

# Resources: Energy, Conservation and the Three R's Teacher Facilitation Notes

## In General . . .

- Project the slide deck in edit mode—do not show it as a slideshow.
- Hide the speaker notes before projecting. (View/Show Speaker Notes)
- Hide the toolbar. (Click on the up arrow at the right end of the tool bar.)
- Call on students to read the various content shown on slides.
- For each investigation, assemble the needed materials for each group and place in a central location for ease of distribution.
- Duplicate copies of the data sheets for each student.

## Materials Needed:

Engage—The Role of Energy (per group)

*Energy in Our Lives* Template                      Scissors                      Glue

Explore/Explain, Part 1: The Conservation of Energy Resources (per group)

*Three's a Crowd* Handout                      Sticky note

Elaborate: Toilet Paper Roll Bird Feeder (per student)

Empty toilet paper roll\*                      Vegetable shortening                      Birdseed

Craft sticks, 1-2                      String or twine, 1 m                      Paper plate

Scissors                      Paper towels

\*At the beginning of the lesson, ask students to bring in 1 or 2 empty toilet paper rolls to use in the elaboration.

## Other Materials

Evaluation

Pencils

Science Notebooks

# Resources: Energy, Conservation and the Three R's

## Teacher Facilitation Notes

### **Engage: The Role of Energy Resources**

- You can use the main classroom lights or a lamp for this beginning activity.
  - Turn off the light and then turn it back on.
  - Ask, *Why does this light come on when the switch is closed?*
  - What causes a light to light up?
  - Be sure they talk about energy. Discuss what energy is.
  - Ask, *From what sources does electrical energy come?*
  - Brainstorm a list of energy sources on the board or using a document camera.
- Read and discuss the opening slide and the slides about different types of energy sources. Point out how each energy source is used in our daily lives.
- Give each student a copy of the template and have them follow the directions to complete the activity. Under the tab labeled energy, have them define the term in their own words. Under the other tabs, make sure they tell at least one way they use that energy source in their daily lives.
- Discuss as desired.

### **Explore/Explain, Part 1: The Conservation of Energy Resources**

- Read through the two slides with the students. Discuss as desired.
- Divide the class into groups of three. Give each group a copy of the handout.\*
- Have groups follow the directions on the sheet to complete the activity.
- Circulate around the room as the groups working, asking questions and redirecting thinking as needed.
- After the groups have completed the activity, facilitate a class discussion. Make sure students share their thinking about which action does not belong and WHY it does not belong. Display the sheets in the classroom as desired.

\*Adaptation of Lead4Ward Strategy, *Three's a Crowd*.

### **Explore/Explain, Part 2: Disposal and the Three R's of Conservation**

- Read through the slides with the students.
- Have students complete the *Reduce, Reuse, or Recycle* quiz. Students may have different answers. Accept any reasonable answer students can justify.
- Discuss as desired.

# Resources: Energy, Conservation and the Three R's

## Teacher Facilitation Notes

### **Elaborate: Toilet Paper Roll Bird Feeder**

- Make sure students have easy access to all of the needed materials.
- Review correct science safety rules, i.e., don't eat anything in science without permission. (Some birdseed might have sunflower seeds which students could be tempted to eat.)
- Allow students to create their bird feeders using the directions on the slide. Circulate among the groups helping as needed.
- Discuss other ways students can recycle and reuse household items that would otherwise go in the trash.

### **Evaluate**

- Let students complete the quiz independently.
- Discuss evaluation as desired.

## Evaluation

1. Match each energy source to one way it can be used.

- |                  |  |
|------------------|--|
| A. The sun       | Burning in fireplaces to provide heat          |
| B. Oil           | Turning turbine blades to produce electricity  |
| C. Coal          | Making gasoline for transportation             |
| D. Flowing water | Producing electricity with solar panels        |
| E. Natural gas   | Producing electricity in hydropower plants     |
| F. Wind          | Burning in power plants to produce electricity |
| G. Wood          | Heating our homes and school buildings         |

2. Which of the following describes something you can do to conserve energy? Mark 2 answers.

- F Have the television on in two rooms so you don't miss your favorite show
- G Turn down the heat in your house on a cold day and wear a sweater instead
- H Take a long shower using the hottest water you can stand
- J Hanging your clothes outside on a clothesline to dry rather than using a dryer

3. Fossil fuels are most used energy source today. Why is it important that we conserve fossil fuels? Mark 2 answers.

- A Fossil fuels take millions of years to form.
- B Without conservation, we will use up all the fossil fuels one day.
- C Fossil fuels form from the remains of ancient dead organisms.
- D The use of fossil fuels can lead to air, water, and land pollution.

