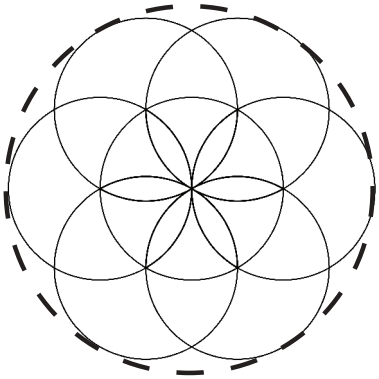
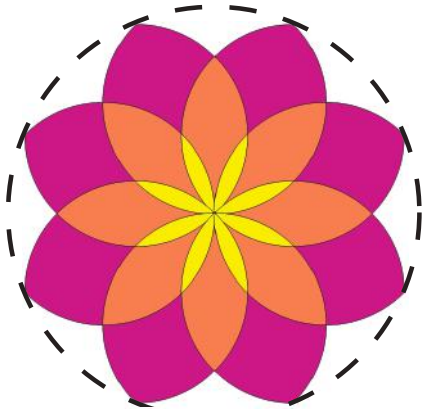
RENEWABLE ENERGIES

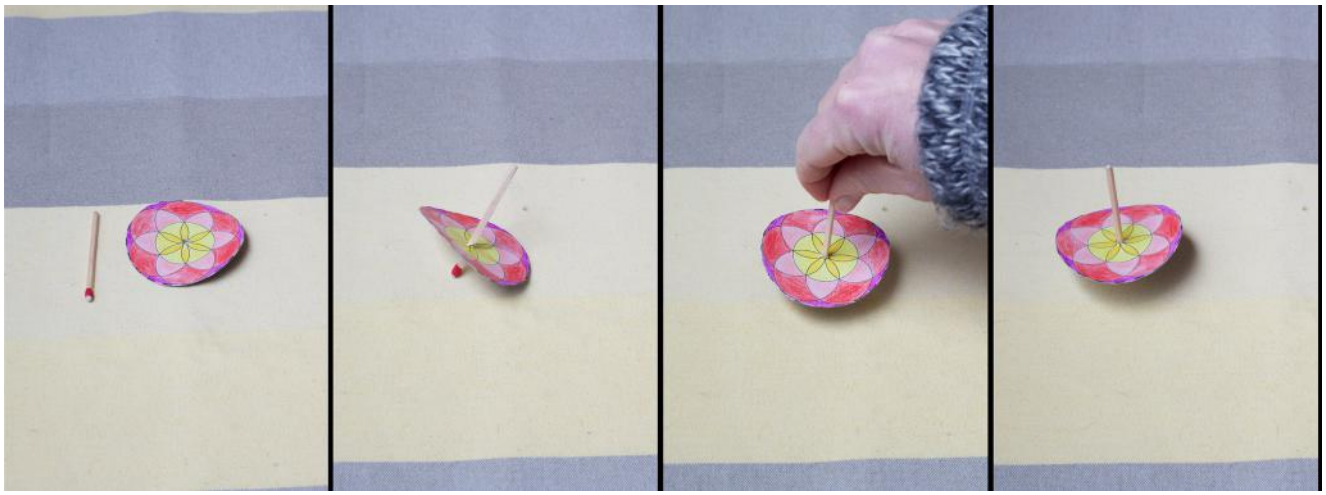
CHALLENGE KIT RESOURCES

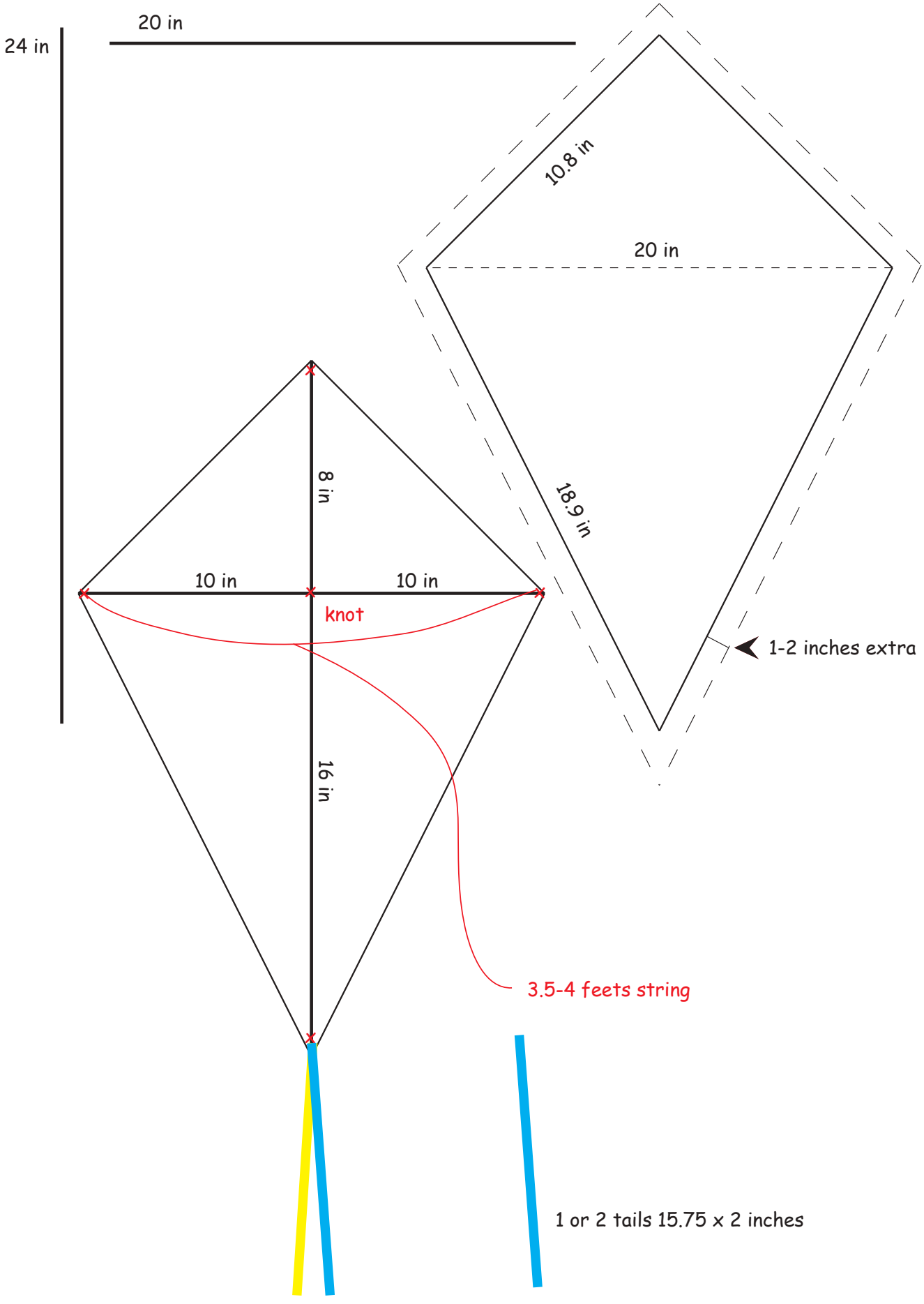
E-Patches & Crests
A Division of 1497202 Alberta Ltd.

Build A Spintop



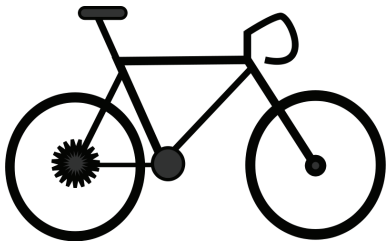


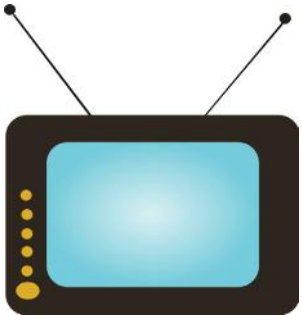


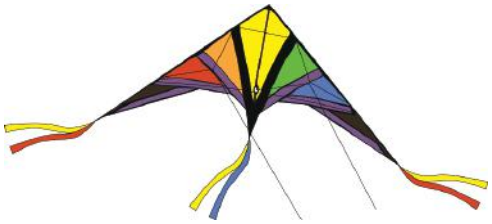


Which Objects Require Electricity to Work?

