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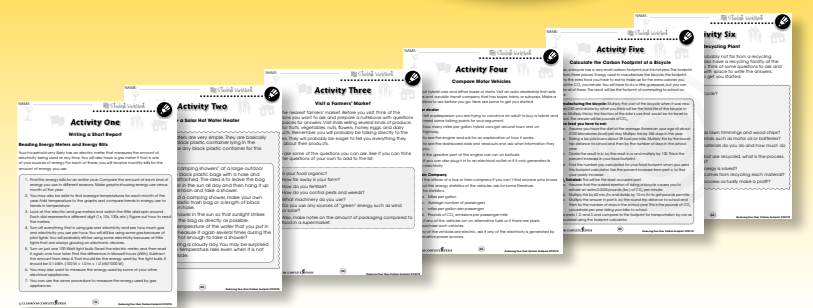
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Footprints At The Mall And In The Trash

1. Circle the word **TRUE** if the statement is TRUE or Circle the word **FALSE** if it is FALSE.
- a) Sending old newspapers to a landfill removes their carbon footprint.
TRUE FALSE
 - b) Most objects in a drugstore have a carbon footprint.
TRUE FALSE
 - c) Most objects in a hardware store do not have a carbon footprint.
TRUE FALSE
 - d) Second-hand clothes have a larger carbon footprint than new clothes.
TRUE FALSE
 - e) Old aluminum cans can be made into new aluminum cans.
TRUE FALSE

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

- a) Which of these recycling processes is least likely to happen?
- A making old glass bottles into new glass bottles
 - B making old car tires into new car tires
 - C making old paper bags into new paper bags
 - D making old soda cans into new soda cans
- b) All of these purchases at a garden store would add to your carbon footprint, except
- A fertilizer
 - B a shovel
 - C a tree
 - D a hose
- c) Which of these would you put in a compost pile?
- A used motor oil
 - B plastic bags
 - C broken plates
 - D dead leaves



Footprints At The Mall And In The Trash

By now you are getting the picture that those pesky carbon footprints are everywhere and on everything. Here are a few more footprints and ways to reduce them. Just about everything you buy has two footprints—one when you buy it and one when you throw it away.

All manufactured items have carbon footprints because all factories use energy. These things include furniture, clothing, appliances, telephone service, healthcare, and entertainment. It would be complicated to calculate the CO₂ emissions caused by each separate purchase, but you can get an approximate idea by figuring out your share of household spending that goes to such items annually and multiplying it times a conversion factor. You will see how to do this in the footprint calculation instructions.



Everything you send to the landfill adds to your carbon footprint

So, clearly, you can reduce your footprint here by just buying less stuff, especially stuff you don't need. If that sounds a little harsh, consider buying used goods. Whoever bought them new has already taken on all the carbon guilt. You can also just keep things longer, rather than getting new things just to have new things.

STOP Explain why clothing bought in a second-hand store adds less to your footprint than clothing bought new.

Because disposing of trash at public landfills leads to carbon dioxide emissions, anything you send there adds to your footprint. That includes all your trash and garbage. There are several ways to reduce this part of your carbon footprint. Recycle everything possible, including glass, aluminum, paper, and plastic. Avoid packaging whenever possible. Finally, start a compost pile for your kitchen scraps and lawn trimmings.



Footprints At The Mall And In The Trash

1. Most things you own contribute to your carbon footprint. Number the parts of the footprint of a cotton T-shirt from 1 to 13 in the order they occur. The first and last have been done for you.

- _____ a) weaving cloth
- _____ b) manufacturing a tractor
- _____ c) washing and drying
- _____ d) sowing cotton seed
- _____ e) shipping to clothing store
- 13 _____ f) trucking to landfill
- _____ g) sewing
- 1 _____ h) mining iron ore
- _____ i) shipping to factory
- _____ j) picking cotton
- _____ k) driving to and from clothing store
- _____ l) spinning thread
- _____ m) plowing a field



