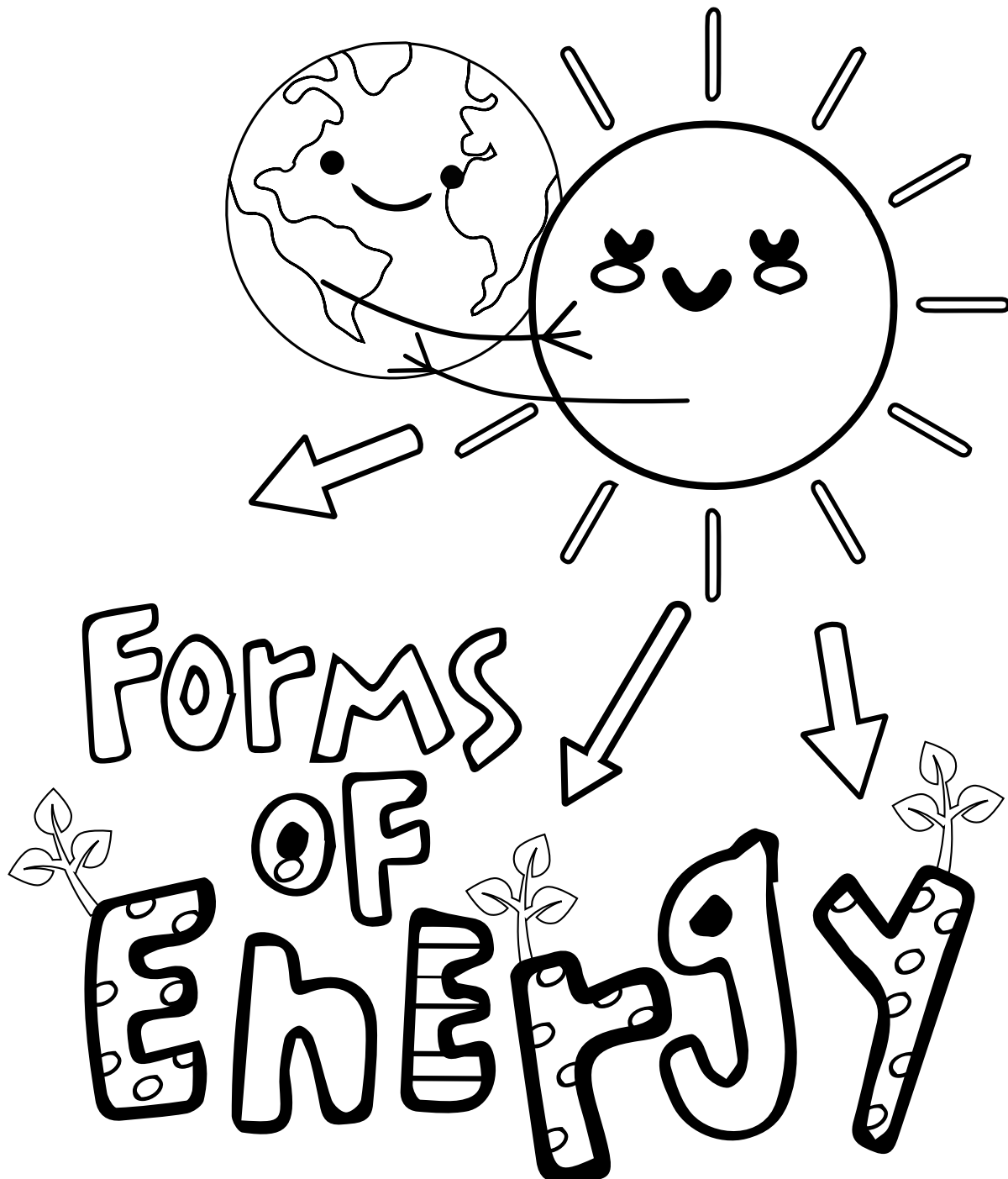


# Eye On Energy

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## Credits

### The 4-H Pledge

I pledge my Head to clearer thinking,  
my Heart to greater loyalty,  
my Hands to larger service,  
my Health to better living, for my club, my community,  
my country, and my world.