Instructions: Draw circles around the objects that require electricity to work







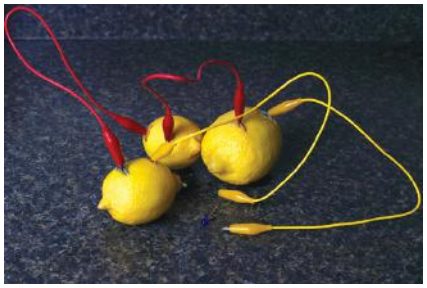
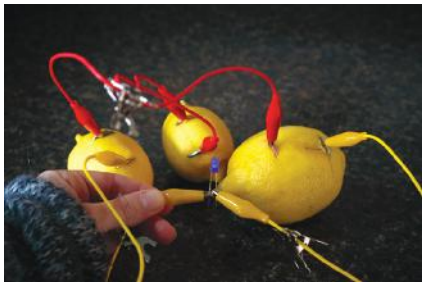
Light a Bulb with Citrus

Materials: 1 LED and 3 Lemons

- Minimum 3 big lemons (the LED will shine brighter with more lemons, best one lemon per person)
- 1 LED
- 3 Canadian pennies (they are covered with 4.5% copper) to make the anode (negative pole of the battery)
- 3 Zinc cut washers or zinc galvanized bolt to make the cathode (positive pole of the battery)
- 4 (or number of lemons +1) insulated lead wires with “alligator clips” on each end.





Build a Solar Oven out of a Pizza Box

Materials:

- 1 Large, recycled pizza box
- Ruler
- Black marker
- Cutter
- Glue
- Scissors
- Tape
- Aluminum foil
- Clear plastic wrap
- Black construction paper

Instructions:

1 Draw a square on the pizza box lid, 1 inch away from the edges of the box. Cut through 3 sides of the square, leaving the line at the rear of the box attached. Fold to the back so it stands up when the pizza box lid is closed.

2 Cover the inner side of the flap with aluminum foil, which would reflect sunlight into the oven. Glue the aluminum foil, flatten out wrinkles. It has to be totally flat smooth surface.

3 Glue a layer of aluminum foil to the inside bottom of the pizza box for insulation.

4 Cover the aluminum at the bottom with a sheet of black construction paper, glue it. The black piece will absorb sunlight and generate more heat inside the pizza box/ oven.

5 Cut 2 square pieces of clear plastic wrap, one inch larger than the opening. Open the pizza box and tape one piece of plastic to the inner side of the hole. Now close the lid and tape the second plastic sheet over the outer side of the hole. This creates a window that keeps the sun heat in the box.

6 Close the lid and you're ready to start cooking.

7 Put your s'mores inside the box, directly on the black paper or on a plastic wrap. Close the box, leave the window open.