## Evaluation, page 2

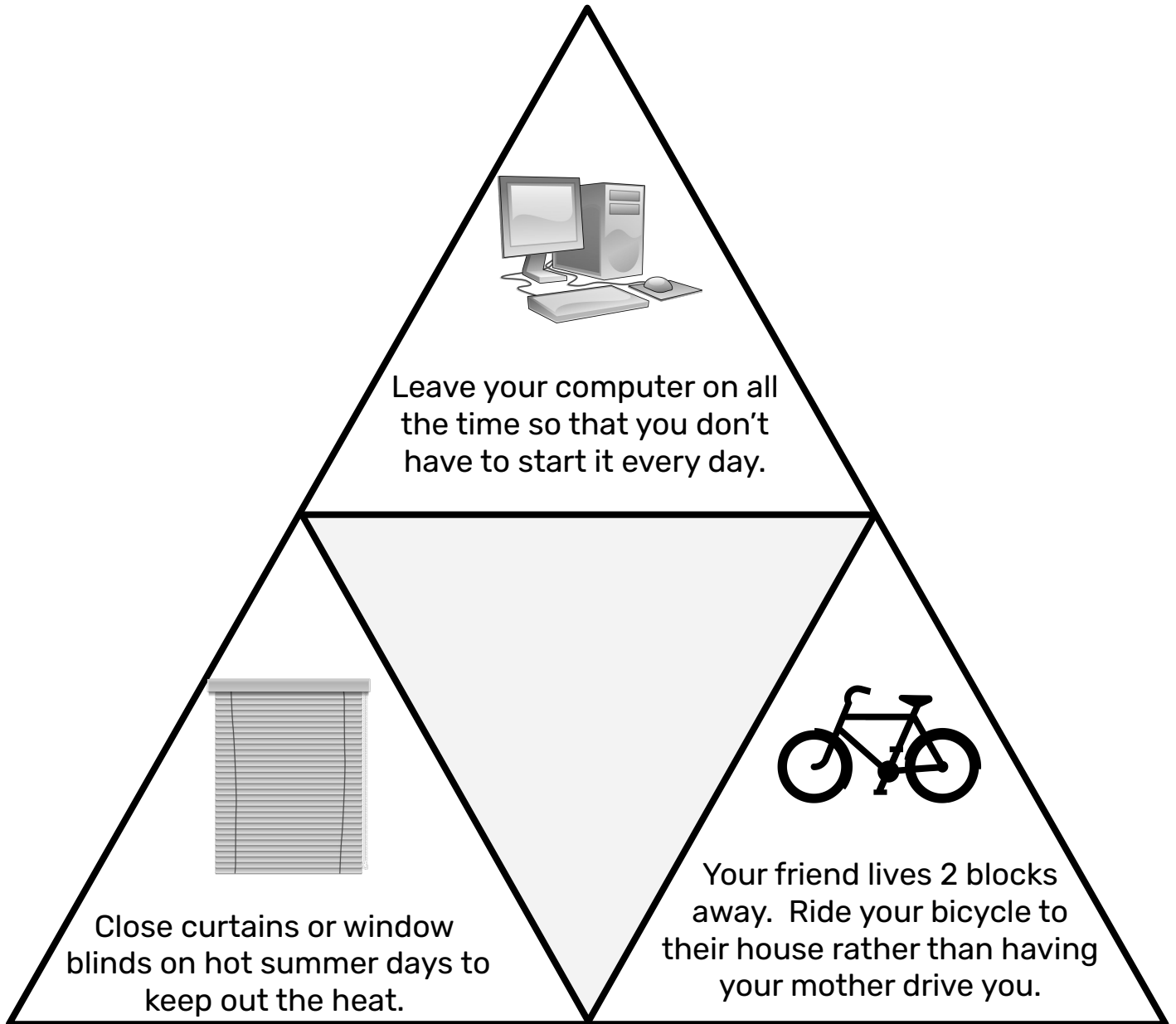
4. Write *yes* or *no* to tell whether each statement is an example of conserving energy or materials resources.
- A. no Stand in front of the open refrigerator door while drinking milk
  - B. yes Turn off lights when not in use
  - C. no Take long baths instead of quick showers
  - D. no Leave the water running when brushing your teeth
  - E. yes Recycle paper, glass, and metal rather than putting them in the trash
  - F. yes Store paper clips in an old jar or plastic container
5. Which of the following is an example of conservation by reusing resources?
- A Throwing newspapers in the trash can
  - B Riding a bicycle rather than using a car
  - C Making a pencil holder from a plastic water bottle
  - D Heating your house using solar energy
6. Which of the following are examples of recycling? Mark all that apply.
- F Making a placemat out of old newspapers
  - G Giving clothes you outgrow to your little brother
  - H Turning off the lights when you leave a room
  - J Using old newspapers to make paper egg cartons
  - K Processing used metal cans to make new cans
  - L Buying an electric car rather than one that runs on gasoline

# Notebook Template: Energy in Our Lives

Solar Energy	Place glue here.	Energy
Water Energy		Coal
Wind Energy		Oil
Energy from Organisms		Natural Gas

Cut out the template along the solid lines. Fold on the dotted lines. Carefully cut along the solid lines between each section. On the front of each tab, draw an icon or an emoji to represent that term. Under each tab, describe the role of that type of energy in your life. Glue the template in your science notebook.