2. Circle the word **TRUE** if the statement is TRUE or Circle the word **FALSE** if it is FALSE.
- a) Wooden furniture does not have a carbon footprint.
TRUE FALSE
 - b) Almost all manufacturing has a carbon footprint because it uses energy.
TRUE FALSE
 - c) Banana peels, coffee grounds, and lawn trimmings can be put in a compost pile.
TRUE FALSE
 - d) Broken glass cannot be recycled.
TRUE FALSE
 - e) Motor oil can be recycled.
TRUE FALSE



Footprints At The Mall And In The Trash

3. Answer the questions in complete sentences.

- a) Describe two things that became part of the carbon footprint of a TV set before you bought it.
-
-
-
- b) Explain how the TV adds to your footprint after you take it or send it to a landfill.
-
-
-

Extensions & Applications

Your family is planning to eat pizza while they watch a movie on TV. The pizza delivery person brings two boxes of pizza, six cans of soda, four salads in plastic containers, paper napkins, and plastic forks. Explain six ways the carbon footprint of this meal could be reduced.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

Carbon Footprint Calculator

On this and the following page you can calculate your own, personal carbon footprint. The different parts of your footprint are arranged in the same order as in the chapters of this book. The calculations will be done in pounds per year (lbs./yr.) of CO₂ emitted because the numbers will be easier to work with. When everything is added up at the end, you can then convert lbs./yr. to tons/yr. If you don't understand how to do the math, be sure to ask for help.

Footprint at Home:

Find the energy bills for your household. You probably know which of the kinds of energy listed below are used in your home. Each kind of energy is measured differently: electricity in kilowatt-hours (kWh), gas in therms, hundreds of cubic feet, or gallons, heating oil in gallons, and coal in tons. Find the part of the bill that lists the amount of energy used in terms of these units. If the bills do not give average monthly usage, take the average of several months scattered throughout the year. The numbers at the end of each equation are called conversion factors. Multiplying by them changes energy units to pounds of CO₂ and months to years.

Electricity

$$\frac{(\text{ kWh/mo})}{(\text{ people in home})} \times (21) = \frac{\text{ lbs.}}{\text{ yr.}}$$

Gas

$$\frac{(\text{ therms, gal. or } 100 \text{ ft}^3/\text{mo})}{(\text{ people in home})} \times (132) = \frac{\text{ lbs.}}{\text{ yr.}}$$

Oil

$$\frac{(\text{ gal. /mo})}{(\text{ people in home})} \times (290) = \frac{\text{ lbs.}}{\text{ yr.}}$$

Coal

$$\frac{(\text{ tons})}{(\text{ people in home})} \times (21) = \frac{\text{ lbs.}}{\text{ yr.}}$$

Total emissions due to household energy _____ **pounds/year**

Food Footprint:

If you eat meat every meal, write 9000 in the space to the right. Write 8300 if you eat meat two meals a day, 7500 if you eat meat one meal a day, 6800 if you never eat meat, and 4600 if you don't eat eggs, or dairy products.

If you buy **only** organic produce, subtract 600 pounds.

If you **only** buy locally grown food, subtract another 400 pounds.

