



Environmental Impact

Pre-Visit Lesson

Grades: 3rd - 5th grade

Class Time Needed: 45 minutes

Big Idea Students will understand their carbon footprint and how they can change their habits to positively impact their environment.

Maryland Curriculum Standards

Social Studies Framework

- Essential Question (3rd grade): What impact does economic development have on Maryland's natural environment?

NGSS Science Framework

- (4th grade): Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.
- (5th grade): Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

Materials Needed

Each student needs:

- Carbon footprint worksheet
- Red, green, blue and brown coloring utensils

Instructor needs:

- Internet access
- Carbon footprint directions page



Teacher Resources

Carbon Footprint Video: https://youtu.be/8q7_aV8eLUE

Topics for discussion:

- Single family homes generally consume more energy per resident than multifamily housing such as apartment buildings. But no matter where you live, there are things you can do to reduce the amount of energy your home uses, thus reducing your carbon footprint.
- Energy-efficient light bulbs such as compact fluorescent and LED light bulbs consume less electricity than conventional incandescent light bulbs. Change your household fixtures to CFLs and you'll save money on your household energy bills, too.
- A programmable thermostat turns your home's heating and air-conditioning up and down automatically, depending on the time of day. When your home's energy system is working efficiently, it wastes less energy, thus reducing your carbon footprint.
- Energy Star rated appliances use less energy. When purchasing new appliances, such as a refrigerator, range stove, microwave, or air conditioner, look for the Energy Star label to save energy, save money, and reduce your carbon footprint.
- All gasoline-powered automobiles emit carbon dioxide. The larger the car, the more carbon dioxide is emitted. Cars that are properly maintained are more energy-efficient. Virtually all modes of transportation consume energy, thus they impact your carbon footprint.
- The growing, processing, packaging, delivery and distribution of food requires energy from farms, factories, trucks, grocery stores and more. Because a vegetarian diet does not include meat, a vegetarian tends to have a smaller carbon footprint than does a nonvegetarian. The production of organic food puts less stress on the environment, so your carbon footprint is smaller if you tend to eat organic food.
- Water that goes down our drains and sewers must be processed through water treatment plants, even if the water is clean. Using only the amount of water you really need helps reduce your carbon footprint.
- Recycling is good for the environment because it keeps excess waste out of landfills and trash incinerators. If you recycle on a regular basis, your carbon footprint is smaller.
- Composting is good for the environment because it keeps kitchen and garden waste out of the trash and it encourages natural gardening practices. If you compost at your house, your carbon footprint is smaller.



Lesson Procedure

Introduction:

Ask students what they know about climate change and its causes. Show the Carbon Footprint Video (https://youtu.be/8q7_aV8eLUE) to introduce the topic for this lesson.

Direct Instruction (Student Activity):

