

# Baltimore Energy Challenge

## Elementary/Middle Core Curriculum

### I. Description

The Baltimore Energy Challenge curriculum is intended to city schools students' understanding of energy and the importance of energy conservation. The curriculum strives to increase students' awareness of both how energy consumption is an essential part of daily life in Baltimore City, and the crucial financial, environmental, health and civic benefits that a reduction in energy consumption with behavioral change can provide. To this end BEC core Green Team curriculum will focus on exploring the following questions:

- *What is energy? How is energy produced and delivered to household? What are the requirements, costs and benefits of renewable resources as compared to fossil fuels?*
- *What is energy used for at home, in schools and in the community? How much energy is actually being used in our homes and schools?*
- *What are the consequences of our community's current energy use?*
- *What is behavioral change and what are the benefits? How can we reduce energy consumption at home, at school and in our community?*

### II. Organization

The core curriculum is the essential background in energy production, energy consumption and behavioral change that all Green Team/ classes **must** complete. It is intended to take about six weeks. Green Team/ class projects are to follow the core curriculum and completed by June. Suggested supplemental lessons are also provided in this binder and on BEC's Google Drive. These lessons can be added into your Green Team and/or curriculum as needed, but only after completion of the core curriculum. Projects can begin prior to the completion of the curriculum. If it's a lengthy project, like creating books, it would be best to start them early by interspersing curriculum with projects.

### III. Weekly Schedule

**Week One:** *Understanding Behaviors , Draw Energy, Energy Conservation Brainstorm & Student Pledge*

Introduce the students to actions they can take and habits that they can change to conserve energy. Encourage students to follow these habits and share them with teachers, parents, and friends. Have the students draw what they think energy is and discuss. Brainstorm ways to save energy and have students take the superhero pledge.

**Week Two:** *Energy Overview, Pollution and Renewables*

After an introduction to fossil fuels, energy production and the electrical grid have the students map out energy from the the source to their homes and schools. Students should identify causes and consequences of pollution in their energy maps. Introduce renewables and discuss their cost, benefits and potential impact on their energy maps. Talk to students about what energy captains are and how they can become one.

**Week Three:** *Two Basic Energy Principles Energy, Draft Detectors*

Pick a common household object and have students create a web of all the energy inputs required to produce, transport and consume that object. Students should consider what we use energy for by detecting drafts and their effects on heating and cooling bills at school and at home.

**Week Four:** *Home Energy Challenge, Energy Vampires, Introduction to Energy Audits*

Lesson on Energy Vampires also known as standby energy and home energy usage. Have students identify where energy is being consumed in the classroom compared to the home and introduce the concept and use of energy audits.

**Week Five:** *School Energy Audits*

Perform a school energy audit. Convert watts into more tangible explanations of energy consumption such as cars on the road.

**Week Six:** *Behavioral Change*

Use "Don't be a Waster" search and find and Bingo to review energy vampires and to reinforce the lessons of the energy audit and the necessity of behavioral change.

**Weeks Seven to Twelve:** *Green Team Projects*

Energy Grant project is found on the schools' energy grant application..

## Core Curriculum 2014-15- Elementary

### Week 1

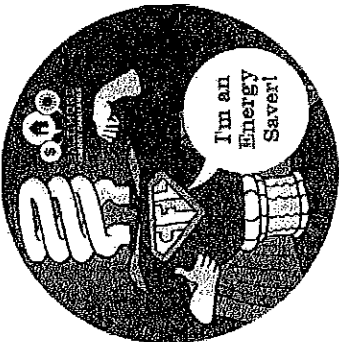
#### Items to take with you:

- Your outline and Student Attachment
- Sign- in sheets
- Activity Ball for Ice Breaker
- Coloring supplies (pencils/markers/crayons)
- Pre Surveys
- Homework Cards

#### Lesson Outline

1. Introduction
  - Introduce yourselves
  - What is BEC? (What is BEC to kids? What are our goals? What are we trying to get kids to do?)
2. Ice Breaker (Activity Ball)
  - Ask the kids to each say their names after they catch the ball
3. Draw Energy
  - a. Ask the kids what does energy mean to them?
  - b. Ask them to draw energy
  - c. Tell them what energy is and begin to explain the different kinds of energy
4. Pre Surveys
5. Brainstorming about story book time idea
6. Energy Superhero Pledge
7. Behavioral Change- 'Go Outside' for example
  - a. Handout Cards
  - b. Go Over "TALK"
    - i. Turn off the lights!
    - ii. Always unplug your electronics!
    - iii. Litter less, recycle more!
    - iv. Know what you want before you open the fridge!

**TALK** to your family and friends about ways to save energy!



## STUDENT ENERGY AWARENESS PRE-SURVEY

The Baltimore Energy Challenge teaches in schools and neighborhoods on how to save energy. Please answer these questions honestly.

1. Do you turn off the lights when you leave a room?  
 yes  no
2. Do you turn off the TV when not watching?  
 yes  no
3. Do you turn off your video games when you are done playing them?  yes  no
4. Do you turn off the water when you brush your teeth?  
 yes  no
5. Do you recycle at home?  yes  no
6. Do you hold the refrigerator door open because you don't know what you want?  yes  no

I am a  boy  girl

Age \_\_\_\_\_ Grade \_\_\_\_\_

Date Survey Taken: \_\_\_\_\_



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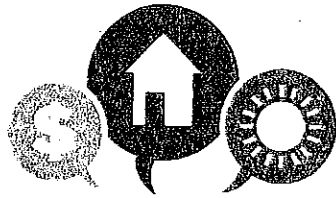
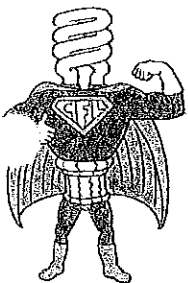
Date Survey Taken: \_\_\_\_\_

Take these actions today to start reducing your energy use:

- ✓ Turn off the lights when you leave a room.
- ✓ Don't keep the fridge door open when deciding what you want.
- ✓ Keep the fridge and freezer full. Use gallons of water to fill the fridge and fill ziplock bags with water to create ice packs for the freezer. Remember, cold keeps cold, cold.
- ✓ Wash clothes in cold water.
- ✓ Hang clothes to dry.
- ✓ Put lids on pots and pans when cooking to cook faster.
- ✓ Take shorter showers.
- ✓ Make sure the water heater is set at 120 degrees and use vacation mode when away for 3 or more days.

Just through your behavior you CAN reduce the amount of energy you use!

You Can Be An ENERGY SUPERHERO



**BALTIMORE ENERGY CHALLENGE**

**BALTIMORE ENERGY CHALLENGE**

443-869-2614

info@BaltimoreEnergyChallenge.org

www.BaltimoreEnergyChallenge.org

## Energy Efficiency Program

Our Energy Efficiency Program is a free service for all Baltimore City residents to provide energy and water conservation upgrades to the home. Our trained staff and AmeriCorps Energy Educators will come to your home and install a wealth of products to help you save energy and therefore save money on your utility bill. We will also talk with you about actions you can take to reduce your energy use through your behavior and habits.

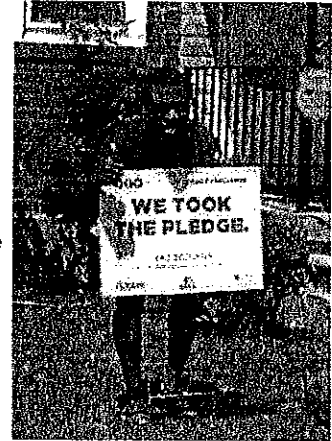


If your home is located in Baltimore City, call **443-869-2614** to schedule your appointment today. This program is a free service to any Baltimore City tenant or homeowner who resides in a house or apartment.

Some of the products we install include:

- CFL and LED light bulbs
- Power strips
- Low-flow showerhead
- Faucet aerators
- Hot water heater wrap
- Pipe insulation
- CO/smoke detector
- Draft stoppers
- Night light
- Hand crank radio
- Flashlight
- Programmable thermostat\*

\*not all houses qualify



## Community Engagement Program

The Community Engagement program continues to partner with neighborhoods, community associations, schools, churches and businesses throughout Baltimore proving that a grassroots, word-of-mouth campaign can make a difference one person at a time. Our AmeriCorps Energy Educators are available to attend community, school, and church meetings and events to share how energy saving actions can reduce your energy use.

We also provide an overview of our Energy Efficiency Program.

Call us at **443-869-2614** or email [info@BaltimoreEnergyChallenge.org](mailto:info@BaltimoreEnergyChallenge.org) for more information or to schedule a speaker for your organization, group of neighbors, school, or faith community.

Help your neighbors, family and friends become more energy efficient — become an **ENERGY CAPTAIN!** Call us for details!

The Baltimore Energy Challenge is a program of the Baltimore City Office of Sustainability in partnership with Civic Works, Inc. and the Baltimore Community Foundation.



# BALTIMORE ENERGY CHALLENGE

901N. Milton Ave., Baltimore, MD 21205  
www.BaltimoreEnergyChallenge.org  
443.869.2614

Teachers:

Camp Name:

Date:

Males:

Females:

Student Name	Age	Grade
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		
17.		
18.		
19.		
20.		

## Draw Energy

**Objective:** For students to define, illustrate and verbalize what energy is, what kinds of energy there are, and understand electricity.

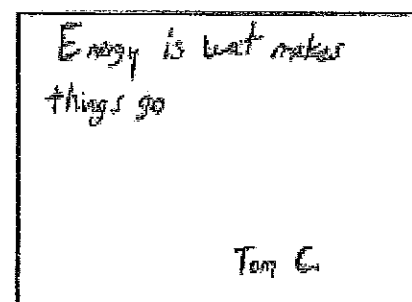
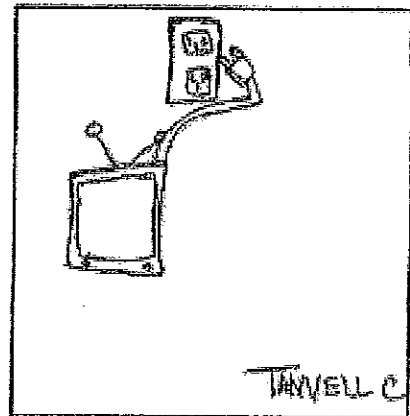
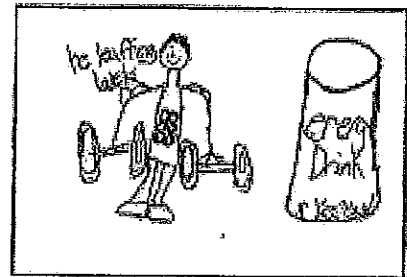
**Time:** 20 minutes

**Materials:** Precut piece of paper, coal or an image of coal

**Preparation:** cut small pieces of paper, pass out pencils

### Activity:

- Ask students to think about what energy is.
- Give students three minutes to draw "energy" on small pieces of paper (for older students, write a paragraph )
- When time's up, students should turn to a neighbor and will have 1 minutes to tell their neighbor what they drew/wrote.
- Ask for volunteers to share with the class, reward participation (ex. stickers, candy, pencil, etc.)
- Point out the different types of energy including, body, alternative and electricity.
- Ask what fuels each type of energy. (Give the examples, What gives your body energy?)
- Focus on coal as a fuel for electricity; ask who has seen coal? Show a picture.
- Explain drawbacks of use of fossil fuels; non renewable and pollutant.