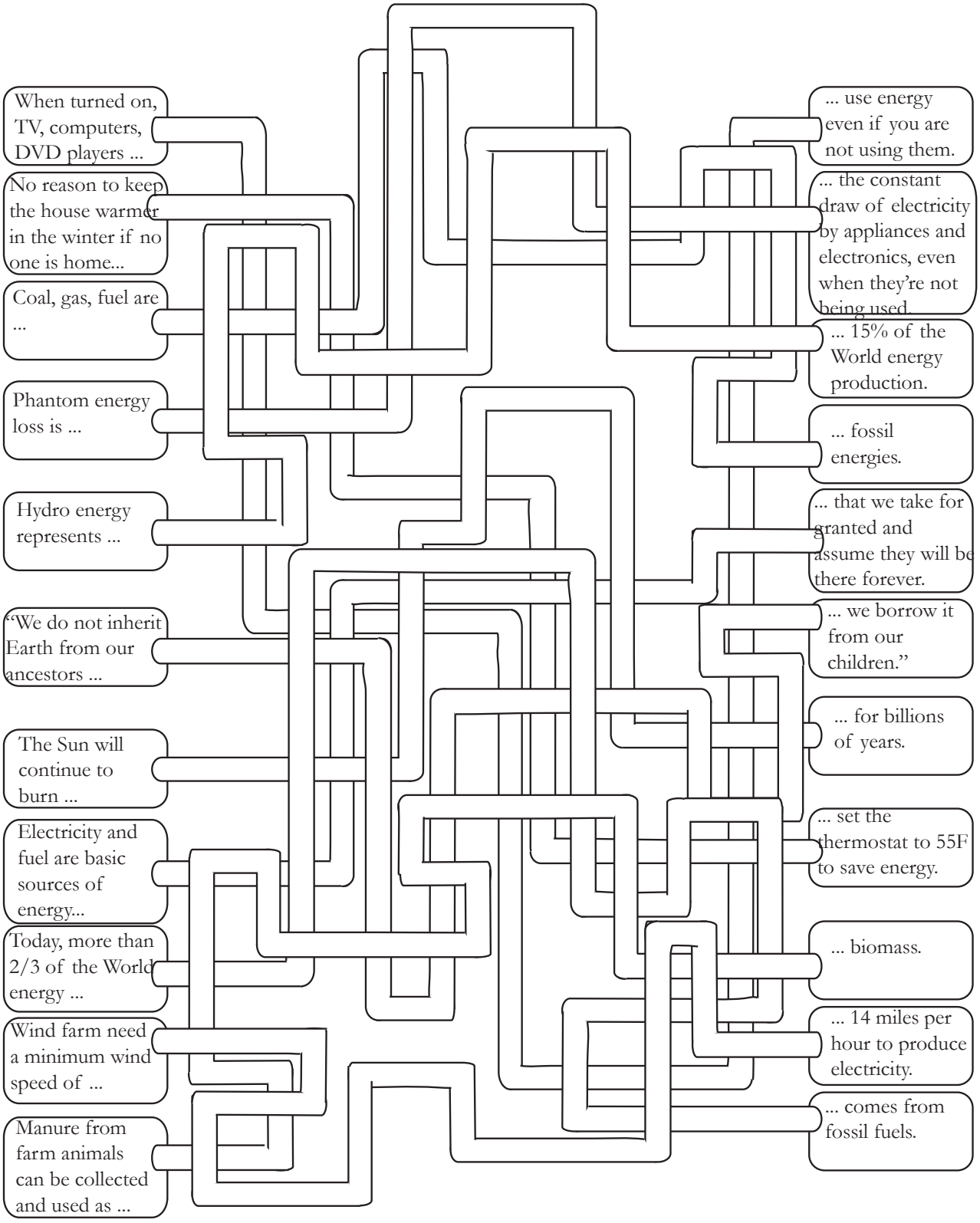
8 On a bright day place your solar oven in direct sunlight. Orientate the flap to the best reflective angle, Use a straw or a ruler to keep it open.

Labyrinth

Materials:

- Printout of the maze
- A pen or other writing device

Instructions: Wind your way through the maze to complete the sentences. Find the path that goes from one part of the sentence to the other, the left column to the right column, thus completing the sentence.



Jigsaw: What is Energy?

Materials:

