Contents

NAME: _____

Before You Read

Footprints in Your Lunch

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

a) Green vegetables have a much smaller carbon footprint than other vegetables.
TRUE **FALSE**

b) A compost pile can be used to make fertilizer for a garden.
TRUE **FALSE**

c) Reusing materials creates less CO_2 emissions than recycling them.
TRUE **FALSE**

d) Farmers' tractors emit greenhouse gases.
TRUE **FALSE**

e) The carbon footprint of a meal depends only on the number of calories it contains.
TRUE **FALSE**

2. **Put a check mark (✓) next to the answer that is most correct.**

a) **Which of these types of food usually has the largest carbon footprint?**
- ◯ **A** red meat
- ◯ **B** potatoes
- ◯ **C** soy beans
- ◯ **D** watermelon

b) **Each of these is one of the three basic ways to lower a carbon footprint, *except***
- ◯ **A** recycle.
- ◯ **B** reduce.
- ◯ **C** relax.
- ◯ **D** reuse.

c) **Which method of disposing of food scraps from a school cafeteria adds least to the carbon footprint?**
- ◯ **A** taking it to a landfill
- ◯ **B** feeding it to animals
- ◯ **C** putting it on a compost pile
- ◯ **D** putting it down a garbage disposal

Reading Passage

NAME: _____

Footprints in Your Lunch

The food we eat adds to our carbon footprint. Most of the CO_2 emissions related to food are indirect, but still fairly large. For example, a farmer's tractor burned a lot of fossil fuel as it traveled back and forth over a field to plant and harvest the wheat to make the bread in your PB & J sandwich.

Calculating the footprint caused by your school lunch is a little tricky because some students bring their lunch from home and some eat in a school cafeteria. If you bring your lunch, you could argue that this is part of your personal footprint, rather than the school's. In any case, no matter how you get your lunch, there are ways to reduce its footprint that work for everyone.

A Reusable Lunch Bag & Reusable containers

A school in Massachusetts started a green lunch program based on the idea that "recycle is good, but reduce and reuse are better." At the beginning of the school year, all the students got "green" lunch bags containing napkins, silverware, and cups that are washable and reusable. This eliminates a lot of waste, and any waste leads to CO_2 emissions when it is disposed of.

STOP

Describe two ways the food we eat causes fossil fuels to be burned.

_____

_____

The lunch footprint can be reduced further by buying food that is grown locally and organically. Any food waste can be put on a compost pile rather than trucking it to a landfill. The compost pile can eventually be used to fertilize a school garden.

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After You Read

Footprints in Your Lunch

1. **Fill in each blank with a word from the list.**

tractors	**carbon**	**CO_2**	**composting**	**locally**
organically	**recycle**	**reuse**	**reduce**	

Most (a) _____ emissions related to your school lunch are indirect. Farmers add to the (b) _____ footprint of your lunch when they drive their (c) _____ back and forth across their fields. "Green" lunch programs are based on the idea that (d) _____ is good, but (e) _____ and (f) _____ are better. Your lunch footprint can be reduced further by buying food that is grown (g) _____ and (h) _____. Your lunch footprint can be reduced even further by (i) _____ your food scraps.

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

a) Reusable plastic plates add less to the carbon footprint of your lunch than disposable paper plates.
TRUE **FALSE**

b) Organic farming produces no CO_2 emissions.
TRUE **FALSE**

c) Supermarkets buy most of their vegetables from local farmers.
TRUE **FALSE**

d) Material from compost piles is not safe to put on a garden.
TRUE **FALSE**

e) The lunches of all students have a carbon footprint, whether they are brought from home or bought in a school cafeteria.
TRUE **FALSE**

After You Read

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Footprints in Your Lunch

3. **Answer the questions in complete sentences.**

a) Describe three things students would find in a "green" lunch bag.

1. _____
2. _____
3. _____

b) Describe three events in the history of a slice of bread that caused the emission of greenhouse gases.

1. _____
2. _____
3. _____

Extensions & Applications

Consider the life of a potato. There are many events related to the potato you eat for lunch that add to its (and your) carbon footprint. List as many of these as you can think of in the left hand column of the table below. In the right hand column describe a way that part of the carbon footprint could be reduced. The first one has been done for you.

CARBON FOOTPRINT OF A POTATO

Things That Add to the Footprint of a Potato	Ways to Reduce This Part of the Footprint
Plowing the potato field before planting.	Plow with a more fuel efficient tractor.

See page 12 for Final Version Worksheet.

