

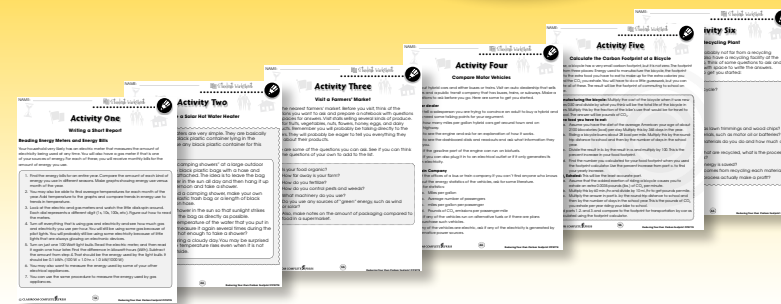
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## Your Slice Of The Shared Footprint

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

- a) Photosynthesis is another word for combustion.  
TRUE FALSE
- b) When your school was built, it added to your carbon footprint.  
TRUE FALSE
- c) Everyone has a share of the carbon footprint created by government activities.  
TRUE FALSE
- d) A car has a carbon footprint, but a highway does not.  
TRUE FALSE
- e) Solar cells reduce the carbon footprint by removing CO<sub>2</sub> from the atmosphere.  
TRUE FALSE

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

a) All of these government activities add CO<sub>2</sub> to the atmosphere, except

- A fighting wars
- B planting trees
- C building bridges
- D delivering mail

b) What are the products of photosynthesis?

- A carbon dioxide and water
- B water and sugar
- C sugar and oxygen
- D oxygen and carbon dioxide

c) How do plants fit into the carbon cycle?

- A Plants permanently remove carbon from the atmosphere.
- B Plants remove carbon from the atmosphere and put it the ground.
- C Plants remove carbon dioxide from the atmosphere and replace it with methane.
- D Plants remove carbon from the atmosphere and store it until the plant dies or burns.



## Your Slice Of The Shared Footprint

Every day your national, state, and local governments are doing things on your behalf that emit carbon dioxide into the atmosphere. Maybe you don't always agree with what they are doing, maybe you wish they would stop, but even if it doesn't seem fair, it is still part of your carbon footprint. Call it your "civic footprint." It is simply the amount of CO<sub>2</sub> emitted on your behalf divided by the number of people in the country.



The Government adds to your footprint

This part of your footprint happens when roads, bridges, and schools are built, when fires and wars are fought, and when kittens are rescued from trees. This has already been estimated, and it amounts to about 1.76 tons per person. About the only thing you can do to change it is vote or become active in an organization trying to change the government's footprint.



Define your "civic footprint."

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So far we have only looked at ways to reduce the amount of CO<sub>2</sub> we put into the atmosphere, but we haven't talked about taking CO<sub>2</sub> out. Do you think that is possible? Although people haven't come up with a practical way to remove significant amounts of CO<sub>2</sub> from the atmosphere, plants are doing just that all the time. In fact they were doing it billions of years before animals showed up on Earth. The process is called **photosynthesis**.

Trees are especially good at soaking up CO<sub>2</sub> because they are large and live a long time. You can reduce your carbon footprint by planting trees. For every tree you already have you can subtract 20 pounds from your footprint.



## Your Slice Of The Shared Footprint

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

a) About how many pounds of CO<sub>2</sub> does an average tree remove from the atmosphere in one year?

- A 2 pounds
- B 20 pounds
- C 200 pounds
- D 2,000 pounds

b) What are the reactants in the photosynthesis process?

- A carbon dioxide and water
- B water and sugar
- C sugar and oxygen
- D oxygen and carbon dioxide

c) What is your share of the carbon footprint caused by government activities?

- A 1.76 pounds
- B 17.6 pounds
- C 1.76 tons
- D 17.6 tons

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

- a) Your "civic footprint" is created by the government.  
TRUE FALSE
- b) You can buy a device to mount on your roof that is more efficient than trees at removing CO<sub>2</sub> from the atmosphere.  
TRUE FALSE
- c) Paying taxes to the government removes your share of the government footprint.  
TRUE FALSE
- d) An acre of grassland removes more CO<sub>2</sub> than an acre of woodland because there are more plants to do photosynthesis.  
TRUE FALSE
- e) When the government goes to war, your footprint increases.  
TRUE FALSE



## Your Slice Of The Shared Footprint

3. Answer the questions in complete sentences.

a) Describe your "civic footprint" and give three examples of activities that add to it.

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b) Planting a tree and switching to energy efficient light bulbs are both good for your footprint, but in different ways. Explain how each act changes the amount of CO<sub>2</sub> in the atmosphere and how they are basically different.