- Printout of the jigsaw puzzle
- Scissors

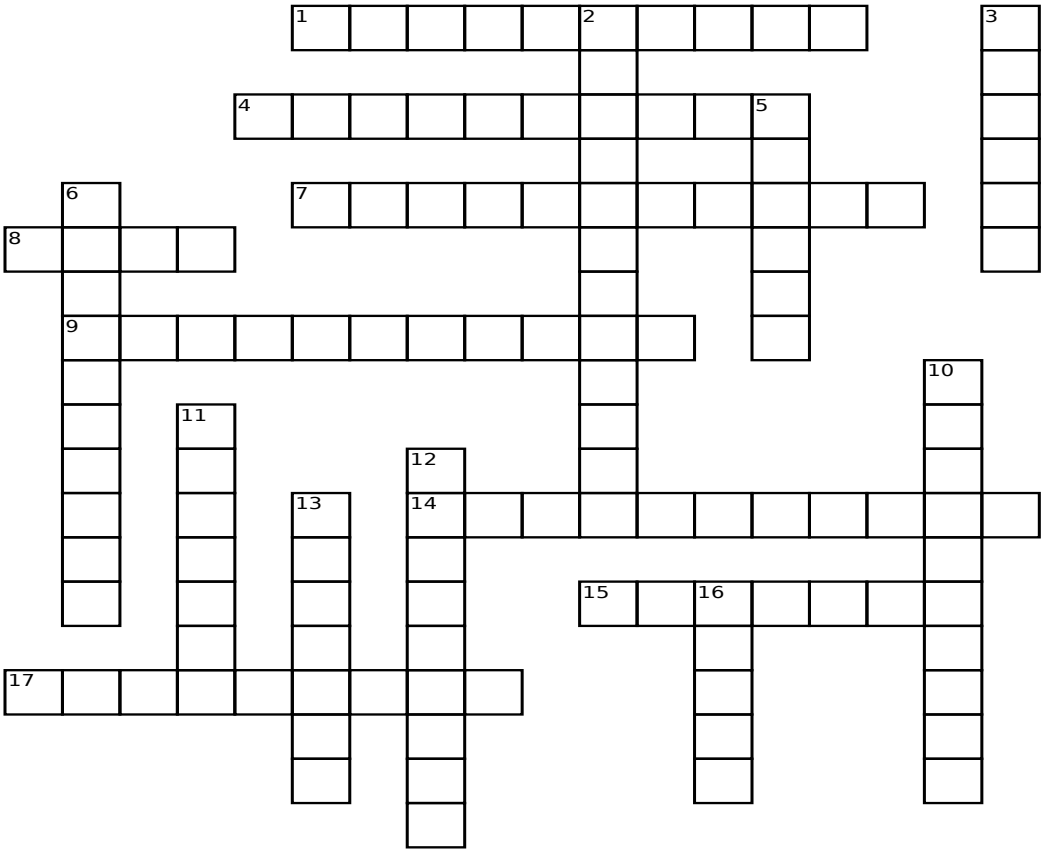
Instructions: Print the puzzle and cut out the pieces. Split the pieces evenly amongst the players and ask them to work as a team to put the puzzle back together.

Crossword

Materials:

- Printout of the crossword
- A pencil or other writing device

Instructions: Complete the Crossword while learning about renewable energies.



Across

1. Electricity generating energy that comes from moving water.
4. Effect responsible for global warming.
7. You're living in it and should protect it.
8. Used to fire a BBQ.
9. Reasonable use of Earth's natural resources.
14. Flows along power lines.
15. Pedal power to get you there and leave no pollution in the air.
17. That will never run out.

Down

2. Harness sunlight.
3. Vehicle driving on both fuel and electricity.
5. After a good lunch you're full of...
6. The Earth is running out of coal, fuel, gas.
10. Underground heat.
11. Machine with blades or rotors that are turned by a force such as wind, water, or steam.
12. Reusing the same thing in a different purpose.
13. Energy source that comes from crop, wood, garbage, or even manure.
16. Renewable energies are...

Word Search

Materials:

- Printout of the word search
- A pencil or other writing device

Instructions: Find and circle the words written below the "letter box".

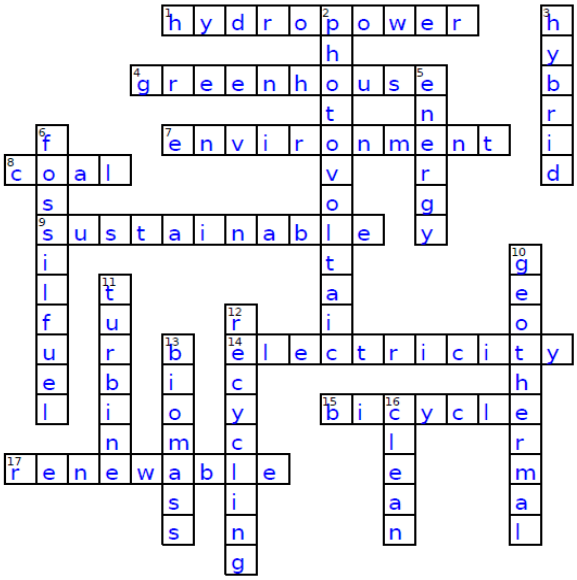
N A L I A U B E I L G C Y S A
T E F O S S I L F U E L E E S
G E W T E N R E C Y C L I N G
A I I L W C R C U L H S G E N
S U N L I G H T C P O W E R Y
E W D N H Y D R O E N E R G Y
E L S U S T A I N A B L E Y S
O O T D I Y E C G O I L N S Y
O O L S R E Y I N B O H E A T
N T A U M G Y T A H M N W V E
O C E N E R G Y C O A L A I V
I N O G T T E O N G S B B N U
A T S U R I Y H G G S U L G N
U E E N A S T U R B I N E A I
Y R A I E O T N L L N B R B E

