

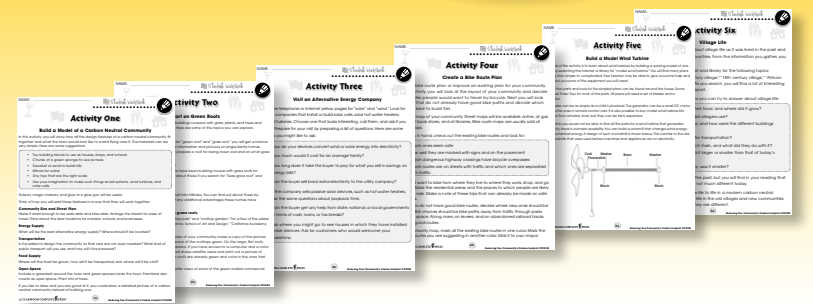
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## Some Green Towns and Cities

1. **Circle** the groups of words that describe a possible feature of some of the carbon neutral towns that have been built or planned.

a small cluster of homes	two cars in every garage	surrounded by a greenbelt
wide freeways	green roofs	food shipped from large farms
solar hot water	photovoltaic cells	energy from organic waste
electricity from coal	crops grown nearby	wind turbines

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

- a) Which of these types of countries is most threatened by global climate change?

A low-lying island countries  
 B mountainous countries  
 C countries with deserts  
 D countries with grassy plains

- b) What makes a community carbon neutral?

A Everyone eats only organic food.  
 B Everyone has the same carbon footprint.  
 C The community absorbs as much CO<sub>2</sub> as it produces.  
 D No one in the community uses anything made of carbon.

- c) Why do most carbon neutral towns have a low transportation footprint?

A Everyone has their own car.  
 B The towns have wide streets.  
 C The towns cover a small area.  
 D A greenbelt surrounds the towns.

- d) Why do some newly designed carbon neutral communities resemble villages of 200 years ago?

A Neither uses cars for transportation.  
 B Residents of both want to live simply.  
 C Residents of both are mostly farmers.  
 D Both are isolated from the rest of the world.



## Some Green Towns and Cities

**B**y the time you read this, the Maldives may have already won the "Carbon World Cup." This is a competition created by the United Nations to see which country can be the first to become carbon neutral. Other countries in the competition are New Zealand, Costa Rica, Iceland, Norway, and Monaco.



A building designed for Masdar City, Abu Dhabi

**STOP** What were the countries in the "Carbon World Cup" trying to do?



Some towns and cities are already carbon neutral or plan to be when they are completed. One of the most ambitious new cities being built is Masdar City in the country of Abu Dhabi on the Arabian Peninsula. Masdar City will cost \$22 billion and be home to 90,000 people, none of whom will be allowed to have a car. The hope is that, when the city is finished in 2016, it will be beyond carbon neutral, it will be carbon *negative*. Here are some other cities that were designed to be nearly or completely carbon neutral:

- **Sherford, England** will be built around an organic farm. Most homes will have solar power, and commercial buildings will have green roofs. People will be able to walk to work and to shop, and everyone gets a free bicycle.
- **Dongtan, China** will be the model for 400 new cities China plans to build in the next 20 years. Dongtan will get all its food from local farms



## Some Green Towns and Cities

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

- a) In several countries, communities are being designed that will be carbon neutral. Which of the following will people in these communities most easily be able to get along without?

A cars  
 B electricity  
 C hot water  
 D warm clothing

- b) All of the following describe basic ways communities can become carbon neutral, *except*

A planting trees  
 B reducing energy use  
 C heating with wood stoves  
 D replacing fossil fuels with renewable energy sources

- c) Why did the Maldives want to become the first carbon neutral country?

A To win the "carbon world cup" prize.  
 B To set an example for countries emitting a lot of CO<sub>2</sub>.  
 C Because they had one of the highest carbon footprints.  
 D Because they had a lot of money to spend on wind turbines.

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

- a) Some communities are already carbon neutral.

**TRUE**      **FALSE**

- b) People in carbon neutral cities are asked not to have vegetable gardens.

**TRUE**      **FALSE**

- c) China plans to build hundreds of new cities in the next 20 years.

**TRUE**      **FALSE**

- d) Carbon negative is even better than carbon neutral.

**TRUE**      **FALSE**

- e) A new city on the Arabian peninsula will be carbon neutral because oil is very inexpensive there.

**TRUE**      **FALSE**

## Some Green Towns and Cities

3. Answer the questions in complete sentences.

- a) Describe one energy source used by many carbon neutral communities.

\_\_\_\_\_

- b) Describe one way in which carbon neutral communities offset the small amount of CO<sub>2</sub> they do emit.

\_\_\_\_\_

- c) Explain how carbon neutral communities reduce their transportation footprint.

\_\_\_\_\_

### Extensions & Applications

Think about the community where you live.

- a) Consider the climate and geography where you live. What would be the best alternative energy sources that could replace fossil fuels in your community?

\_\_\_\_\_

- b) How could the transportation system in your community be changed to lower its carbon footprint?

\_\_\_\_\_



# Carbon Footprint Calculator (continued)

If your state is a **low** footprint state, write down **13** tons per year.  
 If your state is a **medium** footprint state, write down **20** tons per year.  
 If your state is a **high** footprint state, write down **31** tons per year.  
 These will be good guesses of the personal footprints of the people in your community.  
 If you live in one of the countries listed in the table, use the footprint shown there.

You might find it interesting to compare the per capita footprint of your community with some other countries and with the world average. You can find these values in the table at the bottom of the page.

Country	Per capita Footprint in Tons
United Kingdom	9.7
Canada	19
Australia	21

Now you must find out how many people live in your community—in other words, the population. There are several ways to do this.

