

## CARBON CHALLENGE | TEACHER GUIDE



### Activity Overview:

In this challenge, students will take a survey to evaluate their carbon usage. At the end of the survey, students will add up their points and discover what kind of carbon footprint they have. Students then will write a personal pledge in order to lessen their carbon footprint!

**Prep Time:** 5 minutes

**Activity Duration:** 30-40 minutes



## STANDARDS ALIGNMENT

### Common Core

- *W.5.4: Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in Standards 1–3 above.)*

### NGSS

- *5.ESS3.1 Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.*

### MA Comprehensive Health

- *3.7.CE.4 Describe ways that the community can impact the health of people within that community.*

## MATERIALS NEEDED

- Carbon usage survey
- Pledge template
- Writing materials



## BACKGROUND INFORMATION

Carbon footprint refers to the amount of carbon emitted by an individual or group through fossil fuel consuming actions. These activities can be anything from driving your car to using electricity that was produced in a power plant. The pollution in our atmosphere, created from such activities, are referred to as greenhouse gasses (GHGs).

Greenhouse gasses include more than just carbon dioxide, methane, water vapor, ozone and nitrous oxide are all considered GHGs as well. In 2015, the US alone produced 6.6 million metric tons of carbon dioxide. This is over double the carbon dioxide emissions produced by the US in 1960. In fact, the US is the second largest producer of carbon dioxide in the world.

These greenhouse gasses trap sunlight in our atmosphere as heat. The more GHGs in our atmosphere, the more heat is trapped, this is known as the greenhouse effect. GHGs are needed to keep our planet habitable, but in excess they cause climate change. Over the last 150 years, excess GHGs have been produced through human activities.

The main source of greenhouse gas emissions in the US is from burning fossil fuels. Fossil fuels are used for transportation, heat, and electricity. Driving electric cars and using renewable energy sources, like solar panels and wind turbines, can significantly lessen our impact on the environment as they become larger parts of the energy sector.

As a society, our goal should be to lower carbon emissions as much as possible. Educating yourself about activities that create carbon pollution is the first step to reducing your carbon footprint. Then, take action and reduce the amount and duration of carbon dioxide producing activities in your life. This can be accomplished in a number of ways like carpooling, biking, watching less TV, air drying clothing, buying local food, turning off lights and more!

## INSTRUCTIONS

1. Distribute surveys to students and encourage them to answer honestly.
2. Give students 10-15 minutes to answer the survey questions.
3. Once they've completed their surveys, students should add up their points and identify what carbon footprint level they fall under.
4. Distribute pledge templates to students.
5. After students have had a chance to read about the carbon footprint level they're in, they will make a pledge to reduce their carbon footprint. In this pledge, students should identify a few simple changes they can make to reduce their carbon footprint. They will then write a paragraph outlining how these changes will reduce their carbon footprint.
6. Completed pledges can be hung around the classroom or in the hallways!





## CARBON CHALLENGE | STUDENT GUIDE

### CARBON FOOTPRINT SURVEY

*Answer the following questions honestly. Once you've finished, add up all of your points and find out the size of your carbon footprint! Then, based on your carbon footprint, write a goal that will help you leave an even smaller carbon footprint!*

1. How often do you travel by plane?
  - a. Less than twice a year (+1)
  - b. 2-4 times a year (+2)
  - c. More than 4 times a year (+3)
2. How do you get to school?
  - a. Walking (+0)
  - b. Bus (+1)
  - c. Car (+2)
3. Where do MOST of your clothes come from?
  - a. Hand-me-downs (+0)
  - b. Thrifted (+1)
  - c. New from a store (+2)
4. What do you do when you're cold?
  - a. Put on blankets/more clothing (+0)
  - b. Drink/eat something warm (+1)
  - c. Turn up the heat (+2)
5. How do you spend your afternoons?
  - a. Playing outside (sports/playground/etc.) (+0)
  - b. Video games (+3)
  - c. TV (+3)
6. What do you do when you leave a room?
  - a. Unplug and turn off EVERYTHING (+0)
  - b. Turn off the lights (+1)
  - c. Keep on walking (+3)
7. How do you use paper?
  - a. I write on both sides (+1)
  - b. I use one side (+2)
  - c. If I make a mistake, I throw it away and get a new piece (+3)
8. What do you do with most of your waste?
  - a. Find a way to reuse it (+0)
  - b. Recycle (+1)
  - c. Throw it away (+3)
9. How do you drink water/juice/soda?
  - a. Reusable water bottle/cup (+0)
  - b. Can (+1)
  - c. Single use: straw/plastic water bottle/plastic cup (+3)
10. What kind of snacks do you mostly eat?
  - a. Fruits and vegetables (+0)
  - b. Snacks in a reusable container (+1)
  - c. Individually wrapped snacks (+3)
11. What do you do with leftover food?
  - a. Compost it (+0)
  - b. Save it for later/give it to a friend (+1)
  - c. Throw it away (+3)

**CARBON CHALLENGE | STUDENT GUIDE****CARBON FOOTPRINT SURVEY****ADD IT UP!**

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

7. \_\_\_\_\_

8. \_\_\_\_\_

9. \_\_\_\_\_

10. \_\_\_\_\_

11. \_\_\_\_\_

12. \_\_\_\_\_

13. \_\_\_\_\_

14. \_\_\_\_\_

15. \_\_\_\_\_

TOTAL: \_\_\_\_\_

**0-11 POINTS:  
ECO WARRIOR**

WOW! You are an eco warrior! Your carbon footprint is pretty small because of the choices you make in your everyday life. You know that burning fossil fuels not only pollutes the air but also thickens the atmosphere causing global temperatures to rise. For this reason, you make many choices that benefit both the health of the planet and your health!

**12-22 POINTS:  
GREEN MACHINE**

You're on a roll! You make a handful of great eco-friendly choices in order to care for the Earth! You have a good understanding of how your choices affect the environment but want to know more. Choices such as reducing your waste, biking/walking instead of driving, and educating those around you will help decrease the size of your carbon footprint!

**23-33 POINTS:  
SUSTAINABLE STUDENT**

Look at you go! You're starting your sustainability journey and are eager to learn more to help your planet! Try to switch out single use items such as plastic water bottles and cups for reusable items, carpooling or walking instead of driving short distances, and seek out information to learn more about how you can shrink your carbon footprint!