BIOMASS
COAL
ELECTRICITY
ENERGY
ENERGY SAVING
FOSSIL FUEL
GAS
HEAT
HYDROENERGY
OIL
POWER
RECYCLING
RENEWABLE
SUN
SUNLIGHT
SUSTAINABLE
TURBINE
WIND

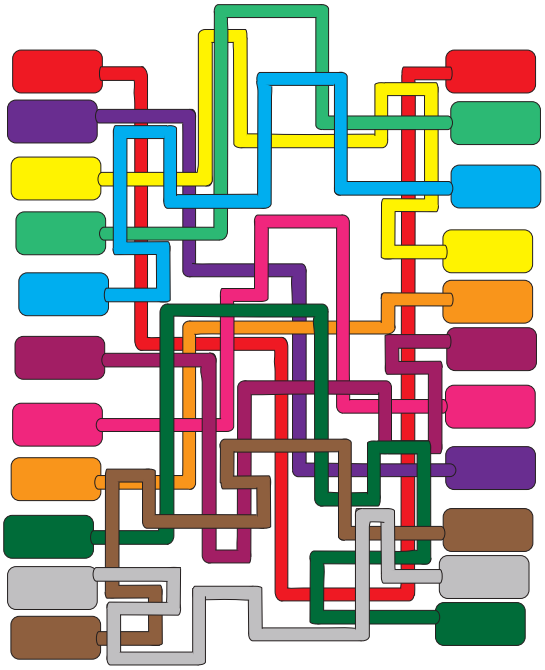
Puzzle Answer Keys

WORD SEARCH

CROSS WORD

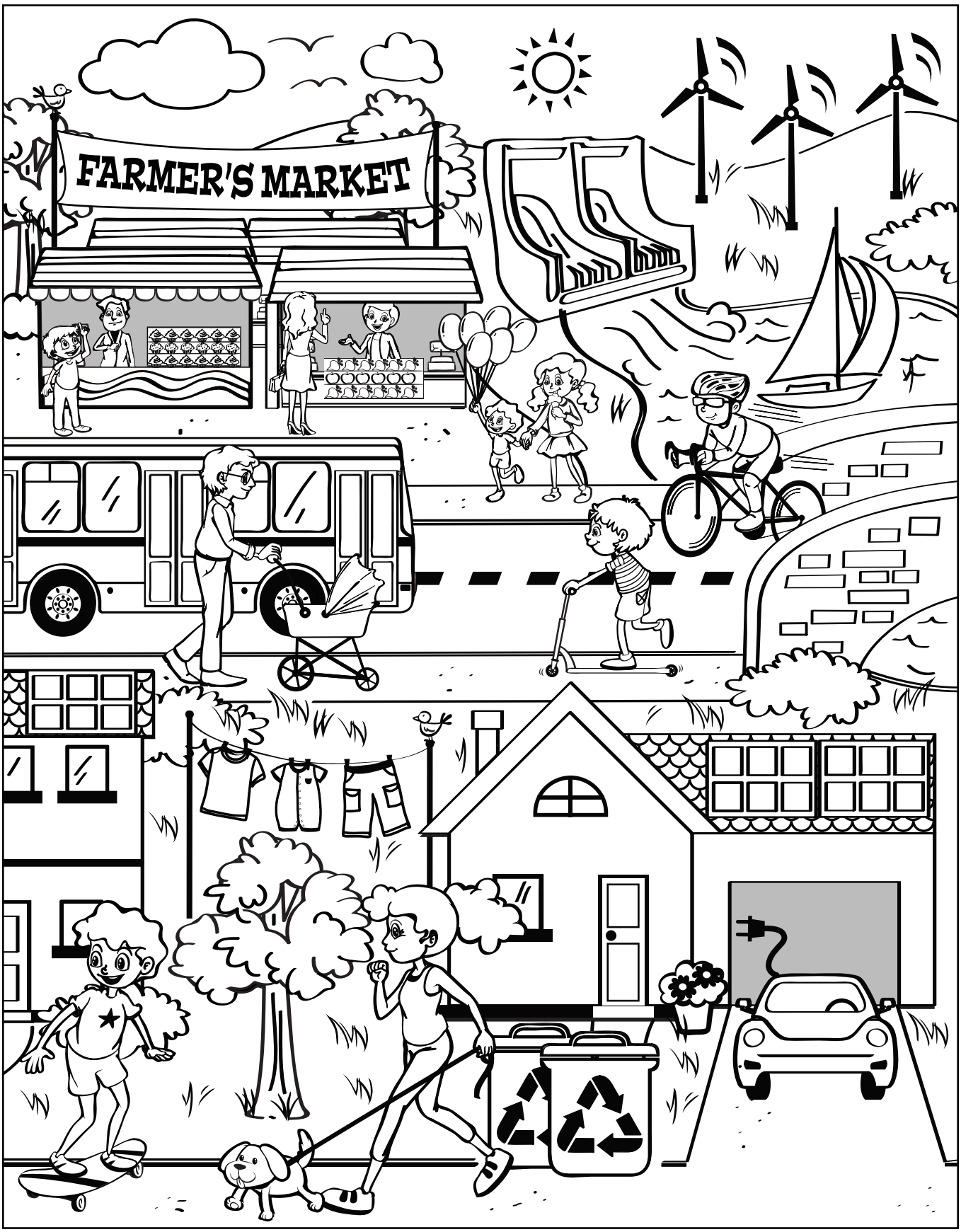


LABYRINTH

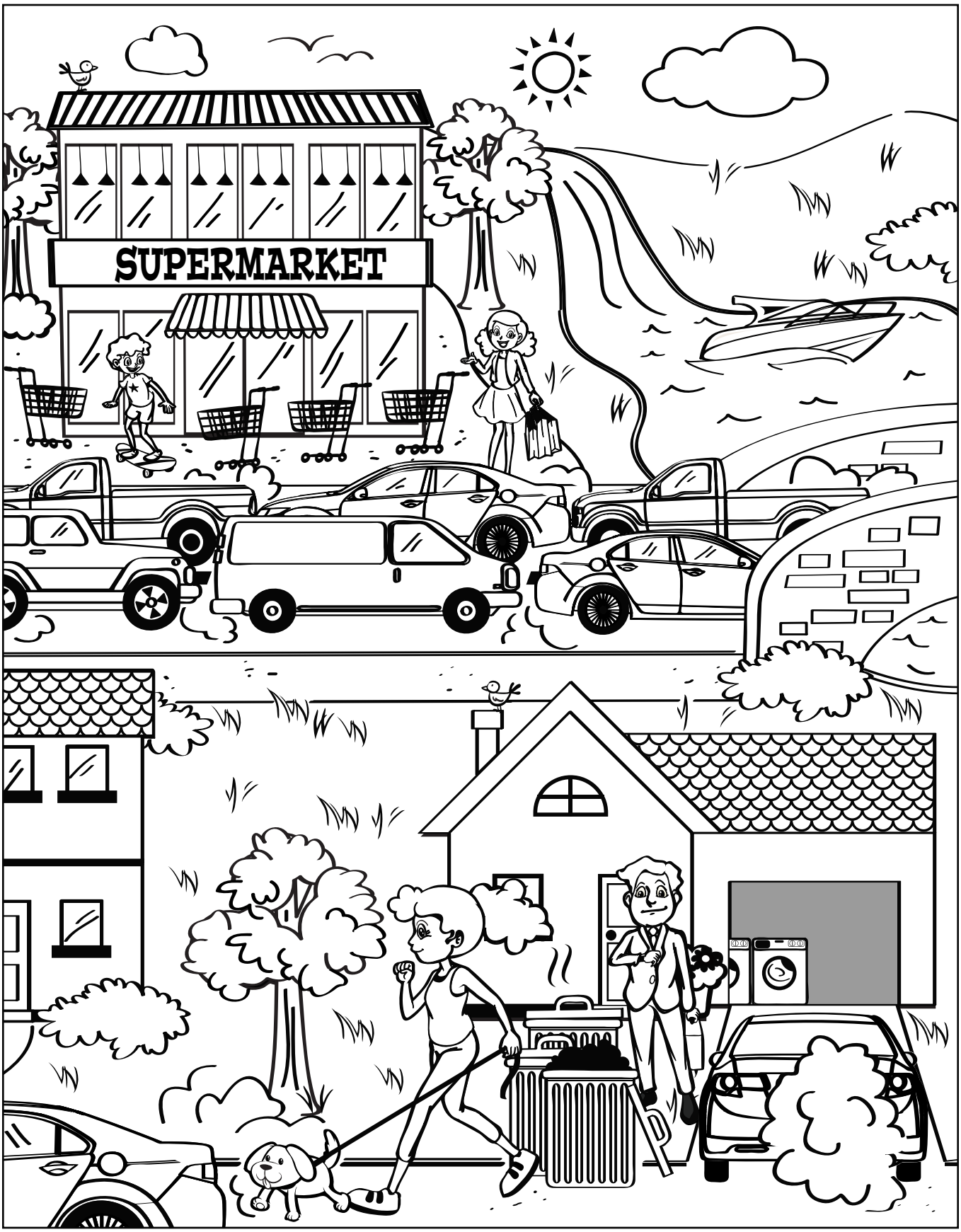


JIGSAW

Renewable Energies



Fossil Energies



Helpful Websites & Bibliography

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http://en.wikipedia.org/wiki/Renewable_energy
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http://en.wikipedia.org/wiki/Renewable_energy_in_Canada
http://en.wikipedia.org/wiki/Peak_oil

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http://www.nrcan.gc.ca/energy/renewable/1297
