



TEACHER GUIDE

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STUDENT HANDOUTS

READING COMPREHENSION

- *Climate Change Has Your Footprint On It*.....
- *Your Footprint At Home*
- *A Footprint On Your Dinner Plate*
- *Your Travel Footprint*
- *Footprints At The Mall And In The Trash*
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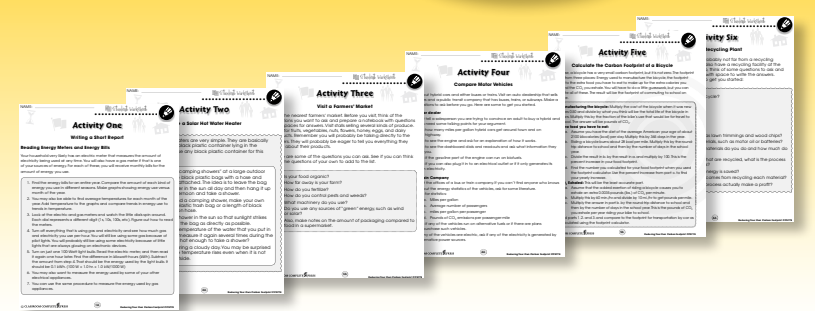
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How To Make Your Footprint Smaller And Why You Should

1. Parts of your carbon footprint can be classified into four different areas of activity:

Home Food Travel Everything Else

Match the activities below to the area of activity they belong to by writing one of the four terms above in each of the spaces below. Terms will be used more than once.

- _____ a) riding in a car
- _____ b) watching TV
- _____ c) planting a tree
- _____ d) buying an apple
- _____ e) taking a bath
- _____ f) taking a load of trash to a landfill
- _____ g) planting a garden
- _____ h) flying to Paris

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

a) Which of these changes would make the best addition to the social contract?

- A accepting that we cannot do anything about climate change
- B accepting the need for everyone to reduce their carbon footprint
- C accepting the need to discover more sources of oil
- D accepting that rich countries will always produce more CO₂ than poor countries

b) In which of these countries do people have the largest individual carbon footprints?

- A China
- B England
- C India
- D United States



How To Make Your Footprint Smaller And Why You Should

When you are in a supermarket, it is pretty easy to slip a candy bar into your pocket and walk out without paying for it or getting caught. Why don't more people do that? Think about it. Most people also don't throw trash out of their car windows, cut in line, or steal chickens, even though it would be easy to get away with. It is not just the law, guilt, or conscience that keeps people from doing whatever they feel like. It is something called the **social contract**.

The social contract has evolved over thousands of years because societies that accept the contract are more successful, so they are the societies that survive. The deal is that everyone accepts certain personal inconveniences so that everything runs more smoothly and everyone is safer, richer, and happier. The contract has been working for so long that we don't even think about it or realize we are doing it. Now it is time to admit that, if we are to survive much longer, we must add something to the contract: Avoiding unnecessary CO₂ emissions must become accepted as normal, natural behavior.



Have you thought about your Social Contract?



How To Make Your Footprint Smaller And Why You Should

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

- a) Your civic footprint is your share of the social contract.
TRUE FALSE
- b) Your civic footprint is the part of your carbon footprint that is easiest to reduce.
TRUE FALSE
- c) People living near their work or school can make their travel footprint very small.
TRUE FALSE
- d) Planting trees is the most practical way to remove CO₂ from the atmosphere.
TRUE FALSE
- e) Meat has a lower carbon footprint than vegetables because it has more protein.
TRUE FALSE

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

a) Which is true about the social contract?

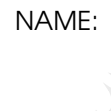
- A It is part of the U.S. Constitution.
- B Adults have to sign it before they can vote.
- C Everyone disobeys it today.
- D It makes society run more smoothly.

b) In which of these countries do people have the lowest personal carbon footprint?

- A India
- B Russia
- C Great Britain
- D United States

c) Why is it especially important for Americans to reduce their carbon footprint?

- A Americans are better at accepting change than other people.
- B America will suffer most from climate change.
- C Americans have one of the highest carbon footprints.
- D Americans long to travel less and have more efficient appliances.



How To Make Your Footprint Smaller And Why You Should

3. Answer the questions in complete sentences.

a) Name the four areas of activity that add to your carbon footprint.

b) For each area you named, describe one change that can reduce a person's carbon footprint.

Extensions & Applications

Without realizing they are doing it, people accept certain rules of behavior known as the social contract, such as not cutting in line. It would be good for the environment if acceptance of smaller carbon footprints were also part of the social contract.

Think of three things that are already accepted behavior. Try to make them as similar as possible to accepting a reduced footprint, and try to make them all behaviors that benefit the environment. For each accepted behavior, explain how it helps the environment.

