

Energy Awareness Pre/Post Survey, Grades 4-5

Answers

Name: _____

Date: _____

1. Look at the pictures and circle the appropriate letters or letters (there may be more than one right answer) that apply:


- If it generates heat circle the word **Heat**.
- If it generates light circle the word **Light**.
- If it produces sound circle the word **Sound**.
- If it moves circle the word **Moves**.
- If it uses electricity circle the word **Electric**.
- If it doesn't do any of the above don't circle any of the letters

Fan



Heat
Light
Sound
Moves
Electric

Rock



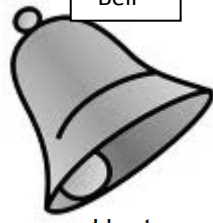
Heat
Light
None
Sound
Moves
Electric

IC Bulb



Heat
Light
Sound
Moves
Electric

Bell



Heat
Light
Sound
Moves
Electric

Lit candle



Heat
Light
Sound
Moves
Electric

Cell phone



Heat
Light
Sound
Moves
Electric

Fill-in the blanks with one word that fits in both spots....

2. E N E R G Y is the ability to do work. Our bodies use food to make E N E R G Y so we can play and read and clean our rooms. The other types of energy we use help make our lives easier and more comfortable.

3. Draw a line to connect the heat transfer name to the correct definition:

- Convection → The transfer of heat by invisible electromagnetic waves.
- Radiation → The transfer of heat by direct contact between objects.
- Conduction → The transfer of heat by the movement of molecules in a gas (air).

4. The pan on the stove is placed on top of a burner to cook an egg; write a short answer to the following questions:



- What is happening to the pan?
The pan is being heated by the fire by CONDUCTION. The atoms and molecules in the pan are moving around, speeding up as they get hot, bumping into their neighbors, which also are getting excited.
- Do you think the pan's metal handle will get hot?
The metal, which is a good material for transferring heat, cooks the food and heats the entire pan, including the handle! Don't touch without mittens!
- What type of heat transfer does the hot air rising off the pan represent?
The hot pan and food transfer heat to the air above it, which is a heat transfer by CONVECTION.
- What type of heat transfer happens when you warm your hands near the pan without touching it?
If you put your hands near the hot pan without touching it and they felt warm, that would be heat transfer by RADIATION.

5. Heat always moves from warmer things to cooler things – true or false? (circle one)

6. Which of the following items costs the most to run per hour? (circle your choice)

a) Dishwasher

b) Computer

c) Television

d) Refrigerator

e) Xbox 360

7. Why do you think the item you chose is the most expensive? Answer- “**dishwasher**”.

- The students may choose the largest item, the refrigerator or even the one that they may be the most familiar with-the X-box, but the answer is the **dishwasher**. The dishwasher uses a lot of energy to heat up the water to clean the dishes and they are generally operated at the hottest water of all household uses, typically 135 to 140°F to sanitize the dishes.
- Some may choose the **refrigerator** because it is the largest, but because refrigerators (unless it is a very old one) are well insulated and have pretty efficient compressors, they are not major energy users. The main reason that they use extra energy is because people open them and look around a long time before deciding what they want and closing them. This allows the warm air in the kitchen to enter the cold refrigerator making the refrigerator work harder to cool all that warm air, thus wasting energy.

Explain that it saves energy to:

- Keep the refrigerator door closed
- Run the dishwasher only when full
- Shut appliances “off” when not using. This may require pulling the cord out of the wall socket because many appliance still draw energy when switched “off”, yet still connected.

8. Why is it important to conserve energy at school, at home, and in your community?

There are many reasons to save energy, such as:









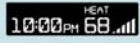

- Conserving energy saves money for family on your utility bills, and makes more money available for other family needs or fun activities.

- Reducing the CO2 emissions produced by generating electricity will reduce the greenhouse effect which helps reduce global warming. One example of global warming is the polar bear's melting icebergs.
- We have a limited supply of fuel, so at some point our current supplies will run out. Any conservation efforts now will extend this deadline further into the future.
- The amount of fuel that we import in for our nation's demands contributes to our trade deficit and makes the United States dependent on other countries.
- Can you think of any others?

9. What can you do to conserve or save energy at school, at home, and in your community (can share these ideas or print off this for the children to take home)?

THE EASY ENERGY ACTION PLAN

10 SIMPLE WAYS TO USE ENERGY WISELY

1	 Turn off lights.	<input type="checkbox"/> <small>CHECK THE BOX</small>
2	 Use energy-saving light bulbs.	<input type="checkbox"/>
3	Shut off computers. 	<input type="checkbox"/>
4	 Use "smart" power strips.	<input type="checkbox"/>
5	Turn off entertainment devices when not in use (TV, game systems, etc.) 	<input type="checkbox"/>
6	 Use natural light, heat and cooling.	<input type="checkbox"/>
7	Unplug your phone charger when not in use. 	<input type="checkbox"/>
8	 Talk to your parents about ENERGY STAR® appliances.	<input type="checkbox"/>
9	Talk to your parents about programmable digital thermostats. 	<input type="checkbox"/>
10	 Talk to your parents about Home improvements (windows, doors, roofs, etc.)	<input type="checkbox"/>





LoseYourExcuse.gov



Figure 1: Downloaded from: http://www.eere.energy.gov/kids/smart_home.html