# JOIN THE CHALLENGE! TAKE THE PLEDGE!

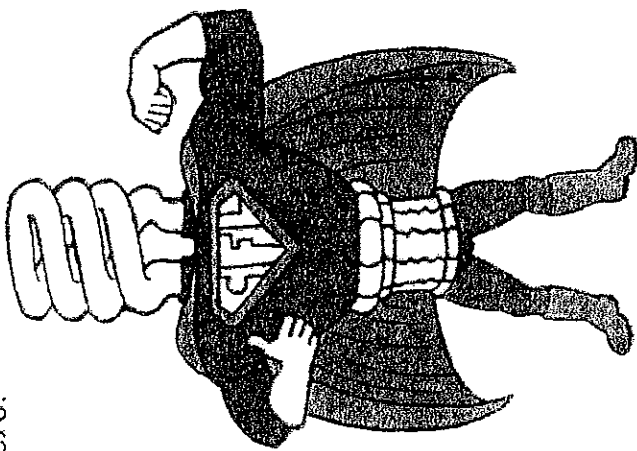
I \_\_\_\_\_ want to be an Energy Superhero!

To be an Energy Superhero, I pledge to save energy by:

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date



*On behalf of the Baltimore Energy Challenge, I would like to thank you for pledging to help protect the environment.*

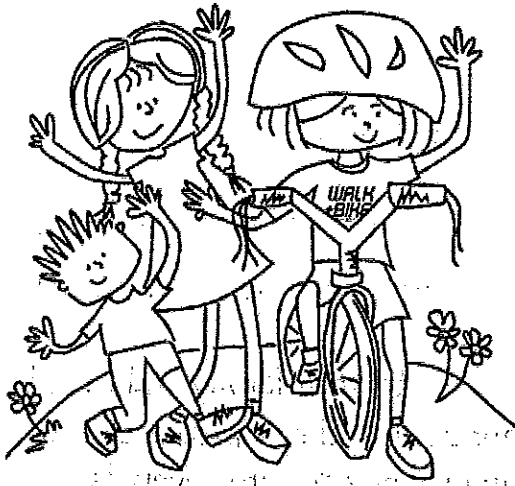
- Charlie F. Lightbulb

**\$\$\$\$ BALTIMORE ENERGY CHALLENGE**

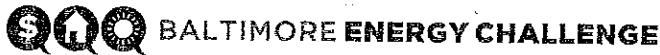


# Go Outside

walk, bike, run, swing, climb, slide,  
throw, catch, jump, play!



turn off the lights, unplug  
electronics, and go outside!



**BALTIMORE ENERGY CHALLENGE**

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**BALTIMORE ENERGY CHALLENGE**

## Core Curriculum 2014-2015- Elementary

### Week 2

#### Items to take with you:

- Your Outline
- Sign- in Sheets
- Light Switch Decals, Fridge Magnet
- Light Meter
- Energy Grid Map Cards
- Homework Cards

#### Lesson Outline

1. Recap from previous week
  - a. Did you "TALK" with your family and friends about what you learned last week?
  - b. Did you choose to "Go Outside" oppose to using your electronic devices?
    - i. What did you do?
    - ii. How does going outside help save energy?
2. Introduction: **Save Energy**
  - a. PowerPoint/ Discussion (Need to revise PowerPoint)
    - i. Do you remember from last week, what energy is?
    - ii. Why should we save energy?
    - iii. How can we save energy? Name one thing you signed off on doing on your energy pledge- did you do it?
      1. By Turning off the lights
        - a. How do you save energy by turning off the lights?
      2. Know what you want before opening the fridge
      3. Ask your parents to:
        - a. Switch out the old light bulbs for CFLs
          - i. Show the light bulb and CFL
          - ii. Display the difference in bulbs with the Light Meter
        - b. Use cold water when washing your clothes
        - c. Hanging your clothes on clothes lines, oppose to using the dryer.
      4. What are other ways you, your family and your friends can save energy?
3. Energy Grid Map Activity
  - a. See attached Energy Grid Map sheet
4. Energy Activity Game: Charlie F Light bulb (CFL)/ Super Energy Hero Says **and/or time depending** Energy Charades
  - a. See CFL says sheet
    - i. Turn off the lights
    - ii. Shut the fridge door

## Energy Grid Maps

### **Goals:**

- Enhance the students' understanding of how energy is produced for and delivered to their homes and schools.

### **Time:**

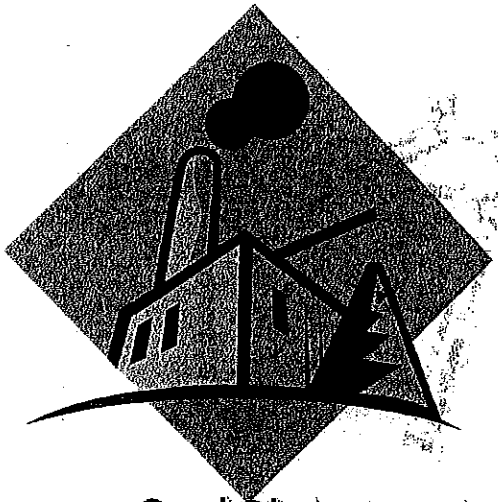
- 15 - 25 minutes

### **Materials:**

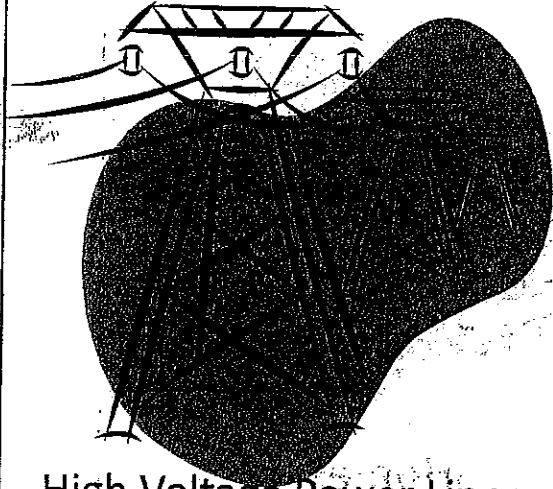
- Power grid cards (coal plant, pollution, power lines, wind turbines, homes, schools and business)

### **Activity:**

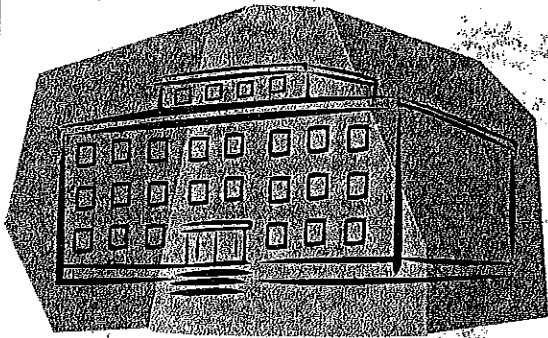
- Divide the students into small groups and pass out power grid cards excepting the wind turbine to each group.
- Inform the students that they are going to apply what they learned from the "Understanding Energy" power point.
- In their groups the students are to arrange the power grid cards in their appropriate order. Starting with a coal plant in the center the students should place power lines between the plant and homes, businesses and schools.
- The BEC educator should go from group to group and ask the students to explain their grid maps.
- Ask the students where they think pollution belongs in their grid map. The students should place the pollution cards around the map. Get the students to discuss pollution as a byproduct of the power grid.
- Ask the students which part of the power grid is the source of the electricity in the grid. Ask the students what they think the origin of the majority of pollution is. They should identify the coal plant.
- Pass out the wind turbine cards. Ask the students to identify what is on the card and what type of energy it is.
- Have the students place the wind turbine into their power grids. Ask the students what they think would happen to the pollution around the map if wind turbines are at the center.



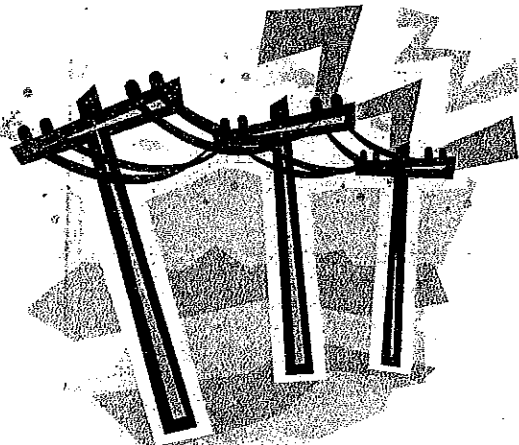
Coal Plant



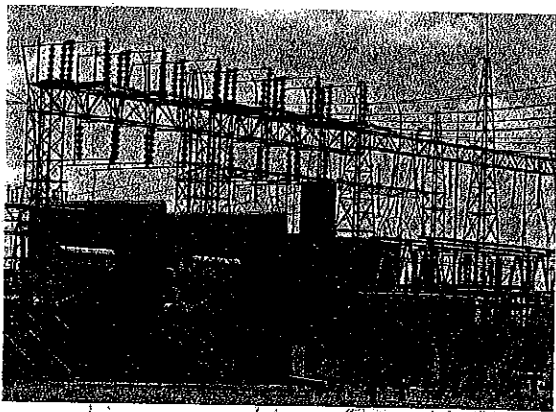
High Voltage Power Lines



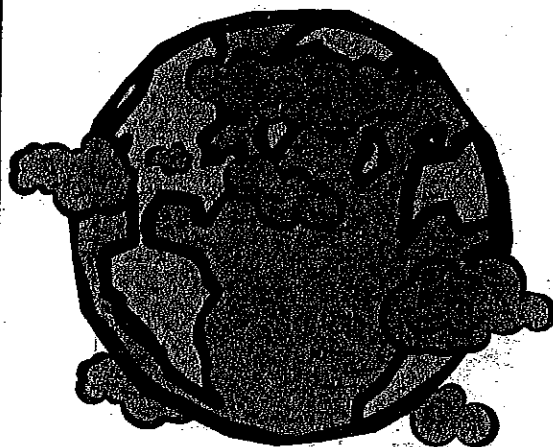
School



Power Lines



Substation



Pollution

## Charlie F. Lightbulb [CFL] Says

### **Goal**

For students to be able to play a game demonstrating energy saving actions

**Time:** 10 minutes

### **Preparation**

- *(optional) Ensure there is a section in the room for students to stand separately from you. You can use tape to draw a line, or utilize the natural layout of the room.*

### **Activity**

- Tell students, now that we have learned so much about energy savings we are going to play a game using what we know. This game is called energy superhero says.
- This game is very similar to Simon Says, except that everything we do will be energy savings actions.
- Make sure the students know how to play Simon Says.
  - I will be the Energy Superhero, because I save energy everywhere I go. If you want to be an energy superhero, you have to be left at the end of the game.
  - Tell students that they can only do the actions that the energy superhero does if you say, "Energy superhero says," first. Otherwise, you will have to sit out the rest of the round.
  - Demonstrate the game prior to playing.
  - Energy Superhero says (examples)
    - Plant a Tree
    - Turn of the light
    - Unplug the cell phone
    - Turn of the TV
    - Switch the CFLs

## Energy Charades

### **Goal:**

For students to be able to act out energy saving actions, and have team members be able to guess what the action is.

**Time:** 15 minutes

**Materials:** Chalk board or dry erase board to keep score.  
Chalk or dry erase markers  
*(optional) energy savings action slips of paper*  
*Paper bag*

### **Preparation:**

- *(optional) You can write energy saving actions that are easy to imitate on a piece of paper and put it in a bag or hat for students to pick from.*

### **Activity**

- Tell students that we are going to take all of the things that we have learned about how to save energy and use it to play a game.
- Split the room into two groups.
- Ask students, have any of you played charades before? Explain charades.
  - One person will come up from the first team and act out an energy saving action without using any words. Their team will have to try and guess the action.
  - If the team cannot guess correctly in the allotted time, than the other team has a chance to guess and receive the points.
  - Tip: use a non-biased strategy for selecting who goes next (ex beginning in the back and ending in the front).
- Before the game begins tell the students to think about all the things you can do to save energy and pick which one you will want to act out when it is your turn.
- Tip: Students may take a while to think of an energy saving action, tell them they have 30 seconds from when their name is called for their team to guess. You can count down if it seems like they are taking too long.