- Many people already know your town or county's population. Your teacher would be a good person to ask.
- Many towns have signs where major highways enter the town that give the town name and population.
- You can go to the official website of the U.S. Census Bureau at: <http://www.census.gov/popest/estimates.html>. You will find a link to the most recent population estimates. Click on "All incorporated places" and then on "Excel" or "CSV" under the name of your state. You will find an alphabetical list of cities in your state and the population of each.

To find your community carbon footprint, simply multiply the per capita footprint times the population:

$$(\text{per capita footprint, tons per person}) \times (\text{community population}) = \text{community carbon footprint in tons}$$

Write the answer here: **Community Carbon Footprint = \_\_\_\_\_ Tons**

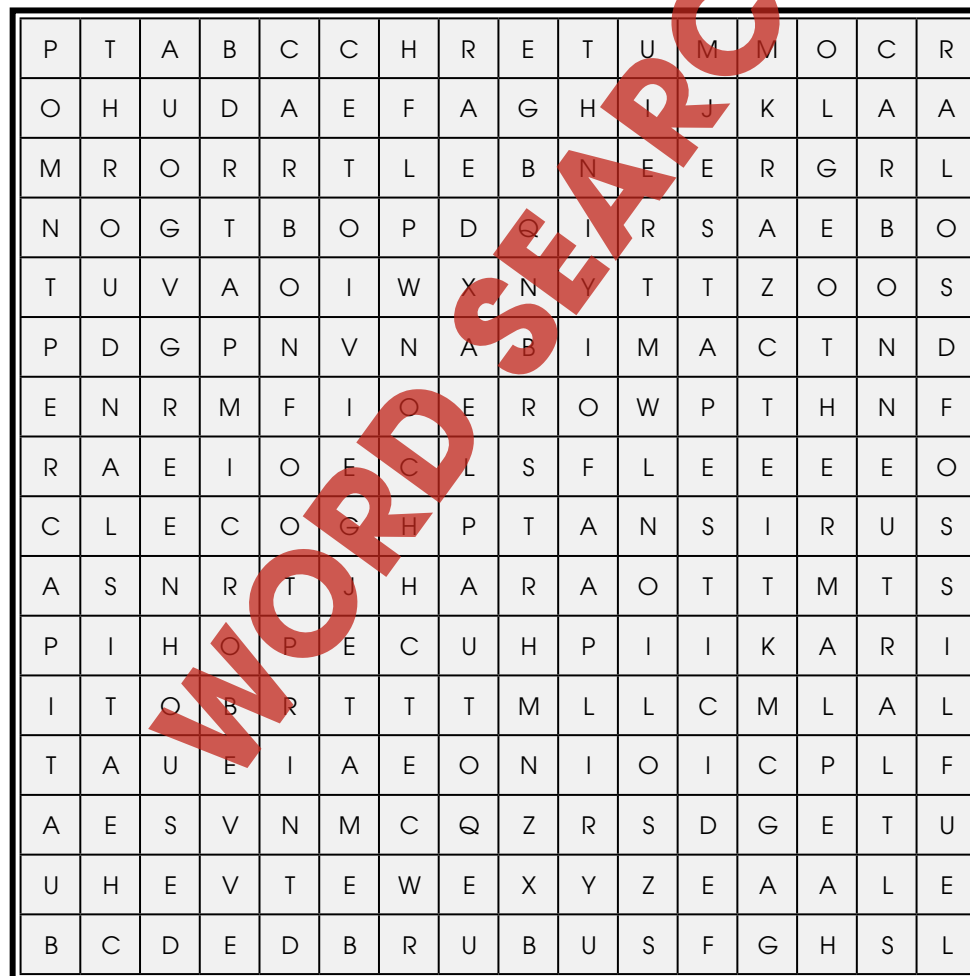
On the following pages you can calculate how much certain changes in your community can reduce its footprint.

For Comparison	
Country	Per capita Footprint in Tons
Afghanistan	0.03
India	1.2
China	4.6
United States	20
World Average	4.5

# Word Search

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

active	decompose	greenhouse	organic	turbine
atmosphere	fertilizer	habitat	per capita	wind
carbon footprint	fossil fuel	heat island	pesticide	
carbon neutral	gas	methane	photovoltaic cell	
carpool	geothermal	microbe	solar	
commuter	greenbelt	natural	suburb	



# Comprehension Quiz

## Part C

Answer each question in complete sentences.

- What does telecommuting mean? 2  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
- How can food waste be used to generate electricity? 2  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
- What makes a community carbon neutral? 2  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
- Explain how planting trees lowers the carbon footprint of a community. 3  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
- Identify three alternative energy sources with little or no carbon footprint. 3  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

SUBTOTAL: /12

# How Biofuel Works



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

After You Read 



## Some Green Towns and Cities

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

a) Describe one energy source used by many carbon neutral communities.

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b) Describe one way in which carbon neutral communities offset the small amount of CO<sub>2</sub> they do emit.

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c) Explain how carbon neutral communities reduce their transportation footprint.

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### Extensions & Applications

Think about the community where you live.

a) Consider the climate and geography where you live. What would be the best alternative energy sources that could replace fossil fuels in your community?

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b) How could the transportation system in your community be changed to lower its carbon footprint?

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3.

a) (Answers will vary.) Some carbon neutral communities generate electricity with wind turbines.

b) (Answers will vary.) Communities offset their CO<sub>2</sub> emissions by planting trees.

c) (Answers will vary.) Communities reduce their transportation footprint by making it easy to walk or bike everywhere.

### Extensions & Applications

a) (Answers will vary.) Photovoltaic cells would be an efficient source of energy in a sunny community.

b) (Answers will vary.) Bike lanes would be added to small communities that don't already have them.

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EASY MARKING ANSWER KEY