# Three's A Crowd!



1. Conserving energy resources helps them last longer. Study each picture and read each action.
2. Take turns in your group talking about how each action is important to the conservation of energy resources.
3. Decide which action does not fit with the other two. Cover that action with a sticky note.
4. Write an action on the sticky note that does fit with the other two actions.
5. In the center section, write a sentence telling how the three actions are connected.

## Explain: Reduce, Reuse, or Recycle?

**Directions:** Draw a line to match each term to its definition.

- |                        |   |
|------------------------|---|
| 1. Natural resources ● | ● collecting materials and turning them into new products |
| 2. Conservation ●      | ● cutting back on the amount of trash we throw away       |
| 3. Reduce ●            | ● materials in the environment that are useful to people  |
| 4. Reuse ●             | ● the wise use and protection of natural resources        |
| 5. Recycle ●           | ● find a new way to use materials or products             |

**Directions:** Write *reduce*, *reuse*, or *recycle* on the line after each scenario.

6. A man rolls up old newspapers to make logs for his fireplace. \_\_\_\_\_
7. My mother takes her own cloth bags to the grocery store. \_\_\_\_\_
8. I turn off the water while I am brushing my teeth. \_\_\_\_\_
9. The school used ground-up tires to cover the playground. \_\_\_\_\_
10. Instead of having a television in every bedroom, we only have one in the living room. \_\_\_\_\_
11. My dad replaced all the old light bulbs in our house with low-energy LED bulbs. \_\_\_\_\_
12. Sally only uses rechargeable batteries in her game devices. \_\_\_\_\_
13. Molly always draws on both sides of her paper in art class. \_\_\_\_\_
14. Clancy made a toothbrush holder out of an old water bottle. \_\_\_\_\_
15. A new factory crushes old glass to make new glass bottles. \_\_\_\_\_
16. Jason's mother gives the clothes he outgrows to his cousin. \_\_\_\_\_



## Evaluation

1. Match each energy source to one way it can be used.

- |                  |  |
|------------------|--|
| A. The sun       | Burning in fireplaces to provide heat          |
| B. Oil           | Turning turbine blades to produce electricity  |
| C. Coal          | Making gasoline for transportation             |
| D. Flowing water | Producing electricity with solar panels        |
| E. Natural gas   | Producing electricity in hydropower plants     |
| F. Wind          | Burning in power plants to produce electricity |
| G. Wood          | Heating our homes and school buildings         |

2. Which of the following describes something you can do to conserve energy? Mark 2 answers.

- F Have the television on in two rooms so you don't miss your favorite show
- G Turn down the heat in your house on a cold day and wear a sweater instead
- H Take a long shower using the hottest water you can stand
- J Hanging your clothes outside on a clothesline to dry rather than using a dryer

3. Fossil fuels are most used energy source today. Why is it important that we conserve fossil fuels? Mark 2 answers.

- A Fossil fuels take millions of years to form.
- B Without conservation, we will use up all the fossil fuels one day.
- C Fossil fuels form from the remains of ancient dead organisms.
- D The use of fossil fuels can lead to air, water, and land pollution.

**Evaluation, page 2**

4. Write *yes* or *no* to tell whether each statement is an example of conserving energy or materials resources.
- A. \_\_\_\_\_ Stand in front of the open refrigerator door while drinking milk
  - B. \_\_\_\_\_ Turn off lights when not in use
  - C. \_\_\_\_\_ Take long baths instead of quick showers
  - D. \_\_\_\_\_ Leave the water running when brushing your teeth
  - E. \_\_\_\_\_ Recycle paper, glass, and metal rather than putting them in the trash
  - F. \_\_\_\_\_ Store paper clips in an old jar or plastic container
5. Which of the following is an example of conservation by reusing resources?
- A** Throwing newspapers in the trash can
  - B** Riding a bicycle rather than using a car
  - C** Making a pencil holder from a plastic water bottle
  - D** Heating your house using solar energy
6. Which of the following are examples of recycling? Mark all that apply.
- F** Making a placemat out of old newspapers
  - G** Giving clothes you outgrow to your little brother
  - H** Turning off the lights when you leave a room
  - J** Using old newspapers to make paper egg cartons
  - K** Processing used metal cans to make new cans
  - L** Buying an electric car rather than one that runs on gasoline