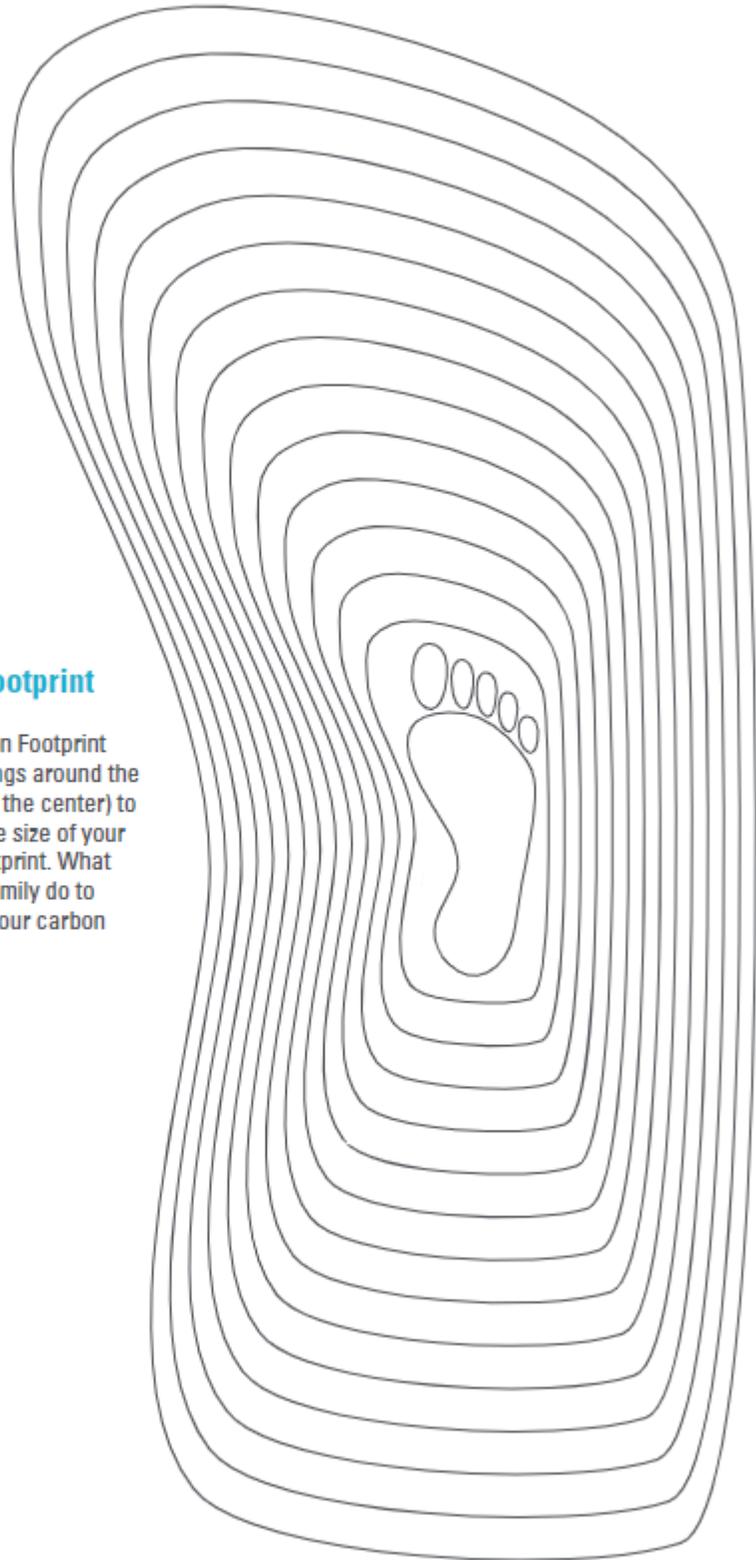
Make sure each student has the four colors (red, green, blue and brown) and a carbon footprint coloring sheet. Lead the students in the coloring activity by reading each direction out loud and discussing what some of the terms mean (examples: LED lightbulbs, organic food, composting, etc).

Conclusion:

Have students share their observations about their carbon footprint. What questions do they have about their houses after doing this activity? Are there things they can change in their lives to help the environment? What can you do at school to reduce the carbon footprint of your classroom?



Name _____



Your Carbon Footprint

Based on the Carbon Footprint Survey, color the rings around the footprint (start from the center) to estimate the relative size of your family's carbon footprint. What can you and your family do to reduce the size of your carbon footprint?





Carbon Footprint Survey: How big is your carbon footprint?

Some of our lifestyle choices and day-to-day activities emit excess carbon dioxide and other greenhouse gases into the atmosphere. The amount of greenhouse gases we produce is referred to as our "carbon footprint". Too much carbon dioxide and other greenhouse gases in our atmosphere can lead to unnatural climate change, which can have a harmful effect on our planet. Complete the following activity to get a sense of your carbon footprint.

Directions:

1. If you live in a single-family home, color 4 rings RED; if you live in an apartment or other type of home, color 2 rings RED.
2. If your home doesn't have a programmable thermostat, color 1 ring RED.
3. For every small car in your family, color 1 ring BLUE.
4. For every medium or large car in your family, color 2 rings BLUE.
5. For every airplane trip you've taken in the past year, color 1 ring BLUE.
6. If you are a vegetarian, color 1 ring GREEN; if you are not a vegetarian, color 2 rings GREEN.
7. If you take baths, run the faucet while brushing your teeth or water your lawn several times a week, color 1 ring GREEN.
8. If you usually recycle your household trash, color 1 ring BROWN; if you never recycle, color 2 rings BROWN.
9. If you never compost your yard and kitchen waste, color 1 ring BROWN.