### The 4-H Motto

Learn To Do By Doing

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Project Resource Information:  
Written by: Elizabeth Johnston  
Layout by: Autumn Unwin, 4-H Ontario  
Date: February, 2024



**CANADA**  
4-H Ontario

A special thank you to the 4-H Associations and Volunteers from Grenville, Grey, Parry Sound, Wellington and York that piloted the Cloverbud Program for 4-H Ontario. Their feedback, dedication and enthusiasm helped in the development of the program materials and was greatly appreciated.

4-H Ontario is pleased to be able to provide project resource reference manuals for use by volunteers in clubs. 4-H Ontario screens and trains volunteers to equip them with the tools to serve as positive role models for youth. With so many topics to choose from, 4-H volunteers are trusted to use these resources to provide safe and quality programming while using their judgement to assess the appropriateness of activities for their particular group of youth. By downloading any 4-H resource, you agree to use it for 4-H purposes and give credit to the original creators. Your provincial 4-H organization may have restrictions on the types of 4-H projects or activities which can be completed in your region.

4-H Ontario grants permission to 4-H Volunteers to photocopy this 4-H project resource for use in their local 4-H program. All information presented in this Project Resource was accurate at the time of printing.

The 4-H program in Ontario is supported by the Ontario Ministry of Agriculture, Food and Rural Affairs. Material for this Cloverbud Eye on Energy unit was supported by the Stanley Knapp Resource Fund.



## 4-H Inclusion Statement

4-H in Canada is open to all\* without discrimination based on race, national or ethnic origin, colour, religion, sex, age or, mental or physical disability.\*\*

4-H is dedicated to providing a safe and inclusive environment that allows for universal access and participation. Where barriers to participation are identified, 4-H will, with reasonable accommodation, adapt programs, rules, policies, or expectations to reduce or remove the barriers.

Any accommodations, changes or exceptions will be assessed on an individual basis, taking into account the individual experience of the member and their family. The physical safety and emotional well-being of members, leaders, staff and volunteers is 4-H's highest priority, and is the ultimate consideration in final decisions.

4-H Canada and local 4-H organizations consider inclusion a priority. Leaders are encouraged to work with individuals and their families to identify and discuss accommodations as required, and to reach out to provincial or national office staff for help with unresolved concerns.

*\*This applies to youth members (ages 6 to 21), volunteers, leaders, staff and professionals.*

*\*\*Definition of discrimination as per Canadian Charter of Rights and Freedoms.*

## Déclaration sur l'inclusion des 4-H

L'adhésion aux 4-H au Canada est ouverte à tous les jeunes\* sans discrimination fondée sur la race, l'origine nationale ou ethnique, la couleur de la peau, la religion, le sexe, l'âge ou le handicap mental ou physique. \*\*

Les 4-H ont pour mission d'offrir un environnement sécuritaire et inclusif qui permet l'accès et la participation de tous. Lorsque des obstacles à la participation sont décelés, les 4-H adapteront, à l'aide de mesures d'adaptation raisonnables, les programmes, les règles, les politiques ou les attentes afin de réduire ou d'éliminer ces obstacles.

Toute mesure d'adaptation, modification ou exception sera évaluée au cas par cas, en tenant compte de l'expérience personnelle du membre et de sa famille. La sécurité physique et le bien-être émotionnel des membres, des animateurs et des animatrices, des membres du personnel et des bénévoles sont la priorité absolue des 4-H et constituent le facteur ultime à considérer lors de la prise des décisions définitives.

Les 4-H du Canada et les organisations locales des 4-H considèrent l'inclusion comme étant une priorité. Les animateurs et les animatrices sont encouragés à collaborer avec les personnes et leurs familles afin de définir et d'examiner les mesures d'adaptation, selon les besoins, et de communiquer avec le personnel du bureau provincial ou national pour obtenir de l'aide en cas de préoccupations non résolues.

*\*Ceci s'applique aux jeunes membres (âgés de 6 à 21 ans), aux bénévoles, aux animateurs, aux membres du personnel et aux professionnels.*

*\*\*Selon la définition de discrimination en vertu de la Charte canadienne des droits et libertés*



# Community Event Checklist

**Community Events** refer to activities hosted and organized by an outside party that are attended by a 4-H group.

Examples include, but are not limited to: club members volunteering at a community event or fundraiser, or attending an exhibition or a trade show.

## **Risk Management Strategies**

Safety information and recommendations contained in this safety checklist are believed to reflect best practices to reduce risk. The suggested risk management strategies are considered minimum standards for participating in a community event.