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### Extensions & Applications

Name three government activities that add to the government carbon footprint and to your share of that footprint. For each activity, describe a new law or other government action that could reduce that part of the footprint.

1. Government Activity: \_\_\_\_\_

Law to reduce footprint of activity: \_\_\_\_\_

2. Government Activity: \_\_\_\_\_

Law to reduce footprint of activity: \_\_\_\_\_

3. Government Activity: \_\_\_\_\_

Law to reduce footprint of activity: \_\_\_\_\_



# Carbon Footprint Calculator

(continued)

### Transportation:

#### Car Travel

Estimate how many miles you travel in a car each year and estimate the average number of people in the car when you are a passenger. Find out the miles per gallon (mpg) rating of the car that you ride in. The mpg for any car can be found at <http://www.fueleconomy.gov/Feg/findacar.htm> Multiply times the conversion factor.

$$\frac{\text{(miles ridden per year)} \times (22)}{\text{(miles per gallon)} \times (\text{average number of people in car})} = \frac{\text{lbs.}}{\text{yr.}}$$

#### Air Travel

Multiply the number of hours you spent flying over the last year by the conversion factor.

$$\text{(hours spent flying)} \times (380) = \frac{\text{lbs.}}{\text{yr.}}$$

#### Public Transport

Multiply the approximate number of miles you rode on a bus or train by the conversion factor.

$$\text{(miles on bus or train)} \times (0.24) = \frac{\text{lbs.}}{\text{yr.}}$$

**Total emissions due to transportation** \_\_\_\_\_ pounds/year

### Everything Else:

#### Waste

Start with 1220 pounds and subtract 240 lbs. if you compost kitchen scraps and lawn trimmings. For recycling, subtract 140 for cans, 40 for glass, 220 for paper, and 40 for plastic.

Write the total here: \_\_\_\_\_ pounds/year

#### Goods and Services

Find out how much your household spends each month on everything else. Include clothing, furniture, appliances, entertainment, telephone, and healthcare. Don't include taxes or anything already accounted for. Use the formula below to find your share of this part of the footprint

$$\frac{\text{(monthly household spending)} \times (6.0)}{\text{(number of people in household)}} = \frac{\text{lbs.}}{\text{yr.}}$$

Emissions on Your Behalf: 3520 pounds

**Total emissions due to everything else:** \_\_\_\_\_ pounds/year

#### Trees

Divide the number of trees on the property where you live by the number of people in your household, multiply the result by 20 and subtract it from all the other emissions.