Total emissions due to food purchases _____ **pounds/year**

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

Part A

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

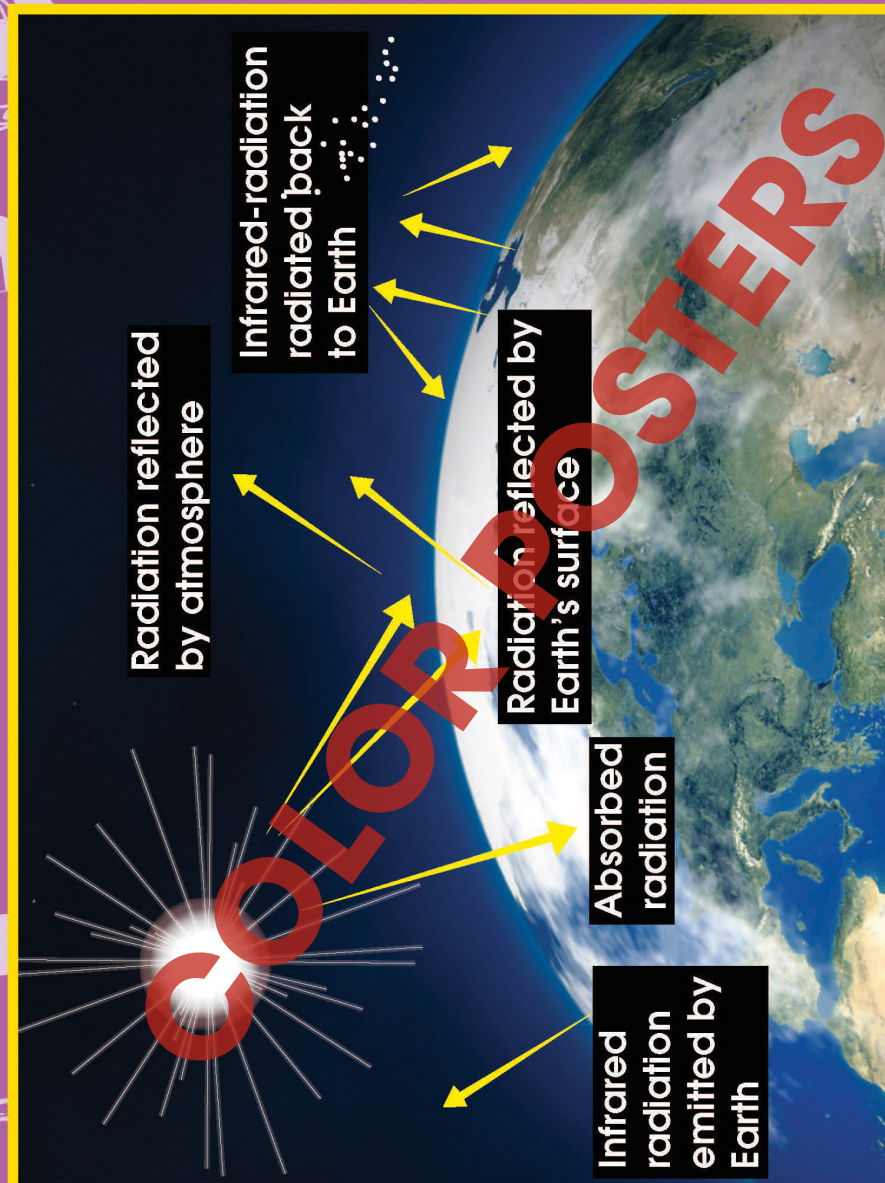
- Human activities are changing Earth's climate.
TRUE **FALSE**
- Double pane windows will reduce the amount of energy used to heat and cool a home.
TRUE **FALSE**
- Meat eaters have a smaller carbon footprint than vegetarians.
TRUE **FALSE**
- Trains produce more CO₂ per passenger-mile than planes.
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

The Greenhouse That Is Earth



Notice that light comes easily through the glass and the atmosphere. When the light strikes the surface, the surface heats up and gives off heat. In both cases, some of the heat is trapped because heat doesn't pass through the glass or the atmosphere as easily as the light got in.



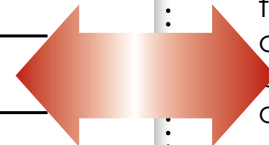
Footprints At The Mall And In The Trash



3. Answer the questions in complete sentences.

a) Describe two things that became part of the carbon footprint of a TV set before you bought it.

b) Explain how the TV adds to your footprint after you take it or send it to a landfill.



Extensions & Applications

Your family is planning to eat pizza while they watch a movie on TV. The pizza delivery person brings two boxes of pizza, six cans of soda, four salads in plastic containers, paper napkins, and plastic forks. Explain six ways the carbon footprint of this meal could be reduced.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

3.

- a) (Answers will vary.) Before a TV set was bought (any two), energy was used to manufacture it, package it, ship it.
- b) (Answers will vary.) After the TV was sent to the landfill, the truck that took it there emitted CO₂ (or) machines expended energy removing the toxic components, crushing it, and disposing of it.

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

Extensions & Applications

1. Pick up the pizza yourself during a trip that combines other errands.
2. Recycle the cardboard pizza boxes and leftover napkins.
3. Recycle the soda cans.
4. Recycle the plastic.
5. Compost the leftover pizza and salad.
6. Grow your own salad greens.

- 8. photovoltaic
- 9. atom
- 10. therm
- 11. gas

10

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EASY MARKING ANSWER KEY