## **Preparation**

- All youth members and their parents/guardians are informed of potential risks involved in the activity, as well as the safety rules and procedures.
- Safety rules and procedures are learned prior to participation.
- Emergency contact and medical information for all participants will be on-hand throughout the event, as well as dedicated phones for emergencies.
- A first aid kit will be available.
- Set a muster point at the event for everyone to gather in case of an emergency, or if separated from the group. Ensure all participants are aware of this emergency plan.

## **Supervision**

- Adheres to Youth Safety Supervision Policy, Rule of Two, and Supervision Ratios.
- At large events, you may partner with other 4-H groups to provide greater supervision coverage.
- Members must stay within supervised areas as explained by leaders.
- At a public event, the overall group may break into smaller groups. Smaller groups may be supervised in public view by one trained leader or screened volunteer. The maximum number of youth per supervisor must follow the supervision ratio.
- There must never be a situation where an adult is one-on-one with a youth. If a member needs individual attention, engage a fellow supervisor or another adult for assistance.
- Ensure all adults communicate a safety plan to youth and everyone knows how to contact the trained leader in charge in case of an emergency.
- If working in conjunction with another volunteer group, members must be supervised by a 4-H trained leader and/or trained volunteer. Volunteers from other organizations have not met our screening requirements.
- Safety rules and procedures are enforced throughout the activity.
- Emergency action plan is in place to deal with accidents/injuries.

## **Clothing/Footwear**

- Appropriate and properly fitted footwear is worn.
- Appropriate clothing is worn.

# The 4-H Pledge

I pledge

My head to clearer thinking,

My heart to greater loyalty,

My hands to larger service,

My health to better living,

For my club, my community,

my country, and my world.



**CANADA**  
4-H Ontario

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## INTRODUCTION TO EYE ON ENERGY:

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### Objectives & Goals of the Unit:

- Understand what the word energy means
- Learn how we use energy in our everyday lives
- Become familiar with the most common sources of energy
- Learn what we can do to conserve energy

### Background:

Energy is a part of our everyday lives and something that many times we take for granted. Youth are figuring out how the world works, and adults need to be their guide as they grow and learn. The simple act of turning off a light as you exit the room is a great starting point for adults to demonstrate how to reduce energy waste. From a young age, youth can learn and develop good energy saving habits from adults, and simultaneously discover why saving energy makes a difference in their own lives.

In this unit, Cloverbuds will learn through fun, hands-on activities about various aspects of energy including where energy comes from, how we use energy day to day, how energy is used in the home and ways to save energy.

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### 4-H PLEDGE & ROLL CALL

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### Suggested Roll Calls:

- Name something electronic in your house.
- If you could only have one electronic device in your house, what would you choose?
- Can you think of one way that you could use less energy in your house?
- Name one type of energy source that can power your house, car, tractor, etc.

**Time Frame:** Units are to be completed in a two-hour time frame. There is more material here than can be covered in two hours. Please choose activities according to the age and abilities of your cloverbud participants.

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## GETTING STARTED

### Energy Colouring page

**Activity Time:** 20-30 minutes

**Materials Needed:**

- Energy colouring page (found in the Resource section at the end of this unit)
- Crayons, markers

Print enough colouring pages for every Cloverbud. Distribute colouring pages and crayons and give Cloverbuds at least 5 minutes to colour the page. Once everyone is finished, gather Cloverbuds and discuss what energy is and why it is important.

Colouring page source: Classroom Doodles <https://www.classroomdoodles.com/energy-coloring-pages.html>

### Energy Wordsearch

**Activity Time:** 10-15 minutes

**Materials Needed:**

- “Energy” Wordsearch (found in the Resource section at the end of this unit)
- Writing Utensils

Print enough word searches for every Cloverbud. Distribute word searches and writing utensils and give Cloverbuds at least 5 minutes to work independently on the activity. After the time is up, or once everyone is finished, gather Cloverbuds and go over each of words listed on the word search.

Wordsearch Source: Worksheet Place.com <https://worksheetplace.com/>

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## LET'S EXPLORE

### Energy Match-Up Memory Game

**Activity Time:** 10-15 minutes

**Materials Needed:**

- Energy Match-Up Memory Game page (found in the Resource section at the end of this unit)

This activity could be completed in pairs, small groups or as a large group.

