



Performance Task: Carbon Footprint



Part 1: Research

Student Directions

Your Assignment: Your class is investigating a number of environmental issues. You have been asked to research the issue of carbon footprints. To learn about this issue, you will watch two videos and read an article about carbon footprints, taking notes on the sources. Then you will answer three research questions. Next, you will gather information from a community business about reducing our carbon footprint in business. Finally, you will write an article for the school newspaper explaining what a carbon footprint is, the impact carbon footprints have on the world, and the different things people can do to reduce their carbon footprint. You will draw information from the three sources provided and information you gather from the community survey.

Steps you will follow:

To plan and compose your newspaper article, you will do the following:

1. Read an article and view two videos, taking notes on the sources.
2. Answer three research questions about the sources.
3. Participate in a community survey.
4. Plan and write your essay.

Directions for beginning:

You will now watch the videos read the article, taking notes with the template provided. You may refer back to the sources and your notes when writing your essay.

Sources information:

Source #1 – Video: *Forest Fast Break: Carbon Capture* (Duration: 2:11)

<https://youtu.be/cCwq8Uhf1Qw>

Source #2 – Video: *Simple Show Explains the Carbon Footprint* (Duration: 2:00)

<https://youtu.be/rDKGKQZWogk>

Source #3 – Article: *What is a Carbon Footprint?* Adapted from:

<https://climatekids.nasa.gov/review/how-to-help/>



Performance Task: Carbon Footprint



Carbon Footprint Note Taking Tool

Sources	What is a carbon footprint?	Why is a carbon footprint a problem?	What can we do to reduce our carbon footprint?
Source #1: Video <i>Forest Fast Break: Carbon Capture</i>			
Source #2: Video <i>Simple Show Explains the Carbon Footprint</i>			
Source #3: Article <i>What is a Carbon Footprint?</i>			



Performance Task: Carbon Footprint



What is a Carbon Footprint?

Text adapted from NASA Climate Kids website.

You leave footprints when you walk in the sand. Similarly, you also leave something called a carbon footprint on the environment, just by making simple choices every day. You can't see your carbon footprint, but it does impact the Earth.

Carbon Footprint

A **carbon footprint** is the amount of carbon dioxide that a person created and leaves in the environment. A person's carbon footprint can range from small to very large. The size of a person's carbon footprint depends on his/her daily actions. Think about:

- The distance you travel and how you travel from place to place;
- How much energy you use at home (i.e. lights, TV, computer, microwave, hot water, etc.);
- The food you eat and how it's packaged.

Whenever you turn on a light, play a video game, or take a shower, a power plant has created more electricity. Most power plants burn **fossil fuels** (such as coal, natural gas, or oil) to make electricity, and burning those fossil fuels produces greenhouse gases. Carbon dioxide, which is one type of **greenhouse gas**, is created by the materials and energy used to manufacture products, the fuel and packaging used to transport these products to stores and homes, and the wastes generated along the way. Your carbon footprint can get bigger...fast!

