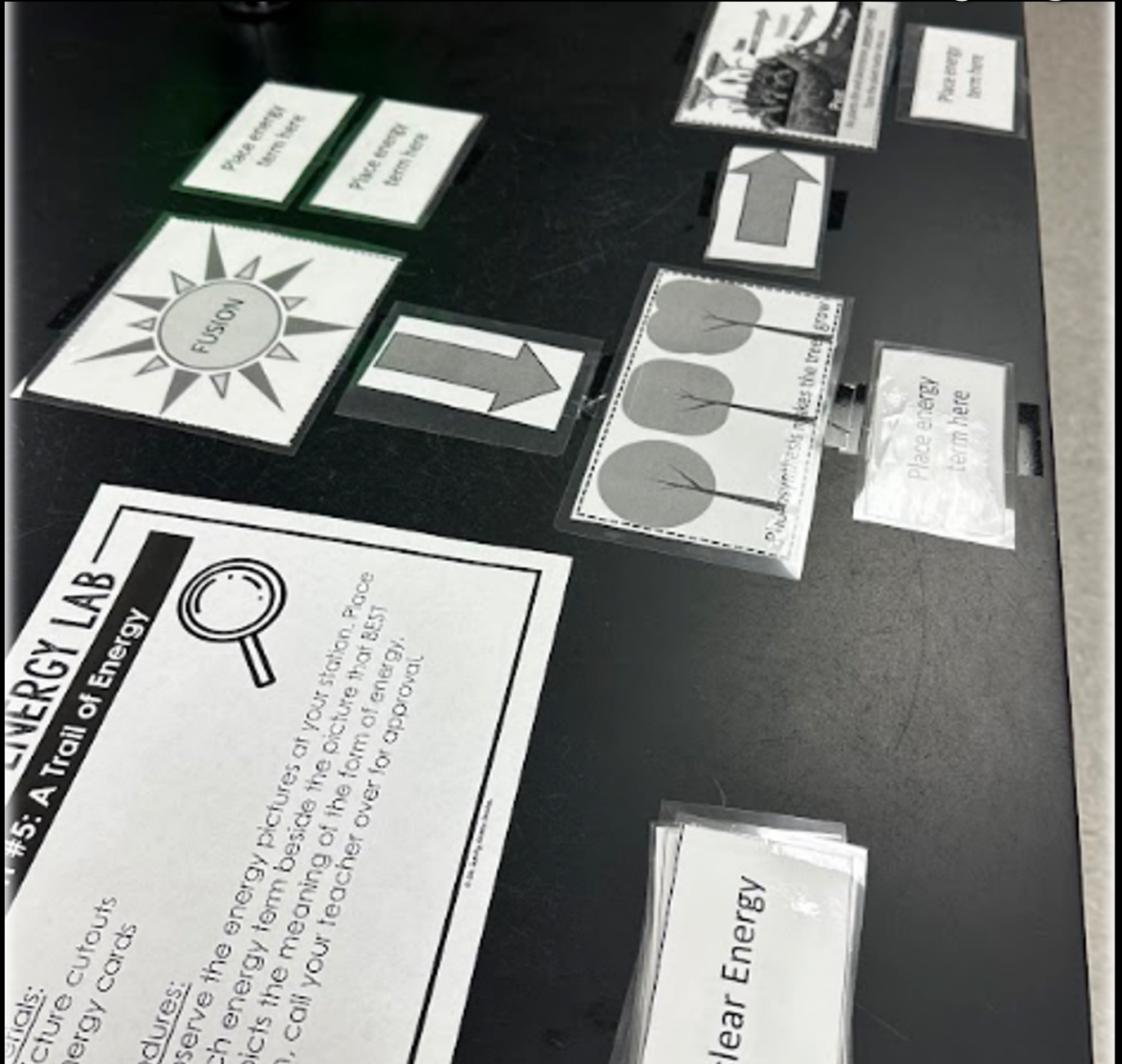


Forms of Energy



STATIONS LAB

12 STATION OPTIONS

FORMS OF ENERGY LAB

Station #1: Moving Screw

Materials:

- magnetic disk
- D cell battery
- 10 cm copper wire
- 2" screw or nail



Procedures:

1. Place the magnetic disk on the flat side of the screw/nail.
2. Pick up the point of the screw with the "knob" side of the battery so the screw/disk is suspended from the battery.
3. Connect the (-) side of the battery to the magnetic disk.
4. That's it! The magnet/screw should start to spin.