Print off the Energy Word Match-Up Game page(s) ahead of the meeting and cut it into pieces. Place all of the cards face-down. Player #1 turns up two cards. If the cards match, they can take another turn. If the cards don't match, the cards are turned back down, and Player #2 takes a turn. The games continues with each person taking a turn until all of the cards are matched.

### Turn Off the Lights!

**Activity Time:** 15-20 minutes

**Materials Needed:**

- No materials required

Kids (and, sometimes, adults) often need to be reminded to turn off lights when they leave a room. Encourage Cloverbud participants to get into the habit of turning off a light when they're leaving an area, and not to automatically turn lights on. They likely don't need lights on in the house during the day.

Turn all of the lights on in the room. Have each participant take a turn at turning out all of the lights as quickly as they can. Use a timer if you wish.

After everyone has had a turn, go around with the group and see which ones really need to be on, and which ones can be switched off to save energy.

#### Energy Fact!

Leaving a 40w incandescent light on for an extra hour uses about .04 kilowatt hours. That may not sound like much, but you would have to ride a bike for almost two and a half days to recreate that energy. If the light used a curly bulb (CFL), you would only have to ride the bike for 12 hours.

Source: <https://www.constellation.com/energy-101/energy-choice/energy-activities-for-kids.html>



## LOOKING WITHIN

### Unplug that Energy Drain!

**Activity Time:** 25-30 minutes

**Materials Needed:**

- Unplug that Energy Drain worksheet (found in the Resource section at the end of this unit)

Put Cloverbud participants in groups of two or three. Give each group an Unplug that Energy Drain worksheet. Depending on the group, make it a competition to see which group can figure out which two pictures are identical matches. If don't want groups competing against each other, have each group present which two pictures they think are a match and see if every group agrees.

Activity Source: <https://www.energy.gov/energysaver/articles/get-current-switch-clean-energy-activity-book>

### Energy Conservation

**Activity Time:** 15-20 minutes

**Materials Needed:**

- Energy Conservation Worksheet (found in the Resource section at the end of this unit)
- Red and yellow markers

Print enough Energy Conservation worksheets for every Cloverbud. Distribute worksheets and one red and one yellow marker to each Clovbude. Give at least 5 minutes to work independently on the activity. After the time is up, or once everyone is finished, gather Cloverbuds and review each of the squares on the page.

Source: Teach Engineering [https://www.teachengineering.org/activities/view/cub\\_energy2\\_lesson02\\_activity1](https://www.teachengineering.org/activities/view/cub_energy2_lesson02_activity1)

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## WRAPPING THINGS UP

### Energy Treasure Hunt

**Activity Time:** 25-30 minutes

**Materials Needed:**

- Clipboard with paper or notepad
- Writing utensils

Have Cloverbud participants either work individually or in pairs. On the Treasure Hunt, Cloverbud participants are challenged to find and write down as many ways as possible that they can find to save energy. This activity can be done inside a building, outside or both.

### Make S'mores with a Solar Oven

**Activity Time:** 15-20 minutes

**Materials Needed:**

- Cardboard box with attached lid. Lid should have flaps so that the box can be closed tightly. Box should be at least 5 cm (2 inches) deep and big enough to set a pie tin inside.
- Aluminum foil
- Clear plastic wrap
- Glue stick
- Tape (transparent tape, duct tape, masking tape, or whatever you have)
- Stick (about 30cm (1 foot long)) to prop open reflector flap. (Use a skewer, knitting needle, ruler, or whatever you have.)
- Ruler or straight-edge
- Box cutter (with adult help)

**To make S'mores:**

- Graham crackers
- Large marshmallows
- Plain chocolate bars (thin)
- Aluminum pie pan
- Napkins

**CAUTION!**

Have an adult cut the box with the box cutter or blade.

Harness the energy of the Sun to make the best snack ever invented, S'mores!

