

Climate Change and Cars Worksheet **Answer Key**

Do gas-powered and electric cars affect our climate?

Together, we are going to find out:

- What is the greenhouse effect?
- What is the carbon cycle?
- How does transportation affect the greenhouse effect?

1. What is the Greenhouse Effect?

Instructions: After watching the video "[What is the Greenhouse Effect?](#)" answer following questions.

- Describe the **greenhouse effect** in your own words.

The Earth traps heat from the sun using gases in the atmosphere.

- Why is the greenhouse effect **important to life** on Earth?

This is how Earth maintains just the right temperature to support life.

- What else did you learn from the video?

Answers will vary.

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2. Carbon Dioxide (CO₂) on Earth

Carbon dioxide, also called **CO₂**, is a type of gas naturally found on Earth. After watching "[What is the Carbon Cycle?](#)" video, answer the following questions.

- Where can we find **CO₂** on Earth?

"Most carbon is stored in rocks and sediments, while the rest is stored in the ocean, atmosphere, and living organisms. These are the reservoirs, or sinks, through which carbon cycles. The ocean is a giant carbon sink that absorbs carbon. Marine organisms from marsh plants to fish, from seaweed to birds, also produce carbon through living and dying. Sometimes dead organisms become fossil fuels that go through combustion, giving off CO₂, and the cycle continues."

- How does it get into the atmosphere?

Carbon dioxide is added to the atmosphere naturally when organisms respire or decompose (decay). Sometimes dead organisms become fossil fuels that go through combustion, giving off CO₂, and the cycle continues.

- Why is **CO₂** important for life?

"When new life is formed, carbon forms key molecules like protein and DNA."

Let's review!

- **CO₂** comes from natural sources...(respiration of animals and humans, decay of dead plants & animals, etc.)
- **CO₂** also comes from human sources...(burning of fossil fuels for energy in cars, power plants, etc.)
- **CO₂** moves through Earth's atmosphere (air), hydrosphere (water), biosphere (living things), and geosphere (land).

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3. How are humans increasing CO₂ levels in the atmosphere?

After watching the video "[Climate Change](#)" answer the following questions:

- In our cities and towns, **what adds more CO₂** into the atmosphere?

Cars, planes, office buildings, houses, etc.

- What **kind of energy** causes more CO₂ to enter the atmosphere?

Fossil Fuels.

- In 2009, **how many tons of CO₂** did the average person use? How many African elephants is that equivalent to?

The average person used 17 tons. This is equivalent to 4 African elephants.

- How many **parts per million of CO₂** is in the atmosphere right now? What do we want to change that to?

It is now over 400 ppm. We want to reduce that to 350 ppm.

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4. Carbon *emissions* (exhaust) from cars.

After watching the video "[What if Carbon Left Your Tailpipe as Solid Chunks?](#)" answer the following questions:

- What do they show coming out of the car's tailpipe in the video?

One gallon of burned fuel, in the form of solid carbon or "turds."

- How are car "turds" shown in the video?

Piles of charcoal (carbon). 5 lbs of car "turds" each mile. Over one ton of carbon per year.

Class Reflection: Share your thoughts on the following questions as a class:

- How do you get to school? Do you take the bus? Do your parents drop you in their car? Do you walk? Do you carpool with a friend?
- Which form of transportation do you think is cleaner?
- Which form of transportation do you think is less clean?
- Are there cars out there that do not have exhaust or (or "turds" like the car in the video)?
- **Open-ended responses. Electric vehicles (EVs) and use rechargeable battery-powered electric motors, which do not release any exhaust (no emissions=no car "turds"!).**

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