Recycle	Turn off the water while brushing teeth
Turn off the TV	Plant a tree
Unplug an electronic	Choose the stairs instead of the elevator
Close the curtains when it's hot and sunny	Put on a sweater in the winter instead of turning up the heat
Take a shorter shower	Play outside
Bike or walk instead of driving	Turn off the lights

Change light bulbs to CFLs

Eat vegetables  
instead of meat

Hang up clothes to dry  
(instead of using a dryer)

Think before opening the  
refrigerator

When using A/C or heat, don't leave  
doors or windows open

Use both sides of paper before  
recycling it

Don't litter, and pick up litter when  
you see it

Think of your own energy-saving  
idea, and act it out!

Name one energy saving strategy,  
and get a FREE POINT  
for your team!

Name one energy saving strategy,  
and get a FREE POINT  
for your team!



# Save Energy

Think about what you want before you open the refrigerator.



If you don't know what's inside, open it quickly to look, then close it while you make a choice.



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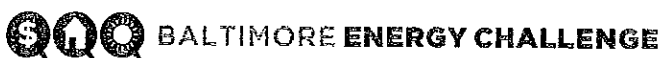


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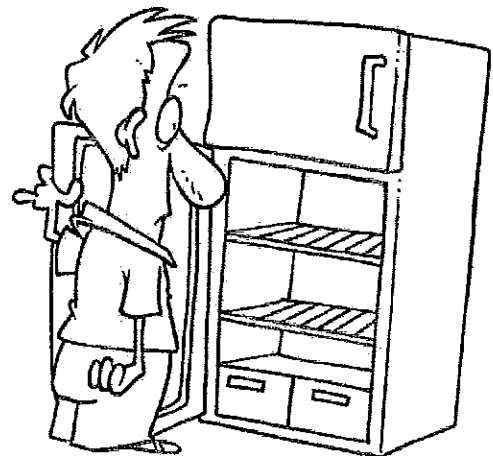


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# Save Energy

Think about what you want before you open the refrigerator.



If you don't know what's inside, open it quickly to look, then close it while you make a choice.



## Core Curriculum 2014-2015- Elementary

### Week 3

#### Items to take with you:

- Your Outline
- Sign- In Sheet
- Kilo Watt Meter(s)
- Lighting and Electronic Audit charts
- Lighting and Electronic Audit Steps sheet with equations

#### Lesson Outline

1. Recap from previous week- **Save Energy**
  - a. Do you remember what we talked about last week?
  - b. Did you choose to start "saving energy"
    - i. What did you do?
  - c. Did you do your "Homework" and "TALK" with your family and friends about what you learned last week?
    - i. What did you, your family, and friends "TALK" about?
2. School Wide Energy Audit
  - a. See attached School Energy Audit Steps
  - b. Students will walk around their school and perform an electronic and light audit for as many rooms as time will allow.
  - c. After the audit is complete, students will calculate the total kWh used per year for each room for both the electronic and lighting audit.

## **School Energy Audit Steps**

Students will perform a school energy audit. (Only light and electronic audits)

### **Lighting Audit**

For school Lighting Audits students will count the lighting fixtures in the room and perform an equation to find out how much energy is being used.

Equation:  $32/1,000 \times (\text{number of lamps}) \times \text{hours per day} \times \text{days per year} = \text{kWh used per year}$

### **Electronics Audit**

For school Electronic Audits students will find electronics that are plugged up in the class/school ( ex. desk lamp or computer) they will unplug it and plug it into the kilowatt ( the educator will be handling the kilowatt device) and then they will watch on the kilowatt device how much energy each device is using when it is in use or in standby mode.

Equation:  $\text{Wattage}/1,000 \times \text{hours per day} \times \text{days used per year} = \text{kWh used per year}$   
(This equation will be done for electronic in use and on standby)

## School Electronics Audit

#	Room	Equipment Type	# in Room	Wattage	Hours used per day	Days used per year	kWh used per year	Total kWh used	Recommendations
1		In Use On Standby							
2		In Use On Standby							
3		In Use On Standby							
4		In Use On Standby							
5		In Use On Standby							
6		In Use On Standby							
7		In Use On Standby							
8		In Use On Standby							
9		In Use On Standby							
10		In Use On Standby							
11		In Use On Standby							
12		In Use On Standby							







**Items to take with you:**

- **Your Outline (This sheet(s))!!**
- **Sign-in Sheets**
- **Smart Strip & Power Strip**
- **Vampire Pokémon Cards**
- **We will need to take the Post-It Wall Pad**
- **Markers for Drawing**
- **Super Hero Plédges (2-line),**
- **Homework Cards - VAMPIRE ENERGY**

**Lesson Outline**

1. Recap from previous week - **SAVE ENERGY (10 minutes)**
  - a. Do you remember what we talked about last week?
  - b. Did you choose to start "saving energy"
    - i. What did you do?
  - c. Did you do your "Homework" and did you "TALK" with your family and friends about what you learned last week?
    - i. What did you, your family, and friends "TALK" about?
2. Introduction: **VAMPIRE ENERGY/ DON'T WASTE ENERGY (20 minutes)**
  - a. Discussion
    - i. Why should we conserve energy? Why should we not waste energy?
    - ii. How does wasting energy impact the environment?
    - iii. Can you give me an example of some thing or some action that wastes energy in your home?
    - iv. What is Vampire Energy/Phantom Energy?
      1. Define Vampire Energy
        - a. Ask kids guess items that are using "vampire energy"
        - b. Provide a copy of the Vampire Energy flyer
      2. Explain how you (or your family) can help eliminate Vampire Energy
        - a. Ask Permission From an Adult First/Be Safe
        - b. Show & Tell - Power Strip/Smart Strip
        - c. Have a discussion
3. Energy Activity/Game: **Win, Lose or Draw (10 minutes)**
  - a. Elementary
    - i. Americorps Instructor #1 will begin to prepare for the next activity



## Summer Camp 2014 -Middle/High

### Week 3 - **VAMPIRE ENERGY/DON'T WASTE ENERGY**

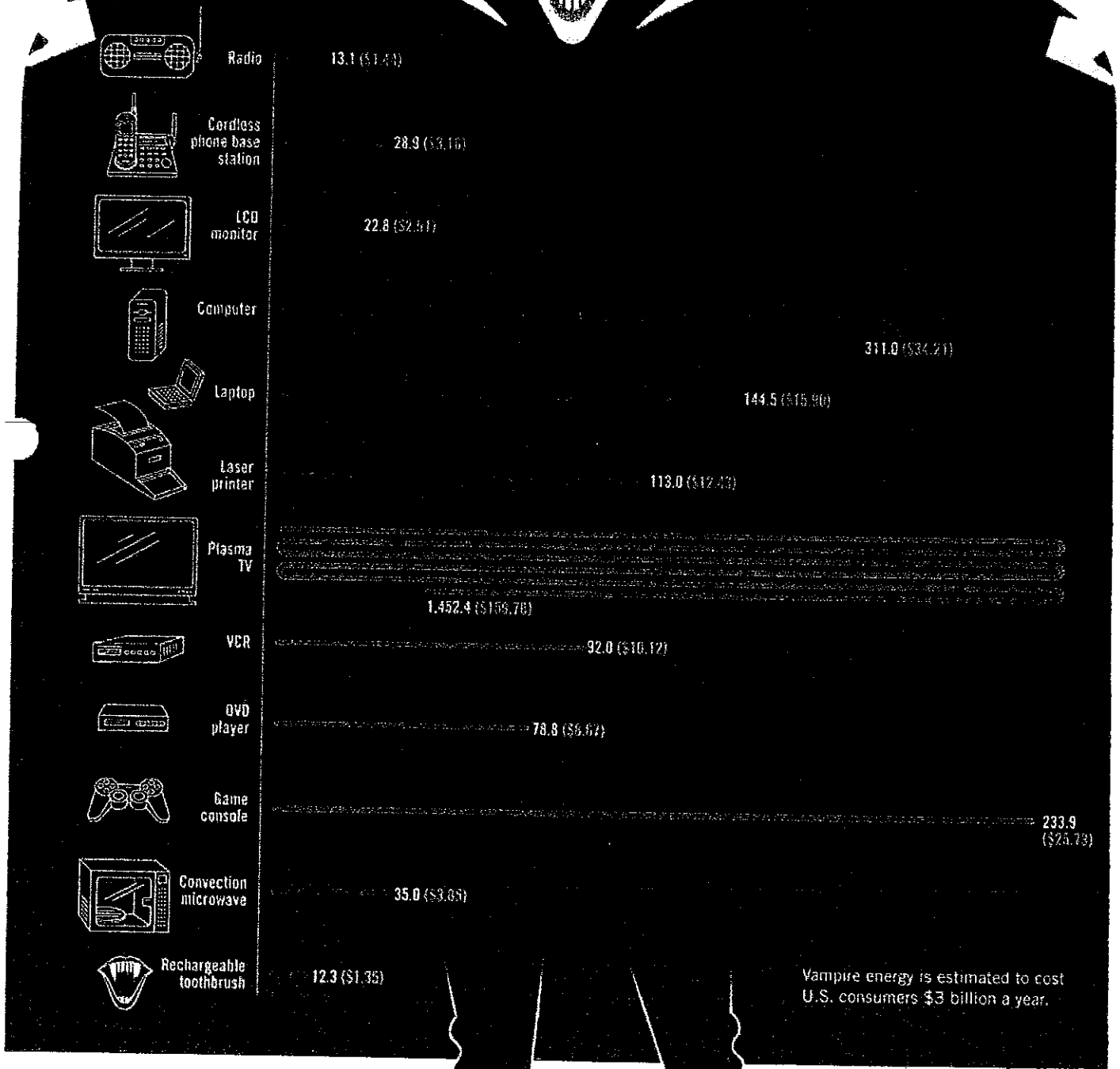
- I would try to get in at least five rounds.
4. **SUPER HERO PLEDGE (5 minutes)**
    - a. Remind the students we have talked about so far, "Going Outside", "Saving Energy", and "Vampire Energy"
    - b. Ask them if they would be willing to take the pledge
    - c. Please give students Super Hero Pledge, Walk them through the activity
  5. **Homework: Behavioral Change - VAMPIRE ENERGY/ DON'T WASTE ENERGY (5 minutes)**
    - a. Handout Pokémon Cards - Vampire Energy Cards (Elementary)
    - b. Handout "Homework" Cards
      - i. Review the activity for home
    - c. Remind them of the "TALK" message
      - i. Turn off the lights!
      - ii. Always unplug your electronics!
      - iii. Litter less, recycle more!
      - iv. Know what you want before you open the fridge!

**Remember to TALK** to your family and friends about ways to save energy!

# Vampire Energy

Even when thousands of appliances are turned off, most are still using some electricity. Appliances are either in passive standby mode (the clock on the microwave is still ticking) or active standby mode (the VCR is off, but programmed to record something).

These numbers are for average standby modes, showing how much electricity is sucked out annually, in kilowatt hours, and what it costs you - assuming 11 cents per kilowatt hour. Red lines show passive standby mode; blue lines show active standby mode.



Vampire energy is estimated to cost U.S. consumers \$3 billion a year.

## Energy Vampires

### **Goal:**

For students to visualize how energy vampires continue to draw power even when they are not in use.

**Time:** 15 minutes

**Materials:** Kilowatt meter

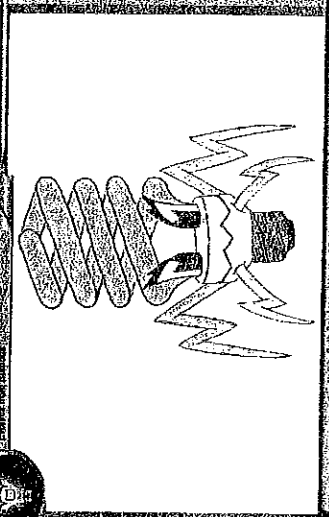
### **Preparation:**

- Locate an energy vampire in the room.
- Plug the energy vampire into the kilowatt meter
- Plug the kilowatt meter into the wall.