© 2015 Savvas Learning Company LLC

FORMS OF ENERGY LAB

Station #4: Glowing Magnesium

Materials:

magnesium ribbon, match, safety glasses, tongs, empty beaker (for the used match)



Procedures:

1. Have one person in your group hold the magnesium ribbon with a pair of tongs. Hold the ribbon over a heat-resistant surface and away from others.
2. Have another person light a match and hold it to the magnesium until it catches fire.
3. Let the magnesium burn out and discard the match in the beaker of water.

© 2015 Savvas Learning Company LLC

FORMS OF ENERGY LAB

Station #3: Magic Water

Materials:

- 250 mL beaker
- Hotplate
- Thermometer
- Tongs
- Food coloring



Procedures:

1. Heat 200 mL of water to approximately 90° F.
2. Place 1 drop of food coloring into the warm water and observe.

© 2015 Savvas Learning Company LLC

FORMS OF ENERGY LAB

Station #2: Mechanical Energy at Work

Materials:

small marble, 4 ft. plastic PVC pipe cut in half, lightweight cup, meter stick



Procedures:

1. Set up the ramp so the cup is at the base with the open end facing the top of the ramp.
2. Place a meter stick at the bottom of the ramp beside the cup (for measurement purposes).
3. Hold the marble at the top of the ramp and let go. Record the distance the marble was able to push the cup.
4. Now, start the marble 1/2 way down the ramp. Let marble go. Measure how far the cup was pushed.
5. Lastly, start the marble just a few inches from the bottom of the ramp. Measure how far the cup was pushed.

© 2015 Savvas Learning Company LLC

FORMS OF ENERGY LAB

Station #5: A Trail of Energy

Materials:

- picture cutouts
- energy cards



Procedures:

1. Observe the energy pictures at your station. Place each energy term beside the picture that BEST depicts the meaning of the form of energy.
2. Then, call your teacher over for approval.

© 2015 Savvas Learning Company LLC

FORMS OF ENERGY LAB

Station #6: Give Me Some Energy!

Materials:

candy (with nutritional facts), calculator

Procedures:

We get energy from the food we eat. This energy is often measured by calories. One calorie is equal to 4186 J.

1. Look at the nutrition label on the bag of candy. How many calories of energy does the candy contain?
2. Calculate how many joules of energy this candy contains by using the following formula:
 $(\text{calories}) \times 4186 = \text{J (energy from 1 serving)}$
3. The average person needs to take in 10,000,000 J of energy each day. How many bags of this candy would you need to eat to get this much energy?

© 2015 Savvas Learning Company LLC

FORMS OF ENERGY LAB

Station #8: Solar Powered Motor

Materials:

- 5
- a
- mini
- heat

Procedures:

1. Use the
2. Turn
3. Ob



© 2015 Savvas Learning Company LLC

FORMS OF ENERGY LAB

Station #7: It's Glow Cool!

Materials:

glow stick

Procedures:

1. Observe the glow stick.
2. Bend the glow stick to break the inner glass vial.
3. Observe what happens.

A glow stick contains two separate chemical solutions inside a flexible plastic tube. One is a mixture of a fluorescent dye and an oxalate ester, and the other is a solution of hydrogen peroxide, which is contained in a small glass vial. The breaking vial allows the hydrogen peroxide to mix with the oxalate ester and dye in the outer tube. The mixing triggers a chemical reaction. The hydrogen peroxide reacts with the oxalate ester to create an unstable compound that decomposes into carbon dioxide and energy. This causes the glow stick to "light up."

© 2015 Savvas Learning Company LLC

FORMS OF ENERGY LAB

Station #9: Pendulum Swing

Materials:

- small metal washer tied to a string
- ring stand

Procedures:

1. Attach the string to the ring stand to create a pendulum.
2. Pull the washer back and release the pendulum.
3. Observe the motion of the pendulum.

© 2015 Savvas Learning Company LLC

FORMS OF ENERGY LAB

Station #11: Virtual Lab Activity A

Materials:

- computer/tablet/device



Procedures:

1. Visit the following website: <https://bit.ly/2MIMBU4>
2. Move through each page/module in search of the answers to the questions that are provided on your student answer document.