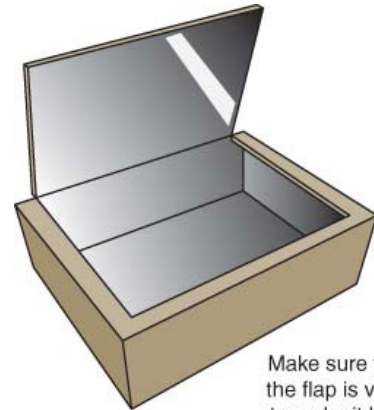
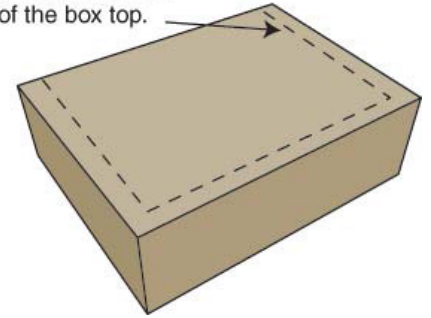
A solar oven is a box that traps some of the sun's energy to make the air inside the box hotter than the air outside the box. In other words, the solar oven is like a super greenhouse.

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**Solar Oven Assembly Instructions:**

1. Using the straight edge as a guide, cut a three-sided flap out of the top of the box, leaving at least a 1-inch border around the three sides.
2. Cover the bottom (inside) of the flap with aluminum foil, spreading a coat of glue from the glue stick onto the cardboard first and making the foil as smooth as possible.
3. Line the inside of the box with aluminum foil, again gluing it down and making it as smooth as possible.
4. Tape two layers of plastic wrap across the opening you cut in the lid—one layer on the top and one layer on the bottom side of the lid.
5. Test the stick you will use to prop the lid up. You may have to use tape or figure another way to make the stick stay put.

Cut here, 1 inch from the edge of the box top.



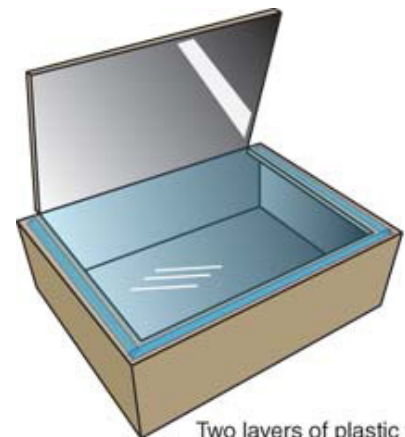
Make sure the foil inside the flap is very smooth, to make it like a mirror.

**Put the oven to work :**

Set the oven in the direct Sun, with the flap propped to reflect the light into the box. You will probably have to tape the prop in place. Preheat the oven for at least 30 minutes

**IMPORTANT!**

Note that unlike most recipes, these s'mores have the marshmallow UNDER the chocolate. That's because, in the solar oven, it takes the marshmallow longer to melt than the chocolate.



Two layers of plastic wrap over the opening will help keep heat in, while still letting all the light shine through.

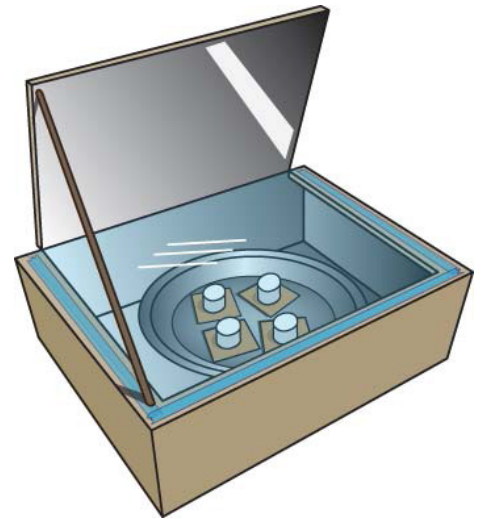
**S'mores Instructions:**

1. Break graham crackers in half to make squares. Place four squares in the pie pan. Place a marshmallow on each.
2. Place the pan in the preheated solar oven.
3. Close the oven lid (the part with the plastic wrap on it) tightly, and prop up the flap to reflect the sunlight into the box.
4. Depending on how hot the day is, and how directly the sunlight shines on the oven, the marshmallows will take 30 to 60 minutes to get squishy when you poke them.
5. Then, open the oven lid and place a piece of chocolate (about half the size of the graham cracker square) on top of each marshmallow. Place another graham cracker square on top of the

chocolate and press down gently to squash the marshmallow.

6. Close the lid of the solar oven and let the Sun heat it up for a few minutes more, just to melt the chocolate a bit.'
7. Enjoy!

