

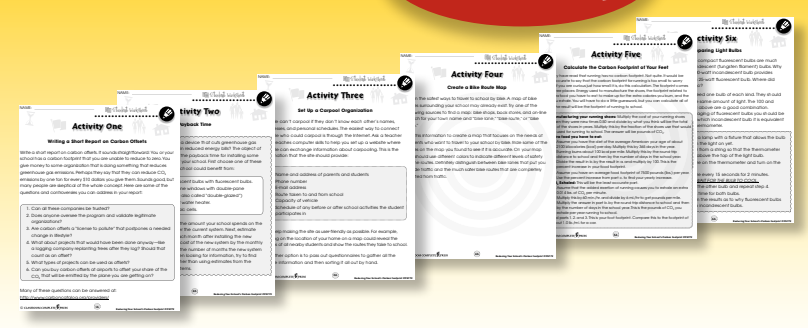
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Study Green

1. **Circle** the word **TRUE** if the statement is TRUE or **Circle** the word **FALSE** if it is FALSE.

- a) Some environmental science projects can affect the global climate.
TRUE FALSE
- b) Earth's climate is changing.
TRUE FALSE
- c) Nitrogen is a greenhouse gas.
TRUE FALSE
- d) Incandescent light bulbs have a larger carbon footprint than fluorescent light bulbs.
TRUE FALSE
- e) Photovoltaic cells convert nuclear power into electricity.
TRUE FALSE
- f) Plants absorb carbon dioxide.
TRUE FALSE

2. Write each word or phrase beside its meaning.

EPA	VOC	HVAC	fossil fuel
Energy Star	carpooling	photosynthesis	

- _____ a) sharing rides
- _____ b) volatile organic compounds
- _____ c) coal, oil, or natural gas
- _____ d) heating, ventilation, and air conditioning
- _____ e) Environmental Protection Agency
- _____ f) efficiency rating for appliances
- _____ g) the process in plants that converts light energy to chemical energy



Study Green



You may have done projects related to the environment before, such as making posters about saving resources or models of the water cycle. What is different about the projects suggested in this book is that the result will actually change the planet by changing the way your school uses energy and resources.



If you are looking for a project that will lead to a reduced school footprint, you might begin by looking at the website of the National Energy Education Development (NEED) Project (<http://www.need.org/>). You will find educational materials, contests with prizes, suggestions for projects, and links to other helpful web sites. Here are just a few of the energy-related projects schools around the country have successfully completed:

- A Michigan school built two wind turbines that light several classrooms.
- A school in New York City studied the effect of grass-covered schoolhouse roofs on heating and air conditioning bills.
- A Utah school used a year's weather data to predict the output of solar and wind power projects.
- An Ohio school composted school cafeteria scraps and used it to supply nutrients to an organic garden.
- Another Ohio school held a contest to see which group of students could save the school the most energy.



Study Green



1. Match each of the benefits listed below to the school projects. Some benefits will be used more than once.

reduce landfill footprint	reduce hot water footprint	raise environmental awareness
fertilize school garden	reduce electricity footprint	reduce HVAC footprint

- _____ a) photovoltaic cells on the schoolhouse roof
- _____ b) heat collectors on the schoolhouse roof
- _____ c) a schoolhouse roof covered with sod
- _____ d) a compost pile for food scraps
- _____ e) recycling bins for paper, cans, and glass
- _____ f) wind turbines
- _____ g) organize a community carbon footprint information fair

2. **Circle** the word **TRUE** if the statement is TRUE or **Circle** the word **FALSE** if it is FALSE.

- a) Some school projects receive cash prizes.
TRUE FALSE
- b) Information needed for carbon footprint projects is difficult to find on the Internet.
TRUE FALSE
- c) Local alternative energy companies are usually eager to help schools with carbon footprint projects.
TRUE FALSE
- d) Environmental studies are unrelated to the other sciences.
TRUE FALSE
- e) A school could generate all its own electricity.
TRUE FALSE



Study Green



3. Answer the questions in complete sentences.

- a) Briefly describe a way to lower the electricity footprint of a school.

- b) Briefly describe a way to lower the waste materials footprint of a school.

- c) Briefly describe a way to lower the food footprint of a school.

Extensions & Applications

Imagine you are a teacher about to begin teaching a new course in environmental studies. Create a broad outline for your course. Just list the big ideas you will cover and arrange them in a logical order. The first one has been done for you.