### **Activity**

- Ask students, does anyone know what an energy vampire is? An energy vampire is something that uses energy even when it's turned off. Most energy vampires have a little light on them.
- Can anyone think of some energy vampires you have in your home?
- Tell students, we have an energy vampire in our midst as we speak.
- Take students over to the kilowatt meter, or ask for a volunteer to read it to the students.
- Have the volunteer read the kilowatt measurement on the meter.
- The only way to keep energy vampires from stealing power is to unplug them. So what should we do to this energy vampire? Unplug it!

**STABE!** **CeeveeFel** **hp 80**



**Lights Out** Flip a coin. If heads, the Defending Pokémon is now Asleep.

**Radiant Flash**

**20** **60**

**WEAKNESS** **RESISTANCE**

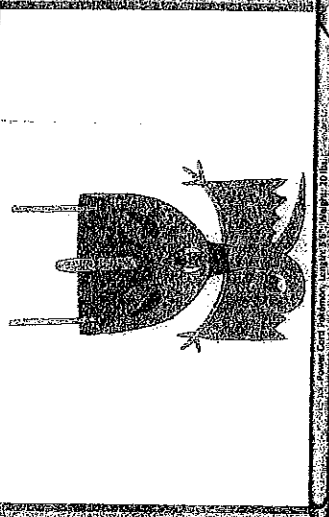
**EVOLUTION**

**TYPE**

**ABILITY**

**DESCRIPTION**

**BASIC** **Vampwire** **hp 80**



**Power Drain** Flip a coin. If tails, Vampwire recovers HP drained from opponent.

**Spark**

**20** **50**

**WEAKNESS** **RESISTANCE**

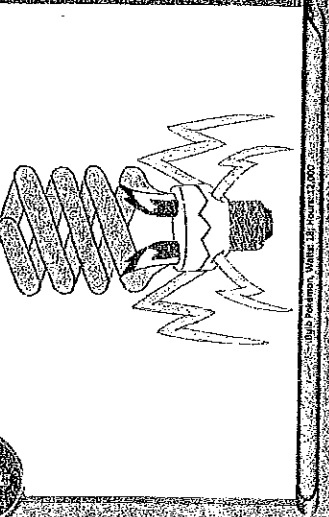
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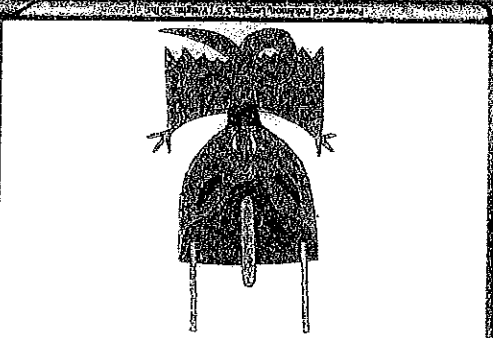
**DESCRIPTION**

**Power Drain** Flip a coin. If tails, Vampwire recovers HP drained from opponent.

**Spark**

**20** **50**

**STABE!** **Vampwire** **hp 80**



**WEAKNESS** **RESISTANCE**

**EVOLUTION**

**TYPE**

**ABILITY**

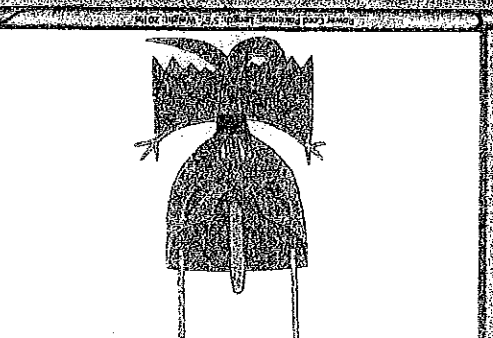
**DESCRIPTION**

**Power Drain** Flip a coin. If tails, Vampwire recovers HP drained from opponent.

**Spark**

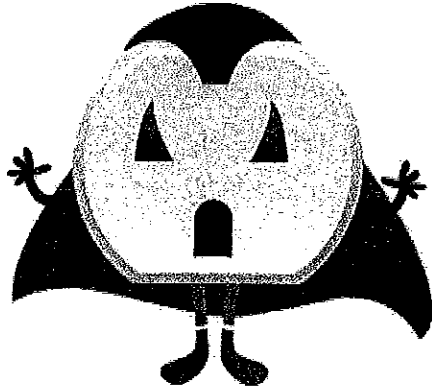
**20** **50**

**BASIC** **Vampwire** **hp 80**



# Switch it Off

TVs, DVDs, game consoles, computers, printers, phone chargers, and other electronics use energy, even when they are in standby mode. These are called energy vampires.

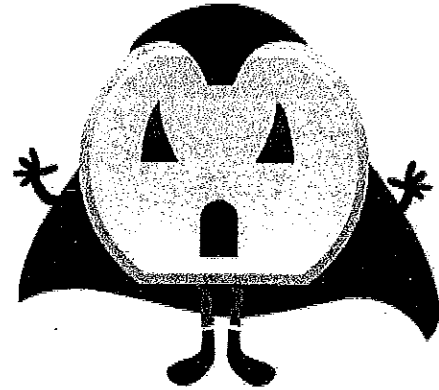


To save energy, use a power strip and switch off energy vampires when not in use .

   **BALTIMORE ENERGY CHALLENGE**

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TVs, DVDs, game consoles, computers, printers, phone chargers, and other electronics use energy, even when they are in standby mode. These are called energy vampires.

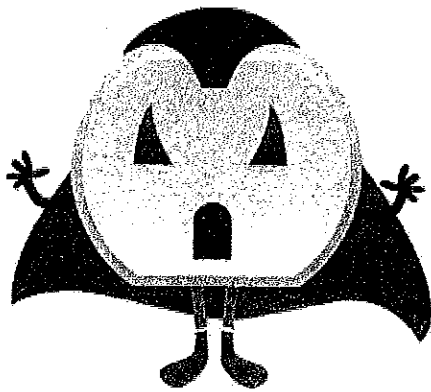


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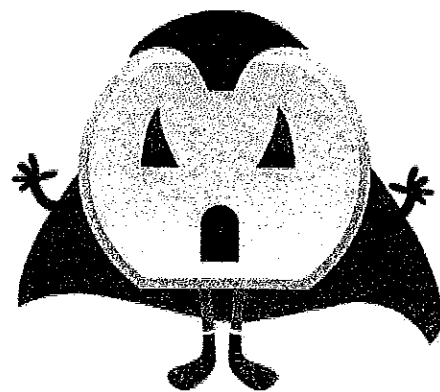


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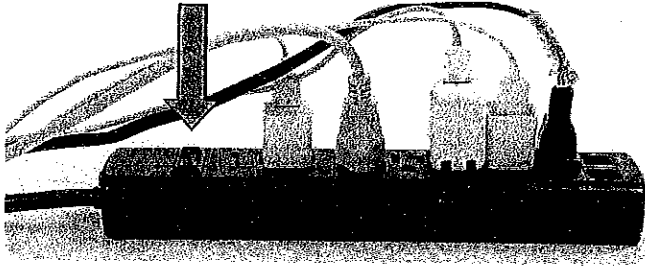


To save energy, use a power strip and switch off energy vampires when not in use .

   **BALTIMORE ENERGY CHALLENGE**

# Switch it Off

Computers, printers, TVs, DVD players, game consoles, microwaves, and other electronics use energy, even when they are in standby mode. These are called energy vampires.

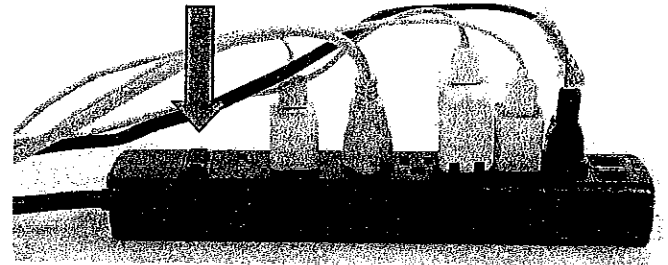


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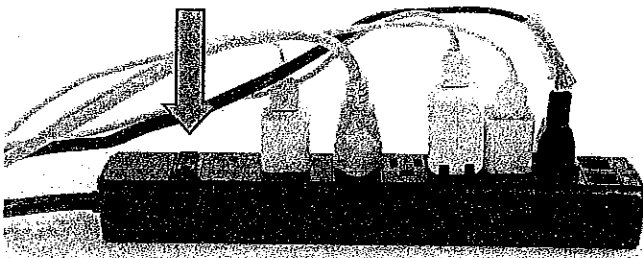


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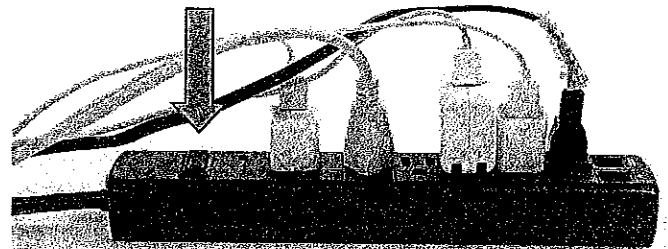


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To save energy, use a power strip and switch off energy vampires when not in use .

   **BALTIMORE ENERGY CHALLENGE**

## Summer Camp 2014 – Elementary

### Week 4 – **SAVE WATER**

#### **Items to take with you:**

- *Your Outline (This sheet)!!*
- *Sign-in Sheets*
- *Water-saving activity pages*
- *Charades game*
- *Homework Cards – SAVE WATER*
- *Washing Machine Magnets*
- *5 gallon bucket*

#### **Lesson Outline**

1. Recap from previous week – **Vampire Energy**
  - a. Did you “TALK” with your family and friends about what you learned last week?
  - b. Did you choose to switch off power strips/unplug electronics
    - i. What did you do?
2. Introduction: **SAVE WATER**
  - a. How can we save water?
    - i. Everyday uses of water
    - ii. Brainstorm water saving ideas with students
    - iii. Contribute ideas they haven’t thought of
    - iv. Show the 5 gallon bucket – this is how much water is used every 2 minutes you are in the shower
3. Water-saving activity pages (2)
4. Energy Activity/Game: Energy Charades
  - a. Elementary School Version: teachers act, kids guess what they’re doing
    - i. Start with water-related actions
5. Homework: Behavior Change – **SAVE WATER**
  - a. Handout Cards and Washing Machine Magnets
  - b. Remind them of the “TALK” message
    - i. Turn off the lights!
    - ii. Always unplug your electronics!
    - iii. Litter less, recycle more!
    - iv. Know what you want before you open the fridge!

**Remember to TALK to your family and friends about ways to save energy!**

## STUDENT AND FAMILY PLEDGE TO FILTER OUT BAD WATER HABITS



Sit down with your family and share what you have learned. Then, as a group, go through the tips below for helping you use water more efficiently, and check each one that you are willing to pledge to do. When you are finished, you and each family member who is participating must sign the pledge at the bottom and record the date. Congratulations and good luck!