© 2015 Savvas Learning Company LLC

FORMS OF ENERGY LAB

Station #12: Virtual Lab Activity B

Materials:

- computer/tablet/device



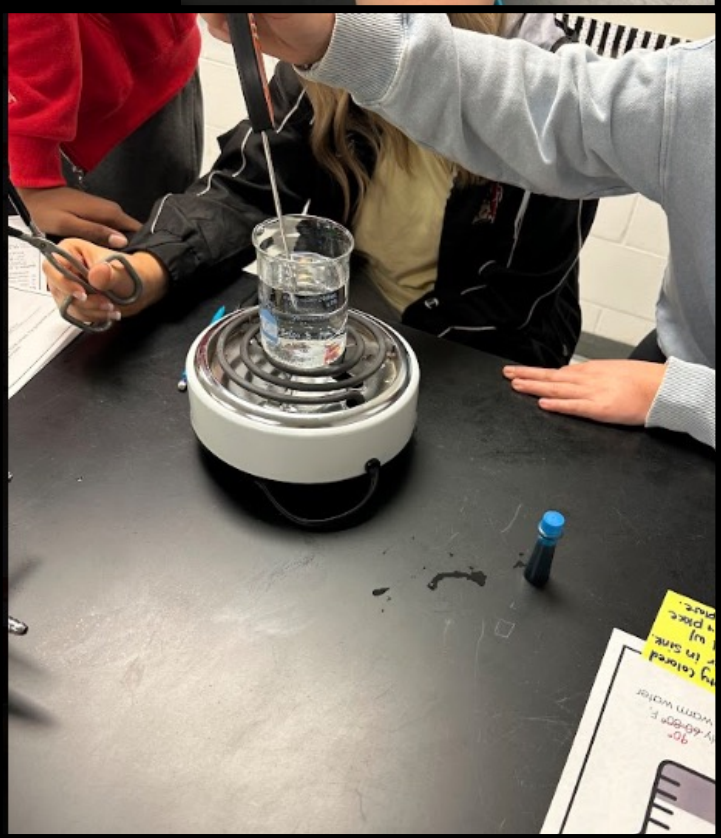
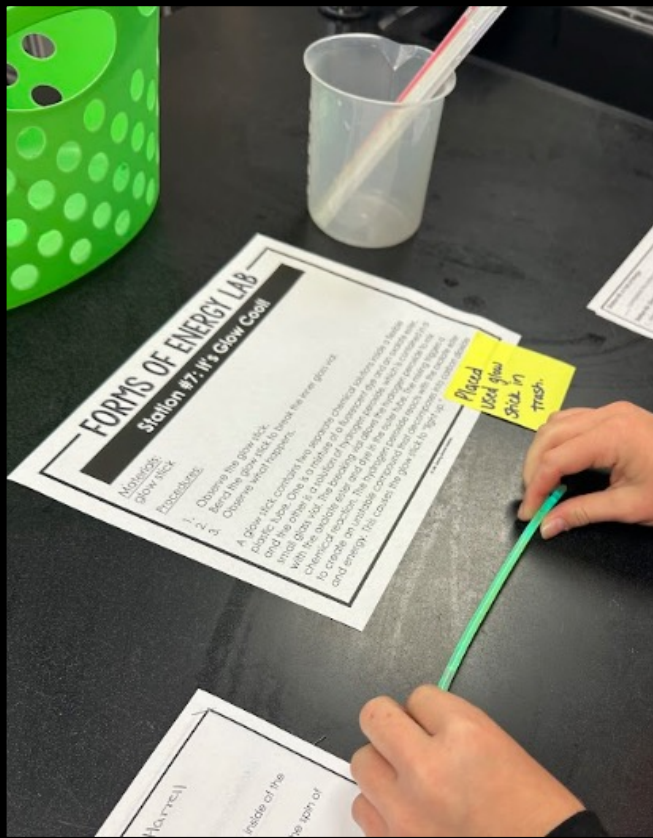
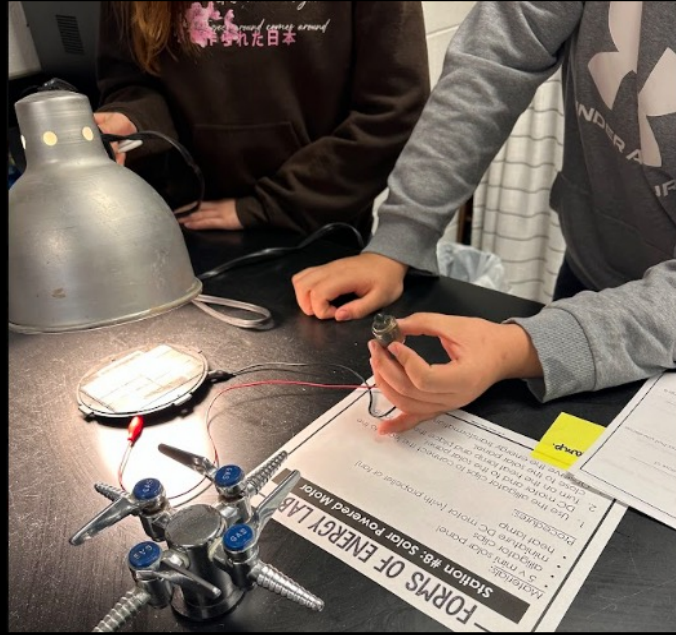
Procedures:

1. Visit the following website: <https://bit.ly/1uDYA1D>
2. Visit the following website and watch the video: What is Kinetic and Potential Energy?