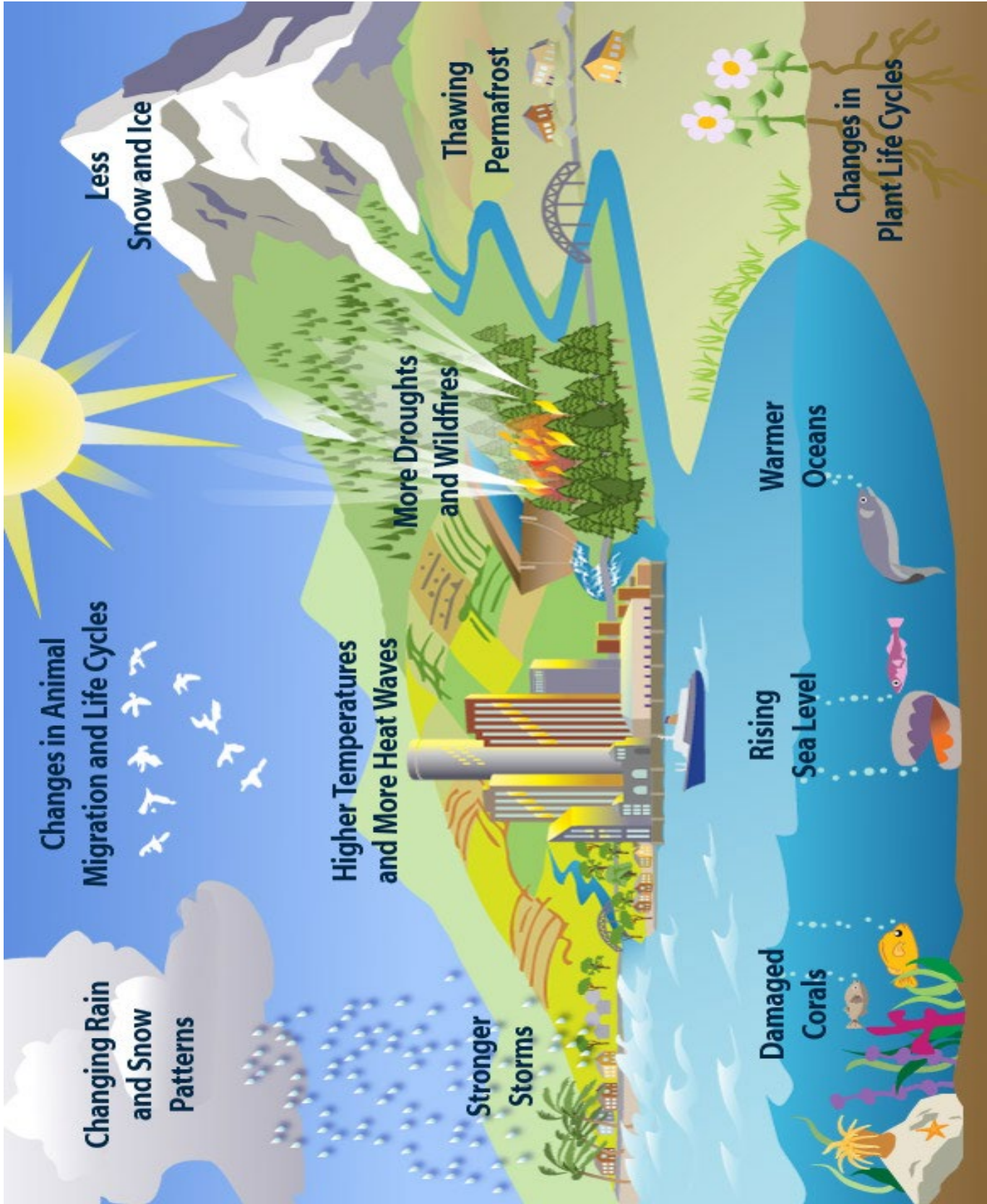
But why is this an issue? When fossil fuels are burned, **carbon dioxide (CO₂)** is produced. This harmful greenhouse gas contributes greatly to **global warming**. This heating of the Earth causes many other problems like sea-level rising and droughts.



Power Plant emitting greenhouse gases.



Performance Task: Carbon Footprint




The effects of global warming, which is caused by the burning of fossil fuels and the emission of greenhouse gases into the atmosphere.



Performance Task: Carbon Footprint





- Every pound of manufactured product produces 4 – 8 pounds of carbon dioxide (CO₂).
- A 5-pound packaged that shipped by truck creates 3.5 pounds of carbon dioxide. If the same package gets sent by plane, it creates 12 pounds of CO₂.
- Fore every gallon of gasoline that is used, 8.7 kg of carbon dioxide is produced.
- Just a 2-mile car trip puts 2 pounds of CO₂ into the air.

Reducing your carbon footprint:

You need transportation, electricity, food, clothing, and other goods. So, you can't **eliminate**, or completely remove, your carbon footprint. But, there are ways you can **reduce** it and have a positive impact on the Earth.



Help Nature

Grow your own fruits and vegetable. Plant a tree. Your new plants and trees will help to remove carbon dioxide from the air. Also, if you grow some of your own food, you will prevent more greenhouse gases from entering the air from fossil-fuel burning ships, planes, and trucks that transport your food.



Shut Off and Unplug

Turn off lights when not in use. Also, electronic devices suck power like a hungry leach...TVs, cell phone chargers, laptops, game consoles, use power even when they are "off." Plug these kinds of things into a power strip that has an on/off switch. Then shut off all the power, instead of unplugging each one, when they're not being used.



Make a Switch

Swap old incandescent light bulbs for the new compact fluorescent lights (CFLs). They use on 25% as much electricity to give the same light and last ten times longer. Also, look for the Energy Star label when buying a new refrigerator, washing machine, or other appliance. They do the same job but use much less energy.



Performance Task: Carbon Footprint



Buy Local

When you buy local, the food and goods are closer to you. So, the miles that a product needs to travel to get to you is reduced. Your local choice will be burning less fuel and reduce the amount of CO₂ released into the environment. Also, when you buy local food, you will be getting fresher, healthier products as well.



Travel Smart

Walk or ride your bike instead of taking a car everywhere. If you must drive, carpool or take the bus. Riding with others reduces the amount of vehicles on the road. Also, stay out of the drive thru! When you go to a fast-food place, park the car and walk inside, rather than sitting in a line of cars with the engine running and polluting the air.