- Take shorter showers/use less water in the bathtub.
- Turn the water off while you brush your teeth or wash your hands.
- Use a broom to clean your driveway instead of a hose.
- Use a layer of organic mulch around plants to reduce evaporation and save hundreds of gallons of water a year.
- Install EPA's WaterSense®-approved aerators on your faucets and low-flow showerheads.
- Conduct a home water audit.  
To conduct a home water audit yourself, or with help from a professional, consult your utility company. Many water providers will conduct home water audits for free or will provide you with home water audit kits at little or no cost! If using instructions from the Internet, be sure the source is reputable and trustworthy.
- Check all water fixtures for leaks and fix/replace those that are leaky.
- Perform a dye test to see if your toilets are leaking (instructions below).  
To check if a toilet is leaking, remove the cover from the tank, add food coloring until the water in the tank is a dark color. Wait 30 minutes (without using the toilet). If any of the dye has entered the bowl in that time, your toilet is leaking.
- Aerate your lawn. Punch holes in your lawn about six inches apart so water will reach the roots rather than run off the surface.
- Water your lawn either in the morning or the evening, rather than the middle of the day, to help reduce loss of water due to evaporation.
- Other: \_\_\_\_\_

By signing our names below, we pledge to use water more efficiently  
by conducting the activities checked above.

Student: \_\_\_\_\_

Family Members

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Date: \_\_\_\_\_

Please remember to bring your signed pledge back to class to share your commitments!

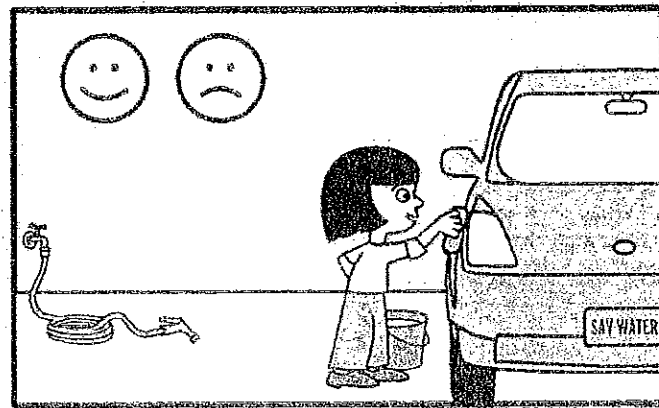
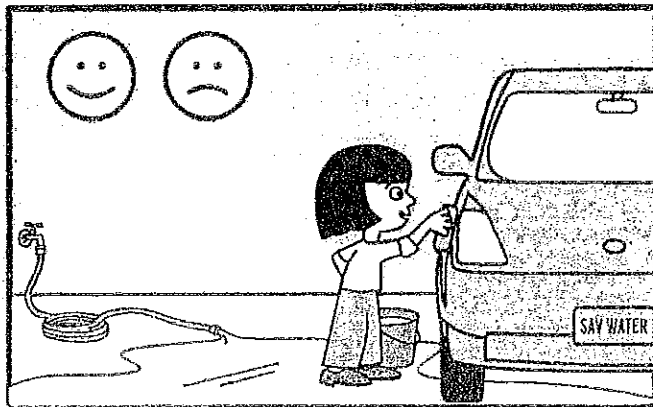
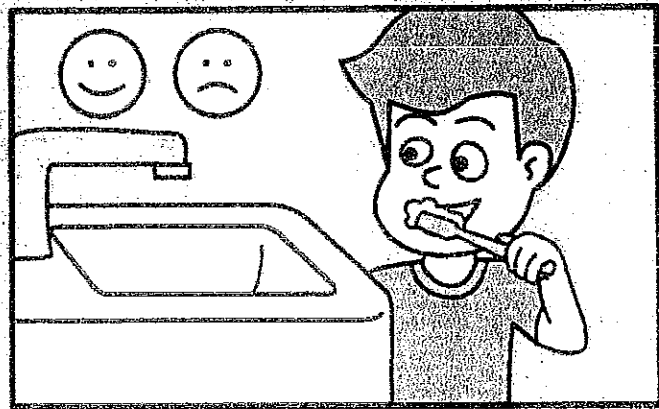
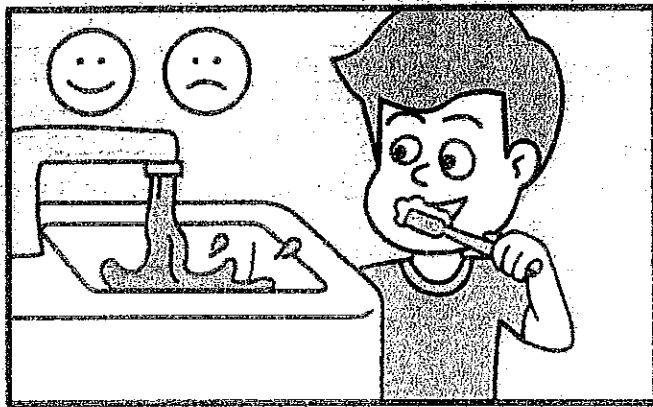
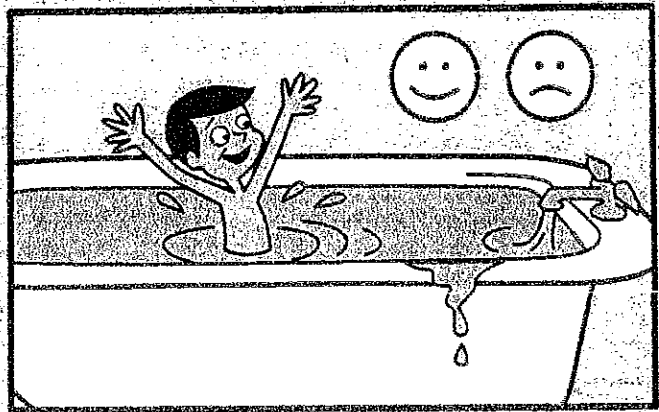
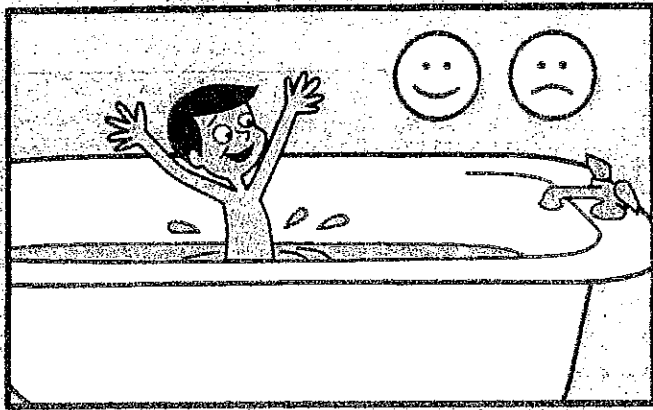
For more information on water conservation and what you can do to protect your watershed,  
visit [www.epa.gov/WaterSense](http://www.epa.gov/WaterSense).





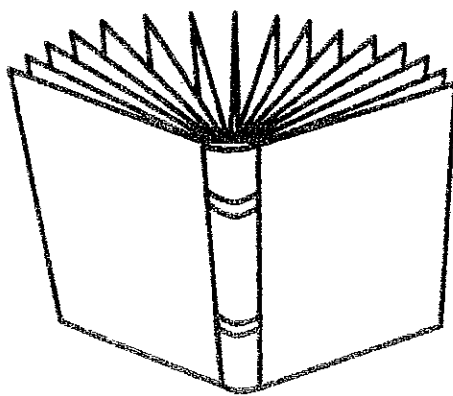
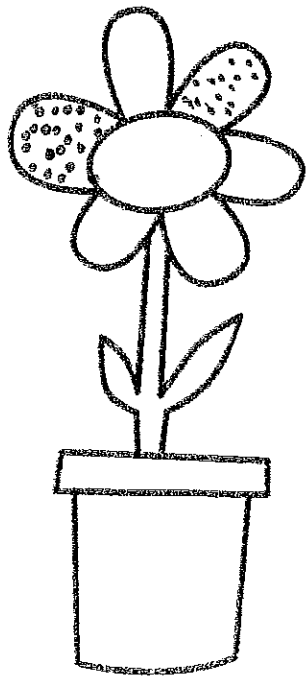
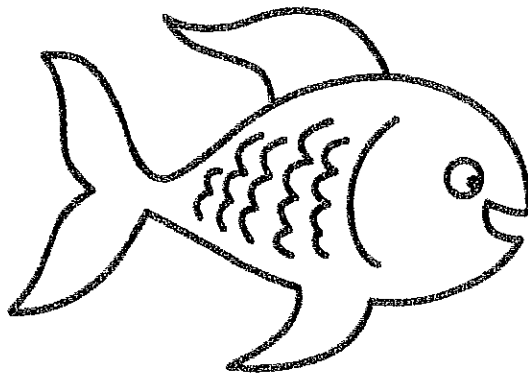
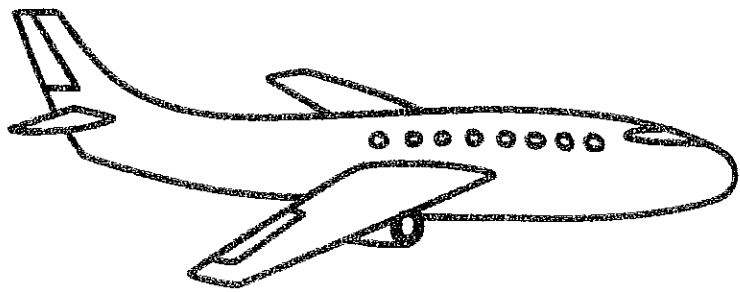
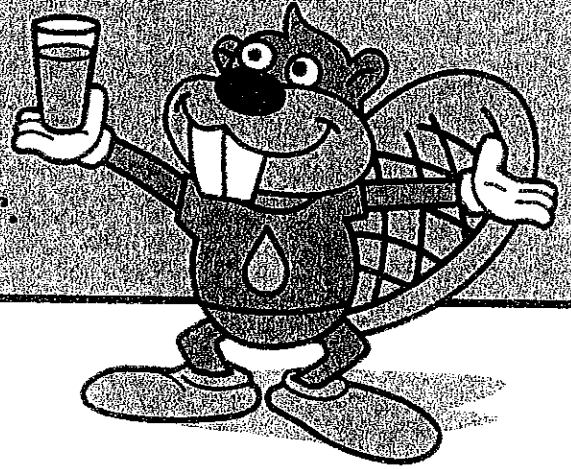
# USING WATER WISELY

Circle the happy face if water is being used wisely.  
Circle the sad face if water is being wasted.



# ALL LIVING THINGS NEED WATER.

Circle and color what needs water.



Water-Wise Tip: Be sure to turn the faucets off tightly after each use so that you're not wasting water.

## Hey Kids, It's Time to Test Your WaterSense!



Think you know everything there is to know about water? You can't be sure until you test your WaterSense.

Circle your answers below. Use the answer key at the end to see how many questions you answer correctly!