© 2015 Savvas Learning Company LLC

Edit to fit your needs.

ENGAGING & FUN FOR EVERYONE!



STUDENT ANSWER DOCUMENT

Student Answer Document Forms of Energy Lab

Name(s): _____

Station #1: Moving Screw

1. What type of energy does the battery have before it is used? _____
2. When the copper wire touches the flat end of the battery, a chemical reaction begins inside of the battery. What type of energy is present at this point? _____
3. The chemical energy from the battery is converted into _____ energy, as seen by the spin of the magnet and _____.

Station #2: Kinetic & Potential Energy

1. What type of energy is kinetic energy?
2. What type of energy is potential energy?
3. The higher the mass, the more potential energy it has. What observations, with distance that the mass falls, support this claim?

Station #3: Magic

1. What type of energy is magic?
2. What type of energy is magic?

Station #4: Glowing

1. What types of energy are present?

Station #5: A Trail of Energy

_____. I completed this station and my teacher checked for accuracy.

Station #6: Give Me Some Energy!

1. How many calories are in one serving of this food item? _____
2. How many joules of energy does one serving of this food item contain? _____
3. How many servings of this food would you need to consume to get your daily dose of energy? _____

Station 7: It's Glow Cool!

Explain the energy transformations that took place. Underline all the forms of energy that you discuss in your explanation:

Station 10: Exothermic Dissolution

What did you notice about the temperature of the water BEFORE the CaCl_2 was added and the temperature of the water AFTER the CaCl_2 was added?

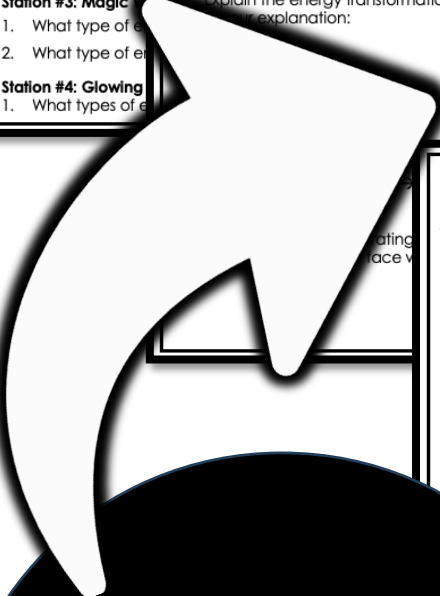
What energy transformation did you witness at this station? _____ → _____

Station #11: Virtual Lab Activity A

1. What is energy?
2. List 4 types of potential energy

Station #12: Virtual Lab Activity B

What is the key to making a roller coaster move? _____
_____ pulls a roller coaster down the track, which increases _____ and _____.
_____ kinetic energy? _____



EDITABLE

Customize
as needed!

Your students
are going to
LOVE this lab!

MATERIALS NEEDED:

- [Magnetic disk](#)
- [D cell battery](#)
- 10 cm [copper wire](#)
- 2" screw or [nail](#)
- [Marble](#) (small)
- 4 ft. [PVC pipe](#) cut in half or a pool noodle cut in half
- [Meter stick](#)
- [Lightweight cup](#)
- [Hotplate](#)
- [Beaker](#)
- [Thermometer](#)
- [Food coloring](#)
- [Magnesium ribbon](#)
- [Matches](#) or [lighter](#)
- [Safety glasses](#)
- [Metal tongs](#)
- A bag of candy or chips
- Calculator
- [Glow sticks](#)
- [5 V mini solar panel](#)
- [Alligator clips](#)
- [Miniature DC motor](#) (with propeller or fan)
- [Heat lamp](#)
- Small metal washer tied to a string
- Ring stand
- [Calcium chloride granules](#) (CaCl_2)
- [250 mL beaker](#)
- [Digital thermometer](#)
- Plastic spoon
- [Stirring rod](#)

*Don't have
these supplies?
No worries!*

**THERE IS A
DIGITAL VERSION
OF THIS LAB**