1. Accepted activity: _____

How the activity helps the environment: _____

2. Accepted activity: _____

How the activity helps the environment: _____

3. Accepted activity: _____

How the activity helps the environment: _____



Calculating Your New, Improved Carbon Footprint

You have read about all the ways you can reduce your carbon footprint, and you have thought about which changes you would like to make, which changes you really will make, and which changes you can talk your family into making. Use estimates of your expected changes to calculate your new footprint.

For some reductions, you will have to decide where you fall in a range. For example, by eating less meat you can reduce your footprint by some amount in the range 0 to 4400 lbs. So if you now eat meat at every meal, and you plan to eat meat one meal a day, you will reduce your footprint by 2/3 of 4400, which is 2933 lbs.

Changes at home:

Replace inefficient appliances with EPA rated "Energy Star" appliances. Estimate the part of your energy bill used by appliances to be replaced and take 25% of that as your reduction.

Replace tungsten bulbs with fluorescents. Save 1 lb./watt replaced.

Take quick showers instead of long baths. 200 lbs./yr.

Adjust to a wider range of home temperature. For every 4 °F increase in temperature range subtract 250 lbs./yr.

Use a clothesline instead of a dryer. 300 lbs./yr. for an electric dryer and 150 lbs./yr. for a gas dryer.

Improve home insulation. Save 30% of emissions due to heating and air conditioning.

Install double pane windows for a reduction of 3000 lbs/yr, depending on number of windows.

Install a solar hot water heater for 800 lbs./yr. reduction.

Generate your own electricity with photovoltaic cells for a reduction equal to the emissions you calculated for electricity in the first part.

Total Home Reductions:

Your Personal Reduction (divide by number of people in household)

Changing Your Diet:

A reduction of 1467 lbs./yr. for each meat meal eliminated every day.

Change from no organic to all organic produce for a reduction of 600 lbs.

Change from all imported to all local food for a reduction of 400 lbs.

Grow your own. The fraction of your food you expect to grow times the total emissions due to food purchases.

Total Food Reductions:

Reduction in lbs./yr.

_____ lbs./yr.

_____ lbs./yr.

_____ lbs./yr.

_____ lbs./yr.

_____ lbs./yr.

_____ lbs./yr.

_____ lbs./yr.

_____ lbs./yr.

_____ lbs./yr.

_____ lbs./yr.

_____ lbs./yr.



Crossword Puzzle!

Across

- Two atoms of oxygen and one atom of carbon make one carbon dioxide _____.
- The element with the symbol C.
- Carbon dioxide emissions caused by your activities.
- Going to work while staying at home.
- Chemicals that kill bugs on crops.

Down

- Its formula is CO₂.
- Weed killer.
- They don't eat meat.
- Carbon going in a circle.
- Our activities are changing Earth's _____.
- Coal and oil are _____ fuels.
- Cells that turn sunlight directly into electricity.
- Smaller than a molecule.
- The unit in which natural gas is sometimes measured.
- It's natural, it's a fossil fuel, and it is a _____.

Word List		
atom	climate	pesticides
carbon	fossil	photovoltaic
carbon cycle	gas	telecommuting
carbon dioxide	herbicide	therm
carbon footprint	molecule	vegetarians