1. When is the best time of day to water your lawn?

- A. Early morning or late evening
- B. In the afternoon
- C. All day long

2. How much water could you save by washing your bike with a bucket and sponge rather than letting the hose run?

- A. 1 gallon a minute
- B. 3 gallons a minute
- C. 4 gallons a minute
- D. 5 gallons a minute

3. Which of these ways to wash the car saves the most water?

- A. Wash it in the driveway with the garden hose
- B. Drive it into the lake
- C. Take it through a car wash that recycles water

4. How much water does a family of four (mom, dad, brother, and sister) use everyday?

- A. 50
- B. 100
- C. 250
- D. 400

5. True or False: It isn't important to save water because there is so much of it on Earth.

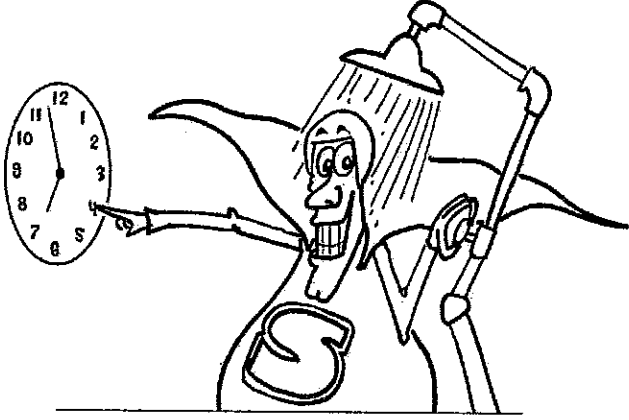
- A. True
- B. False

**Answer Key:**

1.	<p><b>Answer: A</b></p> <p>Although it is fun to run through the sprinklers at the hottest time of day, your lawn should only be watered in the early morning or late evening when it's cooler. Watering the yard when it's really hot outside causes the water to evaporate before the plants have time to drink it.</p>
2.	<p><b>Answer: D</b></p> <p>Washing your bike with a bucket and sponge will not only get your bike extra clean, it will also save water. Hoses can waste more than 6 gallons a minute while a bucket only uses a few gallons for a whole wash. Use a bucket and sponge when you help your parents wash the car, too!</p>
3.	<p><b>Answer: C</b></p> <p>Many car washes save more water than if you wash your car at home. They do this by recycling the water that they use instead of letting it run down the sewer drains. Tell your parents to search online to find a "water-efficient" car wash near your house.</p>
4.	<p><b>Answer: D</b></p> <p>How can a small family use so much water? It may seem hard to believe, but the average person uses 100 gallons of water each day—that's enough to fill 1,600 drinking glasses! There are many things you can do to save water.</p>
5.	<p><b>Answer: B</b></p> <p>Although there is a lot of water on earth (75 percent of the earth's surface!), most of it is salt water, so you can't drink it. It is very important to save the water we use every day because less than 1 percent of the earth's water can be used by people!</p>
6.	<p><b>Answer: B</b></p> <p>To waste the least amount of water in the kitchen, use your dishwasher only when it's filled all of the way with dirty dishes. You could also fill the sink with water instead of running the tap.</p>
7.	<p><b>Answer: A</b></p> <p>You can save up to 8 gallons of water by turning off the faucet when you brush your teeth in the morning and before bedtime. That adds up to more than 100 gallons of water each month!</p>
8.	<p><b>Answer: A</b></p> <p>While it might be more fun to splash in a warm bath, it takes 70 gallons of water to fill a tub but only 10 to 25 gallons for a 5 minute shower. If you do take a bath, put the stopper in the drain right away and change the temperature as you fill the tub.</p>

# Save Water

Standard showerheads use 2.5 gallons of water per minute. Cutting 2 minutes off your shower time can save 5 gallons of water!

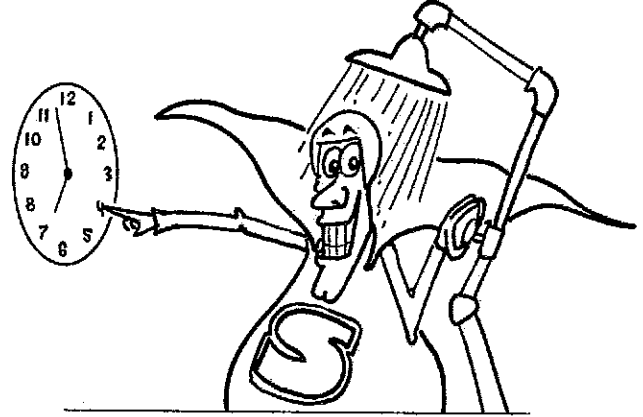


BONUS: Installing low-flow showerheads can save 1 gallon per minute!



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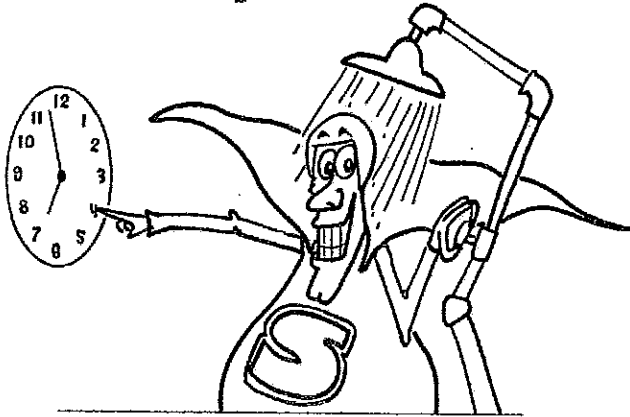


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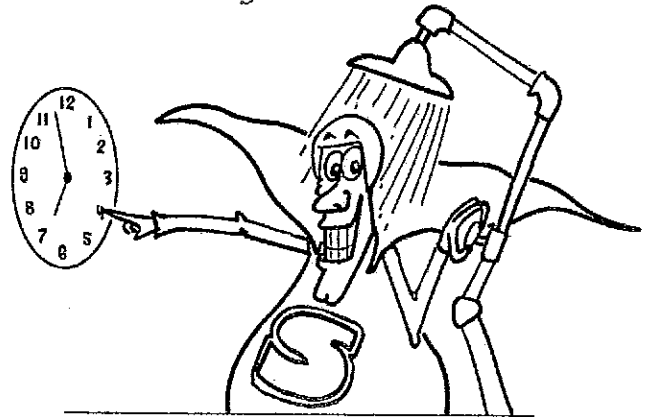


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BONUS: Installing low-flow showerheads can save 1 gallon per minute!



## Summer Camp 2014 – Elementary

### Week 5 – Recycle

#### Items to take with you:

- Your Outline (This sheet)!!
- Sign-in Sheets
- Post It - Markers
- Recycling activity pages
- Recycle Sorting game
- Homework Cards – Recycle

#### Lesson Outline

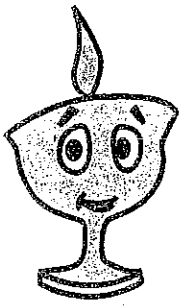
1. Recap from previous week – **Save Water**
  - a. Did you “TALK” with your family and friends about what you learned last week?
  - b. Did you choose to switch off power strips/unplug electronics
    - What did you do?
2. Introduction: **Recycle**
  - a. What is recycling?
    - It is the process of collecting and reprocessing materials that would typically be considered waste.
  - b. Why should we recycle? How does it help the earth?
    - Overall, Americans recovered 34% of waste generated in 2009. That means we threw away 161 million tons of material, which amounts to about three pounds of garbage per person per day.
    - Recycling or making new things from recycled ones takes a lot less money, much less energy, and saves a lot of the Earth’s natural resources, thereby helping the environment.
    - Recycling also saves space in landfills. Instead of your garbage being thrown away and taking up space and possibly damaging the environment it’s better to recycle it.
    - The energy saved by recycling also results in less pollution and we all know how bad pollution is to our environment. When you make new products from old but still useful materials think about the natural resources that are saved because of the material from old products that would otherwise have been thrown away.
    - Paper, glass, cardboard, aluminum cans, steel cans, and other metals can all be recycled. Plastic bottles can also be recycled to make new products. These products can be used to make playground equipment, the steel in skyscrapers, bottles that hold food other household products, and even bottles for drinking water.
    - In 2009, Americans recycled 82 million tons of materials. The resulting CO2 emission reduction is equivalent to taking 33 million passenger vehicles off the road.

## Summer Camp 2014 – Elementary

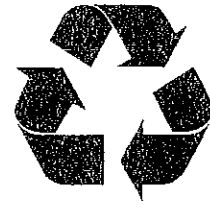
### Week 5 – Recycle

- The recyclable materials in the U.S. waste stream would generate over \$7 billion if they were recycled. That's equivalent to Donald Trump's net worth.
  - The recycling industry employed over 1.1 million workers and generated over \$236 billion in annual revenue in 2001. Increasing recycling rates and new collection programs show that the industry is growing.
- c. How does recycling impact our energy consumption?
- **ENERGY**
    - Twenty recycled cans can be made with the energy needed to produce one can using virgin ore.
    - Recycling one aluminum can saves enough energy to run your television for three hours.
    - The amount of energy saved just from recycling cans in 2010 is equal to the energy equivalent of 17 million barrels of crude oil, or nearly two days of all U.S. oil imports.
- d. What can we recycle?
- Name some things we can recycle
    1. Take the Post It
      - a. Let the kids list items that can be recycled
- e. How do we recycle? What about reusing items?
- You begin to recycle when you separate recyclable materials from other your other trash. The segregated materials are collected by different collection programs.
  - Discuss the Baltimore City Recycling Program
  - What about reusing items?
- f. What can we recycle?
- Name some things we can recycle
- g. How do you recycle?
- h. 3 R's Reduce, Reuse, Recycle
3. 3 R's activity pages (2)
4. Energy Activity/Game: Recycle Sorting Game
5. Homework: Behavior Change – **Litter Less/Recycle More (3 R's)**
- a. Handout Cards
  - b. Remind them of the "TALK" message
    - Turn off the lights!
    - Always unplug your electronics!
    - Litter less, recycle more!
    - Know what you want before you open the fridge!

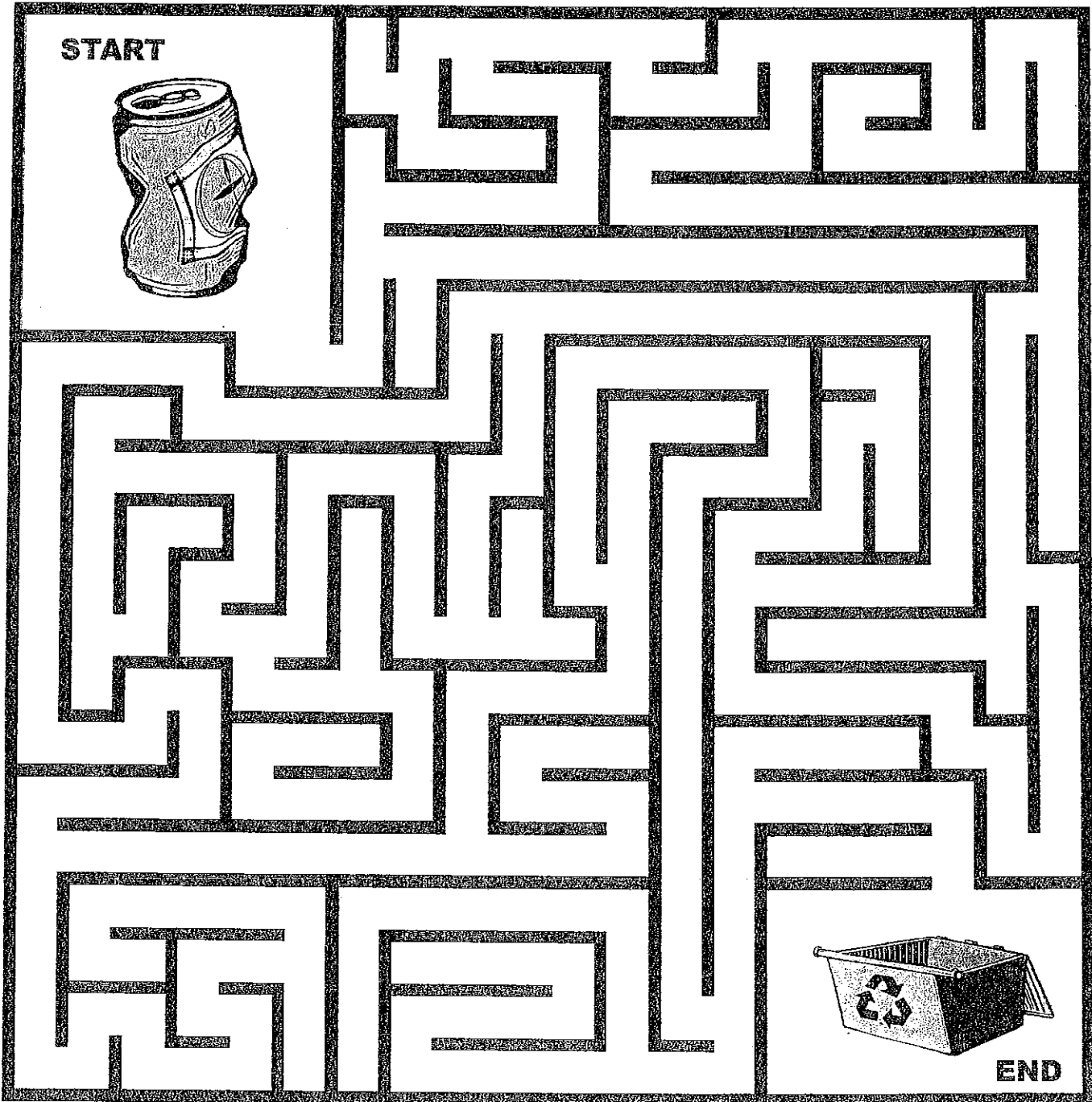
**Remember to TALK** to your family and friends about ways to save energy!