Reduce Your Trash Pile

Reusable bags for groceries will reduce the millions plastic bags thrown away every year. Also, recycle aluminum cans, cardboard, food cans, plastic, glass, and anything made of paper. Choose products with less packaging. Even if you recycle the packaging, it takes energy to create them in the first place and energy to remake them into something else.

Footprints in the sand get washed away by the waves or blown away by the winds, and no one would know you were on that beach. But, your carbon footprint will leave your mark on the planet and have lasting effects. There are important things you can do right now to reduce your footprint. Start small...your choices will have a BIG impact on the Earth and the success of our environment.

Calculate your carbon footprint! Here's a website you can visit to measure your current impact on the environment. Every action we take can make a difference!

<https://www3.epa.gov/carbon-footprint-calculator/index-before-select-hook.html>



Performance Task: Carbon Footprint



3. Select the boxes to show the claim(s) that each source supports. Some of the resources will have more than one box selected. (Locating information)

	Source #1 Video: Forest Fast Break: Carbon Capture	Source #2 Video: Simple Show Explains the Carbon Footprint	Source #3 Article: What is a Carbon Footprint?
You and everything you own has a carbon footprint. Your actions and choices can reduce your carbon footprint.			
A carbon footprint is the amount of carbon dioxide a person contributes to the world in a day, and it contributes to global warming.			
Though we cannot completely eliminate our carbon footprint, we can reduce it.			



Performance Task: Carbon Footprint



Part 2: Field Investigation

Title: Surveying Our Community

Description: You have been asked to collect information regarding local business and the efforts they are making to reduce their carbon footprint. You will identify a business to visit from one of the following categories:

- **Dry Cleaning**
- **Automotive**
- **Grocery Stores**
- **Coffee Shops**
- **Nurseries**
- **Restaurants**

Procedure:

1. Identify a local business from one of the categories.
2. Visit the business. Ask to see the manager and share that you are conducting a class survey to see what the community is doing to reduce their carbon footprint. Explain that the carbon footprint is the amount of carbon dioxide we create through out day to day living. We can reduce this amount in a variety of ways.
3. Use the questionnaire provided to ask questions.
4. Record information provided by the business.
5. Share your information with your class and create a chart showing what is happening in your community to reduce our carbon footprint. Discuss what the data is telling you about efforts to reduce the communities' carbon footprint. Be sure to thank the people you interview for their time!

Summary: What have you learned about the carbon footprint in your community? What can you celebrate and what could be improved? What are steps you might take to help to reduce your carbon footprint? Remember that you can use information from this survey in your article.

Teacher note: If visiting businesses is not going to work for you logistically, then consider inviting two or three business owners into your classroom. The class can conduct an interview, including asking follow-up questions.



Performance Task: Carbon Footprint



Carbon Footprint Community Survey

Name of business interviewed: _____

Person interviewed and job title: _____

Explain what a carbon footprint is. Ask if the business has taken steps to reduce their carbon footprint. If the business has taken steps to reduce their carbon footprint list them below.

Ask if the business has any future plans to reduce their carbon footprint. If the business has future plans list them below.

Thank the business for taking the time to talk with you!



Performance Task: Carbon Footprint



Part 3: Essay

Student directions: You will now review your notes and sources, plan, draft, edit, and revise your writing using the graphic organizer provided. You may refer to your notes and sources to write your article. Now read your assignment and the information on how you will be scored.

Your assignment: Write an article for the school newspaper on carbon footprints, encouraging students to make changes that reduce their carbon footprint. In your article explain what a carbon footprint is, the negative impact of carbon footprints on the environment, and what we can do to reduce our carbon footprints. Support your statements with details from the sources. Cite your sources.

How your informational/explanatory essay will be scored.

1. **Statement of purpose/focus** – how well you clearly state and maintain your controlling idea or main idea.
2. **Organization** – how well the ideas progress from the introduction to the conclusion using effective transitions and how well you stay on topic throughout the essay.
3. **Elaboration of evidence** – how well you provide evidence from sources about your topic and elaborate with specific information.
4. **Language and vocabulary** – how well you effectively express ideas using precise language that is appropriate for your audience and purpose.
5. **Conventions** – how well you follow the rules of usage, punctuation, capitalization, and spelling.

Now begin work on your essay:

1. Review your notes.
2. Plan your essay using the template provided.
3. Write your essay.
4. Revise and edit for a final draft.
5. Cite your sources.