Comprehension Quiz

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Part A

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

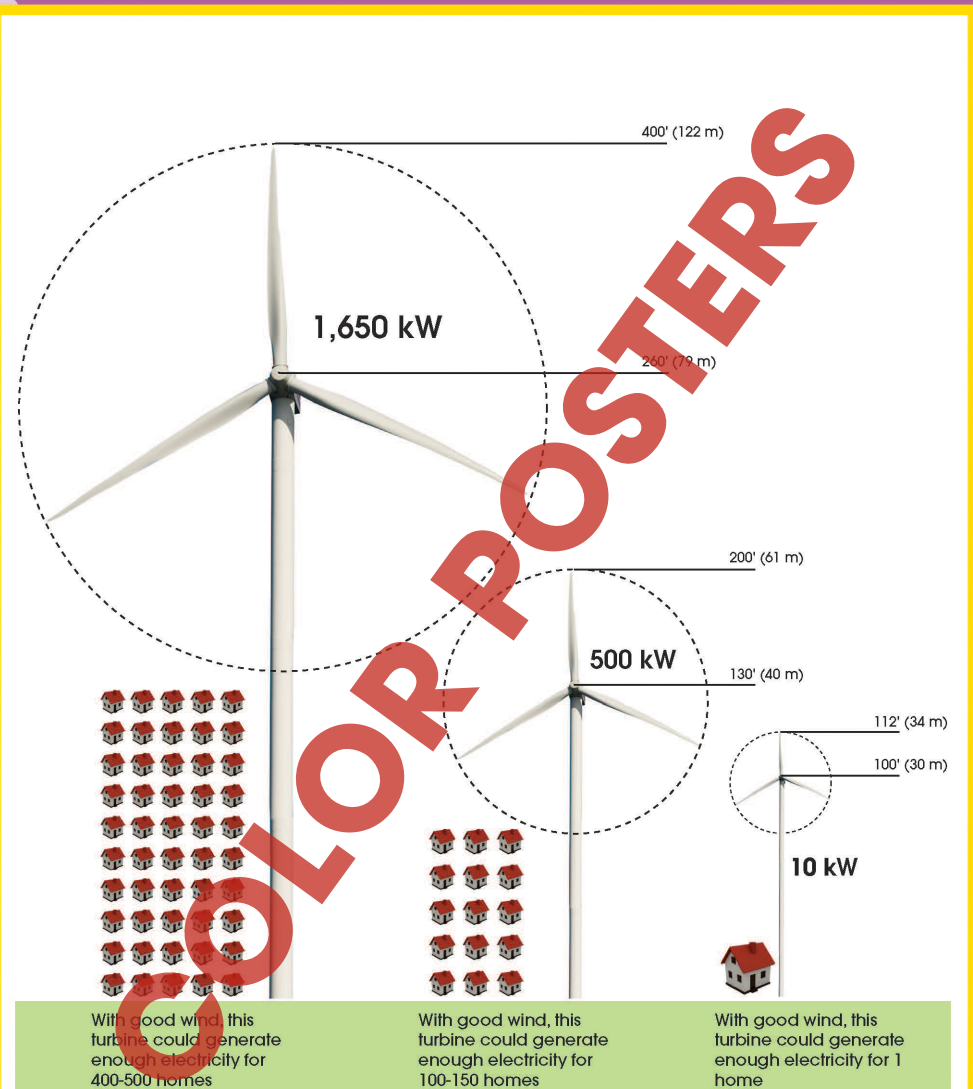
- Human activities are changing Earth's climate.
TRUE **FALSE**
- Double pane windows will reduce the amount of energy used to heat and cool a home.
TRUE **FALSE**
- Meat eaters have a smaller carbon footprint than vegetarians.
TRUE **FALSE**
- Trains produce more CO₂ per passenger-mile than planes.
TRUE **FALSE**
- Buying new clothing increases your carbon footprint more than buying second-hand clothing.
TRUE **FALSE**
- Photosynthesis removes CO₂ from the atmosphere.
TRUE **FALSE**
- The carbon footprint of the average American is smaller than that of the average European.
TRUE **FALSE**

Part B

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

- All of these energy sources release CO₂ into the atmosphere, except
 A oil
 B coal
 C natural gas
 D hydroelectric
- Which of these changes will reduce your carbon footprint at home?
 A taking baths instead of showers
 B keeping the house heated to 70 °F instead of 65 °F
 C using fluorescent light bulbs instead of standard bulbs
 D washing half loads instead of full loads in the dishwasher

Wind Turbine Capacity



NAME: _____

After You Read 



How To Make Your Footprint Smaller And Why You Should

3. Answer the questions in complete sentences.

a) Name the four areas of activity that add to your carbon footprint.

b) For each area you named, describe one change that can reduce a person's carbon footprint.

Extensions & Applications

Without realizing they are doing it, people accept certain rules of behavior known as the social contract, such as not cutting in line. It would be good for the environment if acceptance of smaller carbon footprints were also part of the social contract.

Think of three things that are already accepted behavior. Try to make them as similar as possible to accepting a reduced footprint, and try to make them all behaviors that benefit the environment. For each accepted behavior, explain how it helps the environment.

1. Accepted activity: _____

How the activity helps the environment: _____

2. Accepted activity: _____

How the activity helps the environment: _____

3. Accepted activity: _____

How the activity helps the environment: _____

3.

(Answers will vary.) At home, you can change to fluorescent light bulbs (or any energy-saving home improvement). When food shopping, you can buy less meat (or any change in diet or food shopping habits that reduces your footprint). When traveling, you can carpool with other people (or any change to a more efficient means of travel). You can recycle more of your waste materials (or any reduction of waste or planting trees).

Extensions & Applications

- Accepted activity: Most people don't throw trash out of car windows. How the activity helps the environment: Prevents aesthetic pollution. Saves energy involved in cleanup of highways. Makes it possible to recycle things not thrown away.
- Accepted activity: Most people don't pour oil and other toxic materials down storm drains. How the activity helps the environment: Protects aquatic life in streams and oceans that the storm drains lead to.
- Accepted activity: Most dog owners obey leash laws and clean up after their dogs. How the activity helps the environment: Protects wildlife from dog attacks. Prevents disease and annoyance caused by dog feces.

Across

- molecule
- carbon
- carbon footprint
- telecommuting
- pesticides

Down

- carbon dioxide
- herbicide
- vegetarians
- carbon cycle
- climate
- fossil
- photovoltaic
- atom
- therm
- gas



EASY MARKING ANSWER KEY

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