Transport Canada: Hybrid buses in Canadian cities.
http://www.tc.gc.ca/eng/programs/environment-utsp-casestudy-cs71e-hybridbuses-272.htm

ENVIRO-KIDS, RENEWABLE ENERGY 101. SIMPLE TEACHING EXPLANATIONS ON EACH ENERGY SOURCE.
http://www.greenmountain.com/resources/enviro-kids/renewable-energy-101

FUN FACTS ABOUT RENEWABLE ENERGY.
http://www.alliantenergykids.com/EnergyandTheEnvironment/RenewableEnergy/022403

U.S. ENERGY INFORMATION ADMINISTRATION WEBSITE. A COUPLE OF USEFUL TEACHING MATERIAL, ONLINE GAMES ON ENERGY SAVING AND FUN ACTIVITIES AROUND RENEWABLE ENERGIES.
http://www.eia.gov/kids/energy.cfm?page=renewable_home-basics
http://www.eia.gov/kids/energy.cfm?page=wind_home-basics-k.cfm
http://www.eia.gov/kids/resources/teachers/pdfs/Activitybook_web.pdf

THE OFFICIAL WEBSITE OF EARTH HOUR, SUPPORTED BY WWF.
http://www.earthhour.org/

DETAILS INSTRUCTION FOR ACTIVITIES: HOW TO MAKE A KITE; LEMON BATTERY AND SOLAR OVEN.
www.wikihow.com/Make-a-Kite
http://en.wikibooks.org/wiki/School_Science/Lemon_Battery
http://www.nmsea.org/Curriculum/4_6/pizza_box_oven/pizza_box_ovens.htm

Credits

Maïlis Bietenhader: Writing, Photography on pages 20, 23, 38-40, 42-44, Illustration on pages 8, 9, 20, 33

Pauline Woodhouse: Editing, Layout

Brooke Langner: Illustration on pages 49, 50

Clipart: Pages 7, 10-13, 15, 19, 25-27, 29, 32, 37

Website: Encyclopedia Britanicca for wind turbine image on page 14

Website: www.wikihow.com/Make-a-Kite for Kite image on page 22