

Name:

Date:

Class:

Carbon Footprints & Transportation Worksheet - Answer Key

Instructions: Read the article and research the internet to answer the questions below.

Section 1: Basics of Greenhouse Gases

1. Which greenhouse gas (GHG) emission is most abundant in the U.S.?

Carbon dioxide (CO₂) is the most emitted (released) greenhouse gas in the U.S.

2. Which human activities produce carbon dioxide (CO₂) greenhouse gas emissions?

Human activities that emit CO₂ include the combustion of fossil fuels in electricity generation, transportation, industrial, commercial, and residential uses.

3. What are the top two CO₂ emissions sources in the U.S.?

According to the 2019 article, electricity generation contributes 35% and transportation produces 32%.

NOTE: Since the article, the greatest U.S. source of CO₂ emissions now comes from transportation (35%), and electricity generation (31%) is the next biggest source of CO₂ emissions.

4. Why aren't scientists concerned with water vapor in the atmosphere being a cause of climate change?

Water vapor is the most abundant greenhouse gas in the atmosphere. However, water vapor levels have remained relatively constant throughout history, so it does not appear that increased water vapor is responsible for the changing climate.

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Section 2: Calculate your Carbon Footprint

Instructions: Use the information below and research the internet to answer the following questions.

- The average gallon of gas contains about 5 pounds (lbs.) of carbon.
 - One five-pound bag of charcoal briquettes contains approximately 100 briquettes.
5. If you drive or ride in a vehicle that averages 25 miles per gallon (mpg), how many briquettes per mile would you be emitting?

1 gallon of gas equals 5 pounds of carbon, which is 100 charcoal briquettes. If 1 gallon of gas enables 25 miles of travel then one 5-lb bag of briquettes also enables 25 miles of travel, which equals 0.25 miles per briquette. So, 1 mile of travel equals 4 briquettes, and 25 miles of travel equals 100 briquettes.

6. The average person drives 39 miles each day. How many briquettes of CO₂ do they emit each day?

39 miles time 4 briquettes per mile equals 156 briquettes of CO₂ emitted each day.

7. How many miles per gallon does your family vehicle or school bus average?

Answers vary (mpg means miles per gallon)

8. How many briquettes per mile are emitted while traveling in your vehicle? (same process as #5)

Answers vary (100 briquettes per gallon divided by car miles per gallon equal the number of briquettes emitted per mile of the vehicle)

9. How many miles do you travel to school? (research on the internet, if needed)

Answers vary

10. Calculate how many carbon briquettes you emit as you travel to school (same process as #6).

Answers vary (miles traveled times the number of briquettes emitted per mile of the vehicle)

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Section 3: Carbon Footprint Reflections

11. Do you think people would change their behavior if carbon dioxide were emitted in a visible way, such as charcoal briquettes, rather than as an invisible gas? Why or why not?

Answers vary

12. What might be some options for reducing the amount of carbon dioxide emitted from the transportation system?

Answers vary including driving less, combining multiple short trips into one trip, and carpooling; using non-motorized (e.g., walking, biking, scooter, etc.) or public transportation (e.g., buses, trains, light rail, etc.) when possible; consider alternative fuel (e.g., hybrid, electric- or hydrogen-powered) vehicles.