Craft and Image Credit: <https://climatekids.nasa.gov/smores/>



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## ADJOURNMENT

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### Additional Activities

- Hold the meeting at or tour a power plant or a facility that uses wind or solar energy.
- Visit a recycling facility to see what happens to the items we send for recycling.
- Create a judging activity including any 4 samples of the same type of electrical appliances (cell phones, toaster, fan, Ipads, etc.).

### References

- AgScape <https://agscape.ca/>
  - Classroom Doodles <https://www.classroomdoodles.com/>
  - Education.com <https://www.education.com/>
  - Energy Star <https://www.energystar.gov/>
  - Farm & Food Care Ontario <https://www.farmfoodcare.org/>
  - Government of Canada – Energy Efficiency <https://natural-resources.canada.ca/energy-efficiency/10832>
  - NASA Climate Kids <https://climatekids.nasa.gov/>
  - Teach Engineering <https://www.teachengineering.org/>
  - U.S. Department of Energy <https://www.energy.gov/energysaver/>
  - Worksheet Place.com <https://worksheetplace.com/>
-





Name: \_\_\_\_\_

# Energy Word Search

1. Find the hidden words. The words have been placed horizontally, vertically, or diagonally. When you locate a word, draw an ellipse around it.

a	e	h	w	w	a	f	s	p	d	b	o
e	t	n	k	p	o	w	o	r	k	k	p
p	o	t	e	n	t	i	a	l	g	p	d
n	u	c	l	e	a	r	r	a	e	q	q
a	m	l	e	q	b	l	v	l	w	o	s
t	u	j	c	h	b	d	f	x	d	k	s
m	v	h	t	v	s	k	a	q	v	r	j
o	r	d	r	r	f	h	y	d	r	o	l
l	n	s	i	y	u	b	n	b	w	q	i
v	x	i	c	c	e	n	u	h	n	f	g
i	a	q	i	c	l	i	g	t	k	l	h
g	s	b	t	o	j	f	s	e	k	s	t
s	f	f	y	a	s	o	l	a	r	i	e
l	z	r	a	l	v	e	n	e	r	g	y

1. fuel

2. potential

3. nuclear

4. work

5. energy

6. electricity

7. light

8. hydro

9. solar

10. coal

<b>Solar</b>	<b>Solar</b>
<b>Water</b>	<b>Water</b>
<b>Natural Gas</b>	<b>Natural Gas</b>
<b>Electricity</b>	<b>Electricity</b>
<b>Nuclear Energy</b>	<b>Nuclear Energy</b>
<b>Hydro</b>	<b>Hydro</b>
<b>Energy Conservation</b>	<b>Energy Conservation</b>
<b>Wind Turbine</b>	<b>Wind Turbine</b>

<b>Gasoline</b>	<b>Gasoline</b>
<b>Fossil Fuel</b>	<b>Fossil Fuel</b>
<b>Biofuels</b>	<b>Biofuels</b>
<b>Coal</b>	<b>Coal</b>