# RECYCLE MAZE



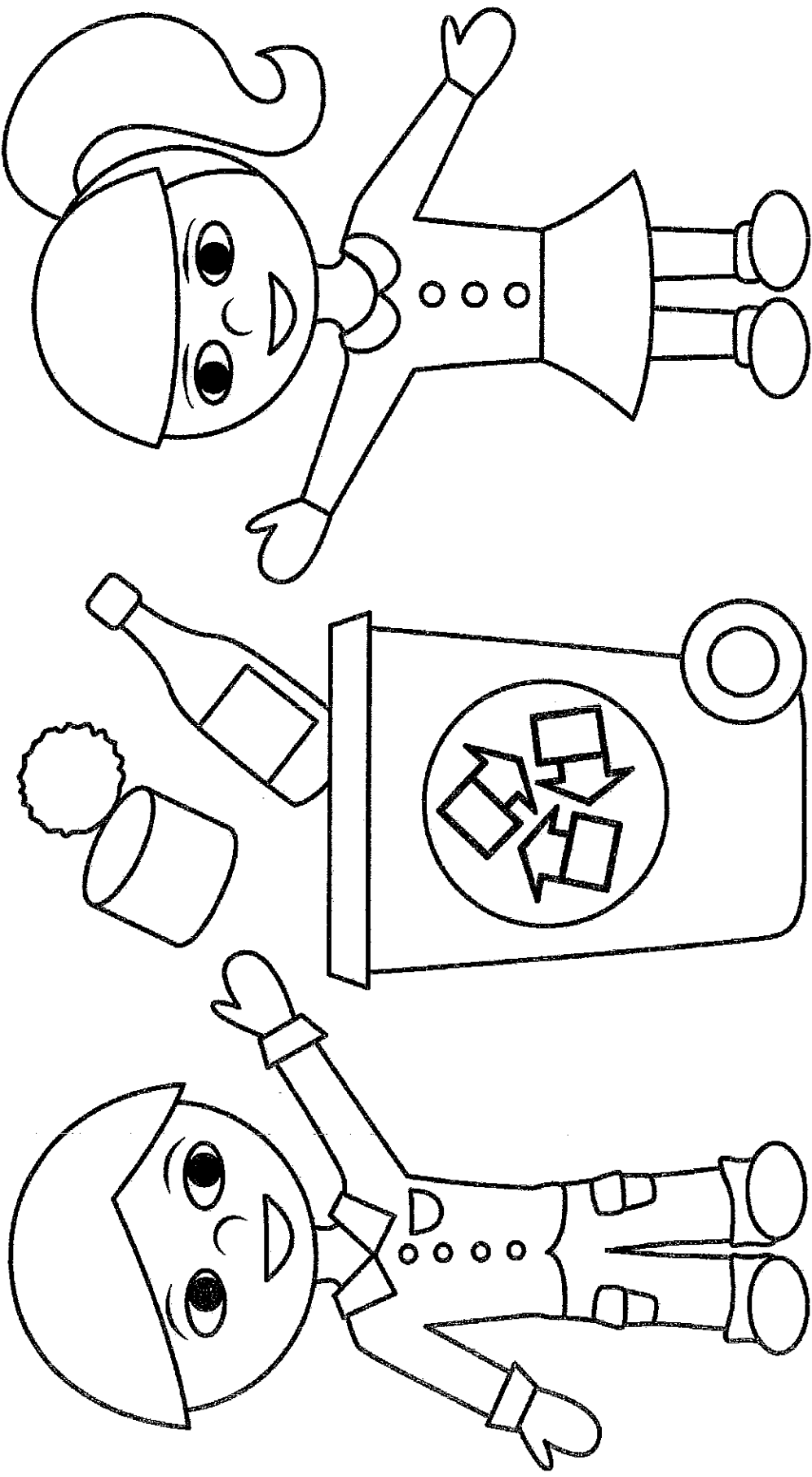
*Help Alice the Chalice recycle! Find the way to the recycle bin.*










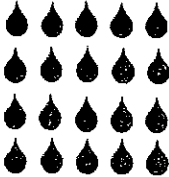
Remember the 3 R's . . . Reduce - Reuse - Recycle!



# Litter Less, Recycle More





 Energy needed to make a can from recycled aluminum: (1x) 


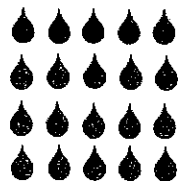
 Energy needed to make a brand new aluminum can: (20x) 

 BALTIMORE ENERGY CHALLENGE

# Litter Less, Recycle More





 Energy needed to make a can from recycled aluminum: (1x) 


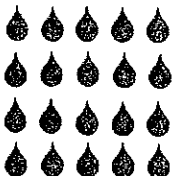
 Energy needed to make a brand new aluminum can: (20x) 

 BALTIMORE ENERGY CHALLENGE

# Litter Less, Recycle More





 Energy needed to make a can from recycled aluminum: (1x) 



 Energy needed to make a brand new aluminum can: (20x) 

 BALTIMORE ENERGY CHALLENGE

# Litter Less, Recycle More



 Energy needed to make a can from recycled aluminum: (1x) 

 Energy needed to make a brand new aluminum can: (20x) 

 BALTIMORE ENERGY CHALLENGE

## Summer Camp 2014 - Elementary

### RECAP - GO OUTSIDE, SAVE ENERGY, VAMPIRE ENERGY/DON'T WASTE ENERGY

RECYCLE, SAVE WATER

#### Items to take with you:

- Jr. Energy Saver Shirts
- POST Evaluations
- Your Outline (This sheet(s))!!
- Sign-in Sheets
- ~~Smart Strip & Power Strip~~
- POSTER BOARD
- CRAYONS/MARKERS
- ~~We will need to take Post-It Wall Pad~~
- Take-home activity books

add these sections

#### Lesson Outline

1. Discuss what we are going to do today!
2. Recap - **VAMPIRE ENERGY (8 minutes)**
  - a. Do you remember what we talked about last week?
    - i. Why should we conserve energy? Why should we not **waste** energy?
    - ii. How does wasting energy impact the environment?
    - iii. Can you give me an example of some thing or some action that wastes energy in your home?
    - iv. What is Vampire Energy/Phantom Energy?
      1. Define Vampire Energy
        - a. Ask kids guess items that are using "vampire energy"
        - b. Explain how you (or your family) can help eliminate Vampire Energy
        - c. Ask Permission From an Adult First/Be Safe
      2. Did you choose to eliminate "vampire energy"
        - i. What did you do?
      3. Did you do your "Homework" and did you "TALK" with your family and friends about what you learned last week?
      4. What did you, your family, and friends "TALK" about?
3. Recap from previous weeks - **SAVE ENERGY (8 minutes)**
  - i. Why should we save energy?
  - ii. How can we save energy?
    1. By Turning of the Lights
      - a. How do you save energy by turning off the lights?
    2. Know what you want before opening the fridge
    3. (Elementary) Ask your parents to:

## Summer Camp 2014 - Elementary

### **RECAP – GO OUTSIDE, SAVE ENERGY, VAMPIRE ENERGY/DON'T WASTE ENERGY**

- a. Switch out the old light bulbs for CFLs
    - i. Show the light bulb and CFL
    - ii. Display Energy/Light Meter
  - b. Use cold water when washing your clothes
  - c. Hanging your clothes on clothing lines, oppose to using the dryer.
4. What are other ways you, your family and your friends can save energy?
4. Recap – **GO OUTSIDE (8 minutes)**
- a. What is energy?
  - b. What are things you can do to use less electricity?
5. **POST Evaluations (5 minutes)**
6. **POSTER ACTIVITY (20 minutes)**
- a. Ask the children to draw posters that displays what you learned over the last three weeks.
  - b. Ask them if they would be willing to take the pledge
  - c. Please give students Super Hero Pledge, Walk them through the activity
  - d. Display Posters
7. Distribute Jr. Energy Captain T-SHIRTS (**5 minutes**)/ take pictures with posters and kids in t-shirts!
8. **THANK KIDS & REMIND THEM TO TALK** about what they have learned
- a. Remind them of the “TALK” message
    - i. Turn off the lights!
    - ii. Always unplug your electronics!
    - iii. Litter less, recycle more!
    - iv. Know what you want before you open the fridge!

**Remember to TALK** to your family and friends about ways to save energy!



## STUDENT ENERGY AWARENESS POST-SURVEY

The Baltimore Energy Challenge teaches in schools and neighborhoods on how to save energy. Please answer these questions honestly.

1. Do you turn off the lights when you leave a room?  
 yes  no
2. Do you turn off the TV when not watching?  
 yes  no
3. Do you turn off your video games when you are done playing them?  yes  no
4. Do you turn off the water when you brush your teeth?  
 yes  no
5. Do you recycle at home?  yes  no
6. Do you hold the refrigerator door open because you don't know what you want?  yes  no

I am a  boy  girl

Age \_\_\_\_\_ Grade \_\_\_\_\_

Date Survey Taken: \_\_\_\_\_

## Energy Bingo

**Goal:** For students to understand easy, low cost/no cost actions they can perform to save energy.

**Time:** 25 minutes

**Materials:** Bingo sheets (versions a-d), prizes

**Preparation:** Pass out bingo sheets (versions at random)


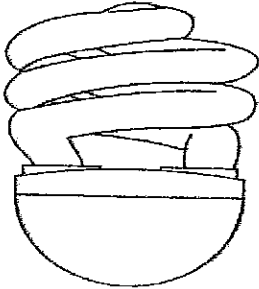
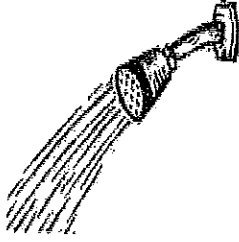
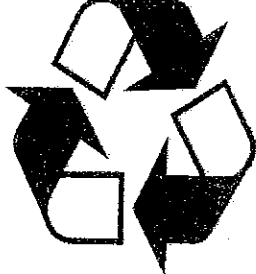
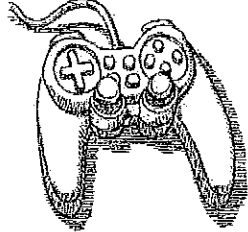


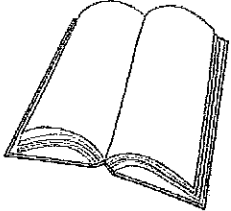
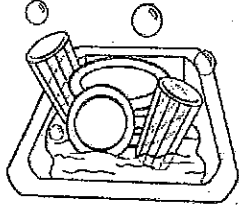
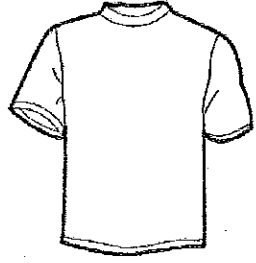
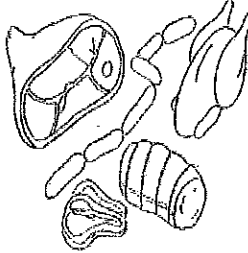
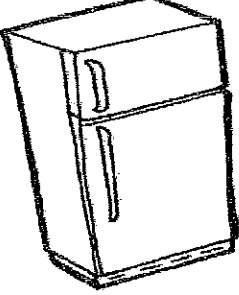