$$\frac{\text{_____}}{\text{_____}} \times 20 = \frac{\text{lbs.}}{\text{yr.}}$$

**GRAND TOTAL** \_\_\_\_\_ pounds/year

Divide the grand total by 2000 and write the answer here: \_\_\_\_\_ tons/year

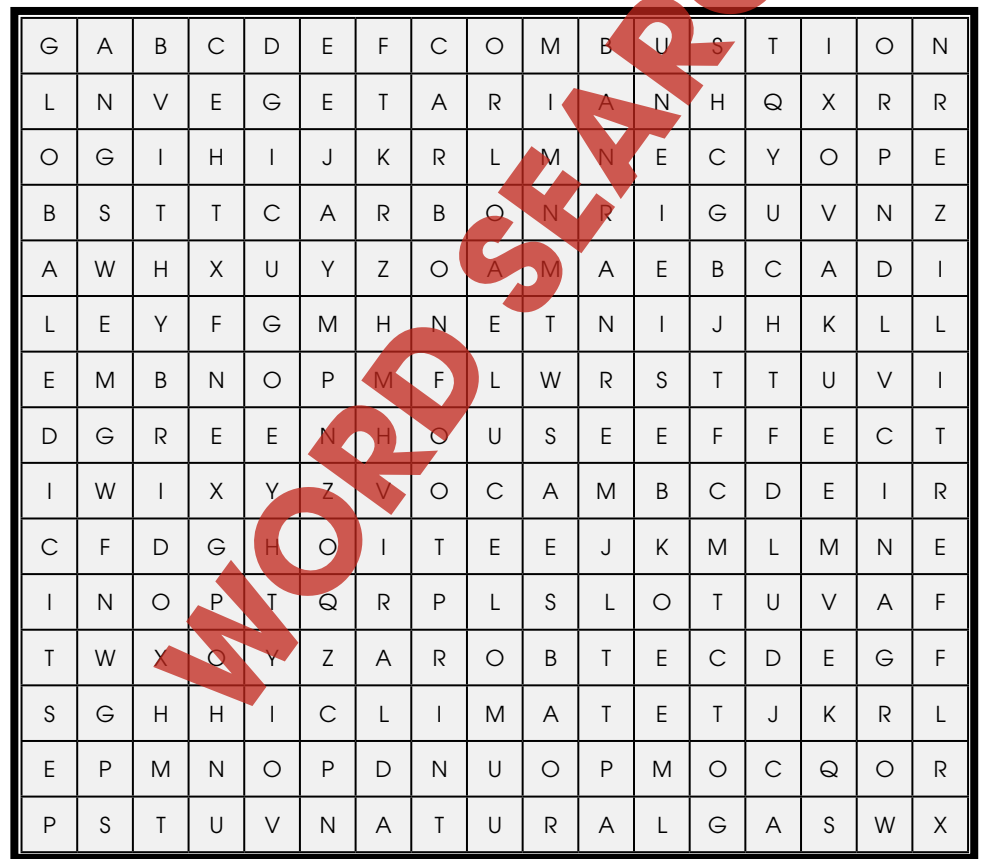


# Word Search



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

combustion	climate	pesticide	organic	photovoltaic
vegetarian	compound	hybrid	fertilizer	oxygen
carbon	natural gas	carbon footprint	telecommuting	methane
greenhouse effect	global	molecule	therm	atom



# Comprehension Quiz

### Part B

3. Which of these parts of your personal footprint is most difficult to reduce?

- A the part caused by traveling
- B the part caused by the food you eat
- C the part caused by government activities
- D the part caused by heating and cooling your home

### Part C

Answer each question in complete sentences.

- Explain how human activities are changing Earth's climate. 3
- Define carbon footprint. 3
- Explain why using electric appliances increases your carbon footprint. 3
- Tell four ways you can reduce the carbon footprint of the food you eat. 3
- Explain why bus passengers have lower travel footprints than car passengers, even though buses emit more CO<sub>2</sub> than cars. 3

**SUBTOTAL:** /15

# Household Electrical & Gas Consumption



Household Gas Meter



Household Electrical Meter

### Electrical Service

Detailed Billing Information

Meter #	Season	Service Category	Peak	KWh Usage	Unit Charge	Amount
13313	WINTER	Power Factor Rate				
		KWH	ON PK	1970	0.0594	\$117.02
			OFF PK	103	0.0396	\$4.08
		Total KWh Consumption		2073		
		Total Electric Charges				\$120.10

### Gas Service

Detailed Billing Information

Meter #	Season	Therms Used	Unit Charge	Amount
2345	WINTER			
		Current Gas Charges	130	0.928
		Total Gas Charges		\$120.64

Household Gas and Electric Bill



After You Read

NAME: \_\_\_\_\_

# Your Slice Of The Shared Footprint



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

a) Describe your "civic footprint" and give three examples of activities that add to it.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

b) Planting a tree and switching to energy efficient light bulbs are both good for your footprint, but in different ways. Explain how each act changes the amount of CO<sub>2</sub> in the atmosphere and how they are basically different.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### Extensions & Applications

Name three government activities that add to the government carbon footprint and to your share of that footprint. For each activity, describe a new law or other government action that could reduce that part of the footprint.

1. Government Activity: \_\_\_\_\_

Law to reduce footprint of activity: \_\_\_\_\_

\_\_\_\_\_

2. Government Activity: \_\_\_\_\_

Law to reduce footprint of activity: \_\_\_\_\_

\_\_\_\_\_

3. Government Activity: \_\_\_\_\_

Law to reduce footprint of activity: \_\_\_\_\_

\_\_\_\_\_

### 3.

- a) (Answers will vary.) The civic carbon footprint is your share of the CO<sub>2</sub> emitted by the government, such as (any two) building bridges, highways, and schools, fighting fires and wars, delivering mail.
- b) Planting a tree removes CO<sub>2</sub> through the process of photosynthesis. Changing to efficient light bulbs reduces the amount of CO<sub>2</sub> you put into the atmosphere. So one action removes CO<sub>2</sub> from the atmosphere, and the other reduces the amount you put in.

### Extensions & Applications

- 1. Government Activity: Delivering mail  
Law to reduce footprint of activity: Require mail trucks to get at least 50 miles per gallon.
- 2. Government Activity: Building schools  
Law to reduce footprint of activity: Require all new schools to generate their own electricity with solar cells on the roof.
- 3. Government Activity: Building highways  
Law to reduce footprint of activity: Require all new freeways to have a carpool lane and all new streets and highways to have a bike lane.

### Across

- 1. molecule
- 5. carbon
- 6. carbon footprint
- 10. telecommuting
- 12. pesticides

### Down

- 2. carbon dioxide
- 3. herbicide
- 4. vegetarians
- 5. carbon cycle
- 6. climate
- 7. fossil
- 8. photovoltaic
- 9. atom
- 10. therm
- 11. gas

# EASY MARKING ANSWER KEY