Topic 1. Global Climate Change

Topic 2. _____

Topic 3. _____

Topic 4. _____

Topic 5. _____

Topic 6. _____

Carbon Footprint Calculator (Continued)

1 Student Number	2 Miles Traveled by Bus	3 Miles Traveled by Car	4 Number of Students in Car	5 Column 3 Divided by Column 4
------------------------	----------------------------------	----------------------------------	--------------------------------------	---

Write zeroes in columns 2 through 5 for students who walk or bike to school. If you or a friend can set this up as an excel file, you will save time. To calculate your school's travel footprint:

- Find the totals of columns 2 and 5.
- Multiply the total of column 2 by 0.24 and the total of column 5 by 1.0.
- Add the results in step 2 and divide the sum by the number of students surveyed. This is the average travel footprint in lbs. of CO₂/day.
- Multiply the result of step 3 by average attendance, then by the number of school days in a school year.
- Divide the result of step 4 by 2000 and write the answer here: _____ **tons CO₂/year.** This is your school's travel footprint.

Food

Only do this calculation if your school has a cafeteria. Ask the cafeteria staff how many students eat there on an average day, if their food is organic, and if it is grown locally.

- Begin with the number 8.22 lbs./student-day.
- Subtract 0.55 if the food is organic and 0.37 if it is grown locally.
- Multiply the result by the number of students eating there per day and then multiply by the number of days in the school year.
- Divide the result of step 3 by 2000 and write the answer here: _____ **tons CO₂/year.** This is your school's food footprint.

Recycling and Trees

For this calculation you will need to find out how many tons of waste material your school sends to a landfill, and you will need to count the trees on the school's property. Begin with the number 2.18 tons of CO₂/ton of waste. Subtract 0.42 if food waste is composted. Likewise, subtract 0.43 if paper is recycled, 0.25 if cans are recycled, and 0.07 each if glass or plastic are recycled.

Multiply the result by the number of tons of waste your school sends to a landfill each year, and write the answer here: _____ **tons CO₂/year.** This is your school's waste footprint.

Add the result above to the results for energy, transportation, and food, write the answer here: _____ **tons CO₂/year.**

Multiply the number of trees on school property by 0.020 and write the answer here:

minus _____ **tons CO₂/year.**

Subtract this amount from the amount above and write the answer here: _____ **tons CO₂/year. This is your total school carbon footprint!**

Word Search

Find all of the words in the Word Search. Words are written horizontally, vertically, diagonally, and some are even written backwards.

adapt	carbon footprint	energy star	kilowatt-hours	photovoltaic
atmosphere	carbon offset	EPA	HVAC	reactant
carbon	carpool	global	incandescent	therm
carbon dioxide	climate change	greenhouse gas	photosynthesis	VOC

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

Comprehension Quiz

Part C

Answer each question in complete sentences.

- What does the Energy Star rating mean? 3

- What is carpooling? 3

- What is a carbon offset? 3

- What is an idle free zone? 3

- What is the easiest way to remove carbon dioxide from the atmosphere? 3

SUBTOTAL: /15

Lower Your School's Carbon Footprint Inside Initiatives

Use Reusable lunch containers

Recycle what you can

Turn down the heat in the winter
Cut back on Air Conditioning
in the summer

Classroom

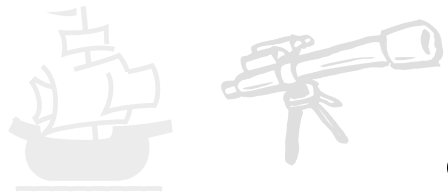
Turn off the lights when not in use (use energy efficient light bulbs)

Use both sides of the paper

Unplug electrical equipment when not in use

NAME: _____

After You Read 



Study Green



3. Answer the questions in complete sentences.

a) Briefly describe a way to lower the electricity footprint of a school.

b) Briefly describe a way to lower the waste materials footprint of a school.

c) Briefly describe a way to lower the food footprint of a school.

Extensions & Applications

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Topic 1. Global Climate Change

Topic 2. _____

Topic 3. _____

Topic 4. _____

Topic 5. _____

Topic 6. _____

3.

a) (Answers will vary.) Replacing incandescent bulbs with fluorescent bulbs will lower the electricity footprint.

b) (Answers will vary.) Recycling cans will lower the landfill footprint.

c) (Answers will vary.) Buying locally grown food will lower the food footprint.

Extensions & Applications

Topic 1. Global Climate Change

Topic 2. Greenhouse gases and the greenhouse effect

Topic 3. Sources of greenhouse gas

Topic 4. Personal contributions to greenhouse gas emissions

Topic 5. School contributions to greenhouse gas emissions

Topic 6. Ways to reduce footprint



EASY MARKING ANSWER KEY