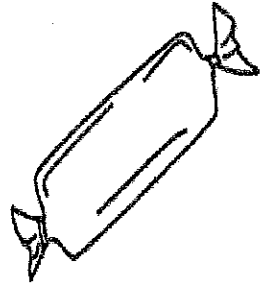
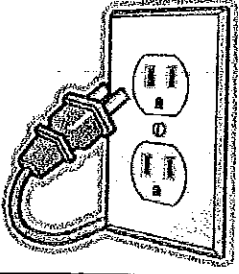
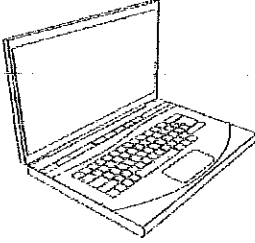
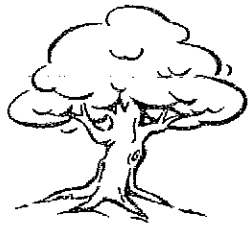
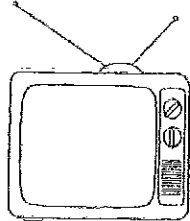
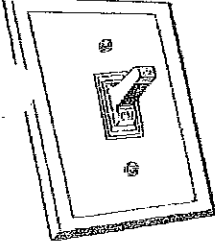
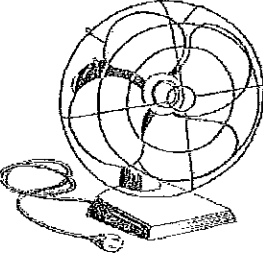

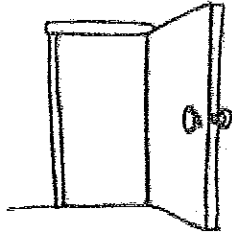
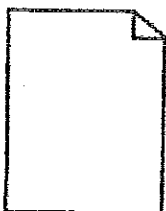
### **Activity:**

- usually follows a defining energy activity (like Drawing Energy)
- Call out energy saving actions listed below, make sure everyone wins at some point
- If the student agrees with the statement, they can mark the card
- make sure they know the middle blank spot is FREE
- When a student shouts BINGO go over card and give prize! Winners can color sheets while waiting for the game to end.

### **Bingo Statements:**

1. Light Switch: I turn off the lights when I leave the room
2. TV: I turn off my Tv when I'm not watching it
3. Showerhead: I take short showers. *it takes energy to heat and produce the hot water used during a shower*
4. Toothbrush: I don't let the water run while I'm brushing my teeth.
5. Refrigerator: I don't leave the fridge open for too long. *Letting out the cold air in the refrigerator wastes energy.*
6. CFL Light bulb: I use energy saving light bulbs.
7. Socket and Plug: I unplug everything after I turn it off. *Energy Vampires; even when things like TVs are turned off, if they are still plugged in they draw energy.*
8. Open Door: I shut the door behind me. *Closing doors behind us to heat or AC in the room doesn't escape.*
9. Recycle Sign: I recycle! *It takes energy to make everything we use, recycling uses less.*
10. Paper: I use both sides of paper
11. Video Game Controller: I turn off my video games when I'm done.
12. Laptop: I turn off my computer when I'm done
13. Meat: I eat at least one meatless meal a week.
14. Footprints: I walk instead of asking for a ride or taking the bus.
15. Talking mouth: I tell my friends about saving energy!
16. Tree: I planted a tree. *Trees clean the air and provide shade.*
17. Candy: I love candy.
18. Planet Earth: I want to help save the earth.
19. Electricity is.....: Fill it in.
20. Kitchen Sink: I wash dishes by hand instead of using the dishwasher. *Running the dishwasher*

# Energy Bingo


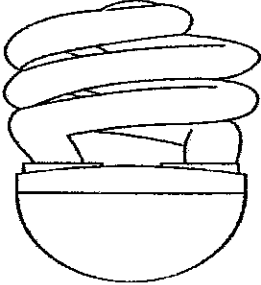

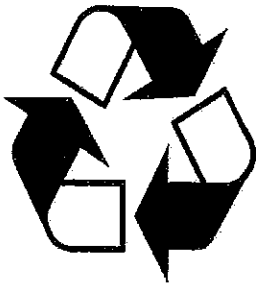


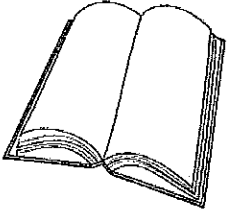
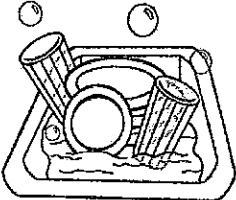
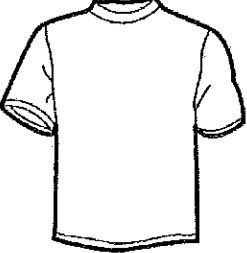
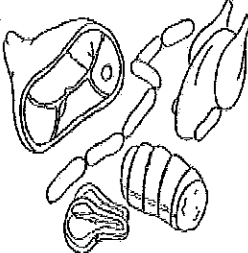
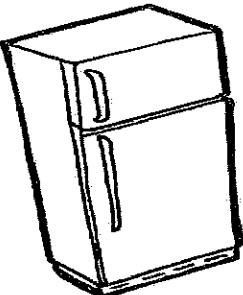
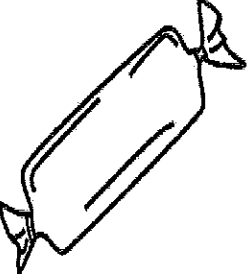
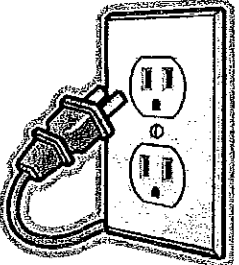
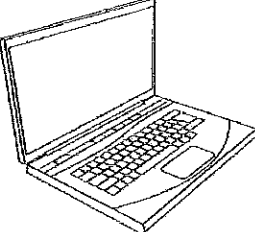

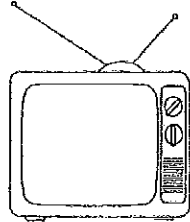
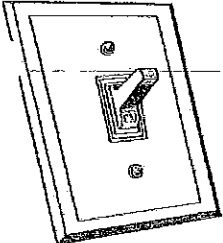
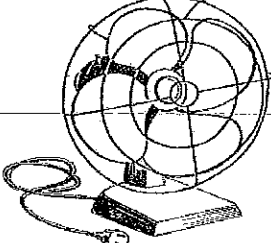
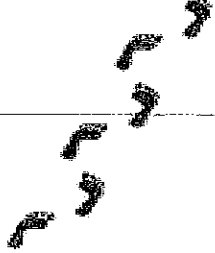
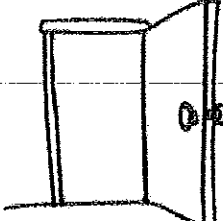
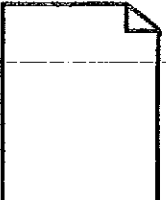
				
				
		FREE SPACE		
				Electricity is...
				



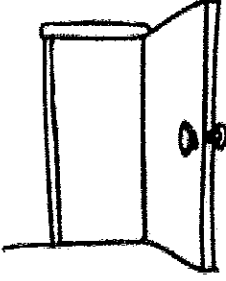
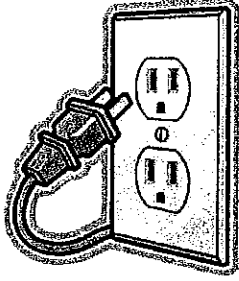
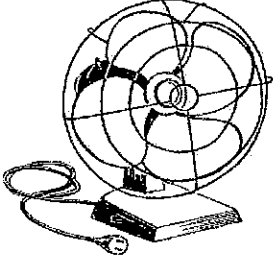

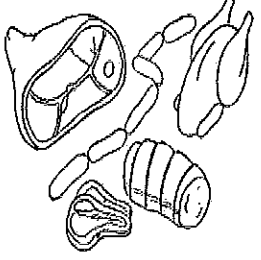
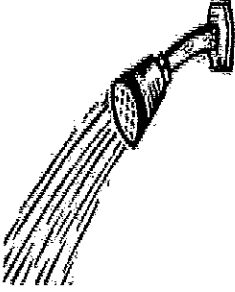
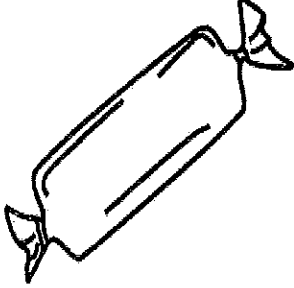
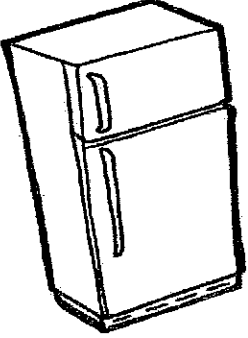

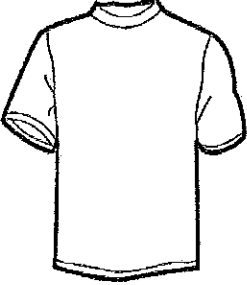
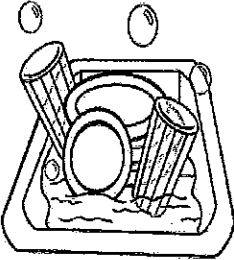
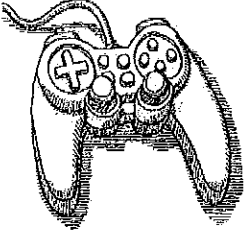
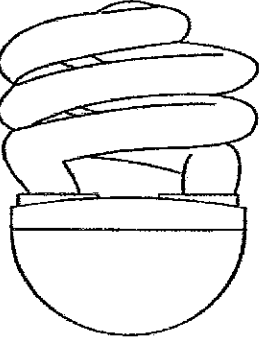
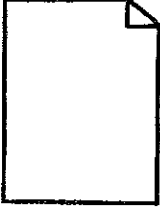

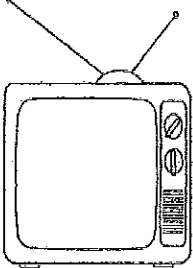

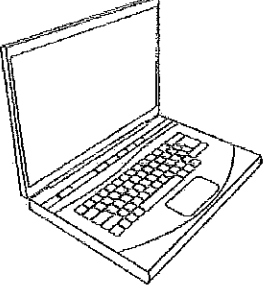
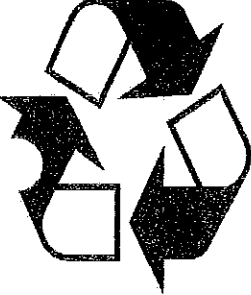

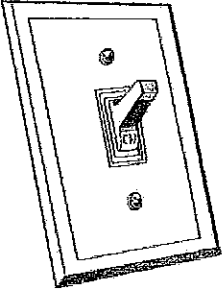

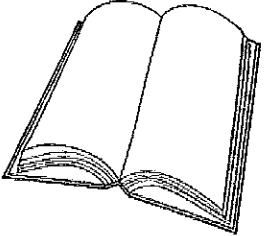
# Energy Bingo

				
				
		FREE SPACE		
				
	Electricity is...			

# Energy Bingo

				
				
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# Energy Bingo

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