Performance Task: Carbon Footprint



Name: _____ Date: _____ #: _____

Carbon Footprint

Informational Essay Graphic Organizer

Introduction	
What is a carbon footprint?	
What impact does a carbon footprint have on the world?	
What can you do to reduce your carbon footprint?	
Conclusion	



Performance Task: Carbon Footprint



Informative / Explanatory Writing Rubric (Grades 6-11) Scoring Version



Score	4	3	2	1
Statement of Purpose/Focus	<p>The response is fully sustained and consistently and purposefully focused:</p> <ul style="list-style-type: none"> consistent or main idea of a topic is clearly communicated, and the focus is strongly maintained for the purpose, audience, and task 	<p>The response is adequately sustained and generally focused:</p> <ul style="list-style-type: none"> controlling or main idea of the topic is clear, and the focus is mostly maintained for the purpose, audience, and task 	<p>The response is somewhat sustained and may have a minor drift in focus:</p> <ul style="list-style-type: none"> controlling or main idea of a topic may be somewhat unclear, and the focus may be insufficiently sustained for the purpose, audience, and task 	<p>The response may be related to the topic but may provide little or no focus:</p> <ul style="list-style-type: none"> controlling or main idea of the topic may be somewhat confusing or ambiguous; response may be too brief or the focus may drift from the purpose, audience, and task
Organization	<p>The response has a clear and effective organizational structure creating unity and completeness:</p> <ul style="list-style-type: none"> consistent use of a variety of transitional strategies to clarify the relationships between and among ideas effective introduction and conclusion logical progression of ideas from beginning to end; strong connections between and among ideas, with some syntactic variety 	<p>The response has an evident organizational structure and a sense of completeness, though there may be minor flaws and some ideas may be loosely connected:</p> <ul style="list-style-type: none"> adequate use of transitional strategies with some variety to clarify the relationships between and among ideas adequate introduction and conclusion adequate progression of ideas from beginning to end; adequate connections between and among ideas 	<p>The response has an inconsistent organizational structure, and flaws are evident:</p> <ul style="list-style-type: none"> inconsistent use of transitional strategies with little variety introduction and conclusion, if present, may be weak uneven progression of ideas from beginning to end; and/or formulaic; inconsistent or unclear connections between and among ideas 	<p>The response has little or no discernible organizational structure:</p> <ul style="list-style-type: none"> few or no transitional strategies are evident introduction and conclusion, if present, may be missing frequent extraneous ideas may be evident; ideas may be randomly ordered or have an unclear progression
Elaboration of Evidence	<p>The response provides thorough and convincing support/evidence for the controlling idea and supporting idea(s) that includes the effective use of sources, facts, and details.</p> <ul style="list-style-type: none"> comprehensive evidence from sources is integrated; references are relevant and specific effective use of a variety of elaborative techniques* 	<p>The response provides adequate support/evidence for the controlling idea and supporting idea(s) that includes the use of sources, facts, and details:</p> <ul style="list-style-type: none"> adequate evidence from sources is integrated; some references may be general adequate use of some elaborative techniques* 	<p>The response provides uneven, cursory support/evidence for the controlling idea and supporting idea(s) that includes uneven or limited use of sources, facts, and details:</p> <ul style="list-style-type: none"> some evidence from sources is weakly integrated, imprecise, or repetitive; references may be vague weak or uneven use of elaborative techniques*; development may consist primarily of source summary 	<p>The response provides minimal support/evidence for the controlling idea and supporting idea(s) that includes little or no use of sources, facts, and details:</p> <ul style="list-style-type: none"> evidence from the source material is minimal or irrelevant; references may be absent or incorrectly used minimal, if any, use of elaborative techniques*
Language	<p>The response clearly and effectively elaborates ideas, using precise language:</p> <ul style="list-style-type: none"> vocabulary is clearly appropriate for the audience and purpose effective, appropriate style enhances content 	<p>The response adequately elaborates ideas, employing a mix of precise with more general language:</p> <ul style="list-style-type: none"> vocabulary is generally appropriate for the audience and purpose generally appropriate style is evident 	<p>The response elaborates ideas unevenly, using simplistic language:</p> <ul style="list-style-type: none"> vocabulary is uneven or somewhat ineffective for the audience and purpose inconsistent or weak attempt to create appropriate style 	<p>The response is vague, lacks clarity, or is confusing:</p> <ul style="list-style-type: none"> vocabulary is limited or ineffective for the audience and purpose little or no evidence of appropriate style

Score	2	1	0
Conventions	<p>The response demonstrates a command of conventions:</p> <ul style="list-style-type: none"> adequate use of correct sentence formation, punctuation, capitalization, grammar usage, and spelling 	<p>The response demonstrates partial command of conventions:</p> <ul style="list-style-type: none"> limited use of correct sentence formation, punctuation, capitalization, grammar usage, and spelling 	<p>The response demonstrates little or no command of conventions:</p> <ul style="list-style-type: none"> infrequent use of correct sentence formation, punctuation, capitalization, grammar usage, and spelling

NS	Unintelligible, in a language other than English, off-topic, insufficient evidence (incomplete) or copied text. (Off-purpose writing will still receive a score in Conventions.)
----	--

*Elaborative techniques may include the use of personal experiences that support the controlling idea.