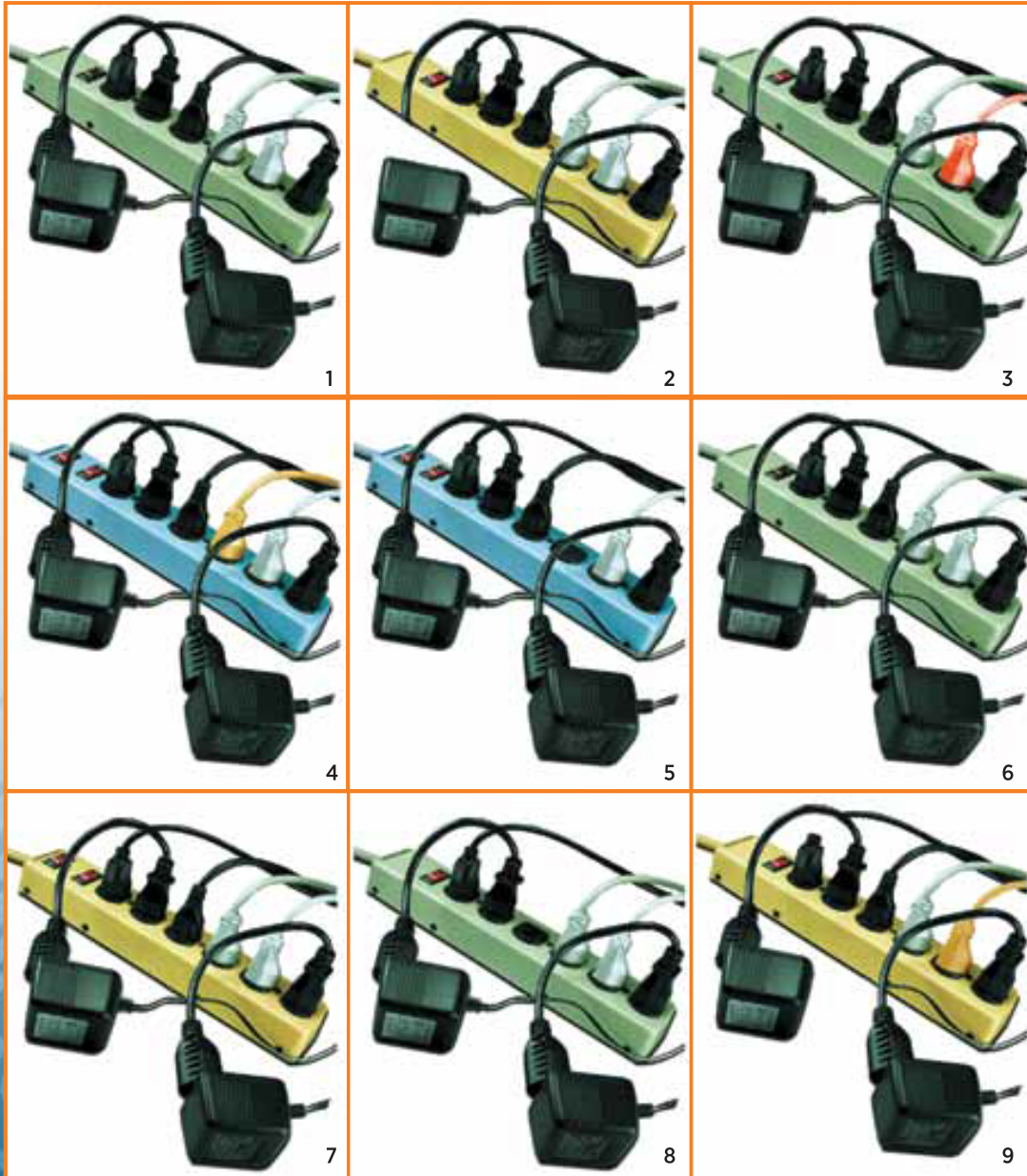
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Find the two that match. Discover the savings.  
Plug your devices and chargers into a power strip and turn them all off at once.

# Unplug that energy drain!



**ENERGY FACT:** Use power strips to switch off TVs, game systems, home theater equipment, and stereos when you're not using them. Even when you think these products are turned off, together, their "standby" consumption can be equivalent to that of a 75 or 100 watt light bulb running continuously.



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

## Energy Conservation Worksheet

**In the grid below, color each square according to the following guidelines:**

**If it describes a waste of energy, color the square RED.**

**If it describes a way to save energy, color the square YELLOW.**

A dripping hot water faucet	A room with thermostat set below 20°C in winter	A house with poor insulation	Leaving lights on in an empty room	Driving in rush-hour traffic	Driving a hybrid car
Growing a garden	Using an electric blanket	Turning the TV off when no one is watching	Turning off appliances when on vacation	Car pooling	Using an electric can opener
A low-water landscape	Using fluorescent lights	Using lamps with 150-Watt bulbs	Driving a car with no other passengers	Leaving the faucet on when brushing your teeth	Taking showers instead of baths
Wearing sweaters and warm clothes in cold weather	Driving an oversized car	Riding your bike instead of taking the car	Using an electric toothbrush	Driving your car over 55 mph	Leaving outside lights on during the day
Opening curtains on the south side of the house during a summer day	Running full loads in the washing machine	Using solar thermal panels to heat hot water	Using both sides of a piece of paper	Closing windows and doors when the air conditioner or heat is on	Recycling cardboard and magazines
Leaving the car running in the driveway while you go inside	Using an electric knife	Hanging clothes outside to dry	Leaving the computer on when no one is using it	Recycling paper, glass and metal	Watching TV instead of playing outdoors

**In the space below, describe additional activities that you can do to conserve energy.**

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