Hands-On Activity # 4

Calculating Your School's New, Improved Carbon Footprint (Continued)

Calculate reduction for each change in travel habits:
Carpooling:

$$\frac{\text{(students changing to carpool)} \times \text{(average distance)} \times \text{(days in school year)}}{\text{(average number in carpool)}} = \_\_\_\_\_ \text{ lbs. of } CO_2\text{/yr.}$$

Car to bus:

(students changing from car to bus) × (average car distance) × (days in school year) × (0.76) =

_____ lbs. of CO_2/yr.

Car to walking:

(students changing from car to walking) × (average car distance) × (days in school year) =

_____ lbs. of CO_2/yr.

Bus to walking:

(students changing from bus to walking) × (average bus distance) × (days in school year) × (0.24) =

_____ lbs. of CO_2/yr.

Transportation Footprint Reduction: Add up the transportation reductions, divide by 2000, and write the answer here: _____ **tons of CO_2/yr.**

Food Reduction

Recalculate the food footprint on page 14. This time make any subtractions for buying local food and organic food that you didn't make before. Also subtract 0.40 lbs./student-day for each day per week that you think your school would accept meatless meals. Subtract the new food footprint from the old food footprint and write the answer here: _____ **tons of CO_2/yr.**

Recycling and Trees

Recalculate the waste footprint and subtract any reductions for recycling that you didn't count before. Subtract the new waste footprint from the old waste footprint and write the answer here: _____ **tons of CO_2/yr.**

Multiply the number of trees you think your school will plant by 0.010 and write the answer here: _____ **tons CO_2/year.**

Add the results for reductions in energy, transportation, food, and waste footprints and the result for tree planting and write the answer here: _____ **tons CO_2/year.** This is your total expected footprint reduction.

Subtract this amount from your school's total footprint and write the answer here: _____ **tons CO_2/year.**

This could be your new school carbon footprint!

After You Read

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Word Search

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

adapt	corbon 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	T	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

After You Read

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Comprehension Quiz

Part C

Answer each question in complete sentences.

1. What does the Energy Star rating mean? (3)

2. What is carpooling? (3)

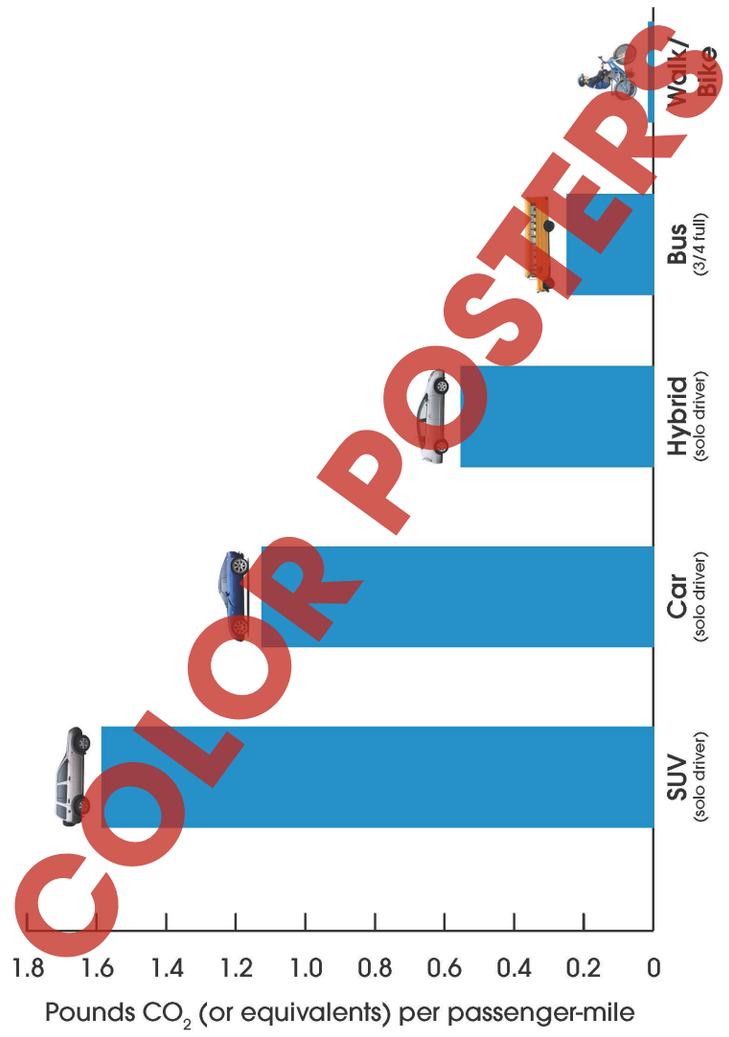
3. What is a carbon offset? (3)

4. What is an idle free zone? (3)

5. What is the easiest way to remove carbon dioxide from the atmosphere? (3)

SUBTOTAL: /15

Your Transportation Carbon Footprint



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Footprints in Your Lunch

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See page 12 for Final Version Worksheet.

3.

a) (Answers will vary.) Students would find reusable plates. Students would find reusable utensils. Students would find washable, cloth napkins.

b) (Answers will vary.) A tractor burned fossil fuel when it harvested the wheat. A truck burned fossil fuel when it took the wheat to the flour mill. The oven that baked the bread used fossil fuel.

Extensions & Applications

CARBON FOOTPRINT OF A POTATO

Things That Add To Footprint of a Potato	Ways To Reduce This Part of the Footprint
Plowing the potato field before planting.	Plow with a more fuel efficient tractor.
Fertilizing the field.	Buy organic potatoes.
Harvesting the potatoes.	Use more fuel efficient machinery.
Shipping the potatoes.	Buy locally grown potatoes.
Packaging.	Buy bulk potatoes.
Driving to the supermarket.	Grow your own potatoes.
Supermarket energy use.	Grow your own potatoes.
Cooking the potatoes.	Use Energy Star appliances.