

NAME: _____



Activity One



Climate Change Survey

Now that you know more about what causes climate change, find out what your friends and family know. You can do this by doing a survey.

1. First, write a list of questions that will let you find out what types of information people already know about climate change, what misconceptions people might have about climate change, and where people need to learn more. Begin with questions that introduce the topic, and move to more specific questions later in the survey. Some questions you might consider asking include:

- Have you ever heard of the term “climate change?”
- What is climate change?
- How long has climate change been going on?
- What causes climate change?
- What role do humans play in climate change?
- What are greenhouse gases?

Be sure to add more of your own questions.

2. Conduct your survey. You may choose to ask people the questions and record their responses, or photocopy your survey questions and ask people to write their answers. Be sure to leave enough space for people to respond. Give your survey to 10–12 people.
3. Analyze the results of your survey. Read or listen back to all of the responses. What information do people already know about climate change? Do people have any incorrect information, or misconceptions, about climate change? Are there areas where people do not have any information at all? Do you see any other patterns or trends in people’s responses? Summarize your results into a chart like the one below:

people already know about...	people have misconceptions about...	people have little or no information about...

4. Design a brochure that addresses people’s misconceptions about climate change, and that gives people more information about the causes of climate change. Give your brochure to everyone who took your survey.

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Activity Two



CFC Audit

You learned that CFCs were banned in the 1980s because of the problems they cause in the Earth's atmosphere. An audit is a check-up. By doing a CFC audit at your home and school, you can find out if any of these synthetic greenhouse gases are still in use.

1.

Write a list of things that might contain CFCs. Remember that CFCs were used in refrigeration (this includes air conditioning), cleansers, and aerosol cans. Brainstorm a list of any items at your home or school that might contain CFCs. Organize your list by room.

2.

Conduct your audit. Go room to room and check on your list to see if you find any of the items. When you find an item that might contain CFCs, write down the name of the item, a description of the item, the year it was made, a model number, and the manufacturer. Most of this information can be found on a label somewhere on the item. Look on the label for any information about CFCs. Write down if the label says the item DOES or DOES NOT contain CFCs. If you do not find information about CFCs on the label, leave a question mark on your audit.

3.

Use the Internet or library resources to find out more about the items on your audit with a question mark. Look up the manufacturers' websites on the Internet, or try to find a phone number for the manufacturer in a phone book. Contact the manufacturer if necessary to find out whether the item in question contains CFCs. If it is an old item, such as an old air conditioner, find out whether the manufacturer makes new models without CFCs.

4.

Use all of the information you gathered to write a report that details where CFCs can still be found in your home or school. Write an action plan that contains solutions for cutting out the use of CFCs. Your class might even choose to raise money to replace older CFC-containing items with newer ones that do not contain CFCs. Ask your teacher or parents' group to help.

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Activity Three



Create a Pie Chart

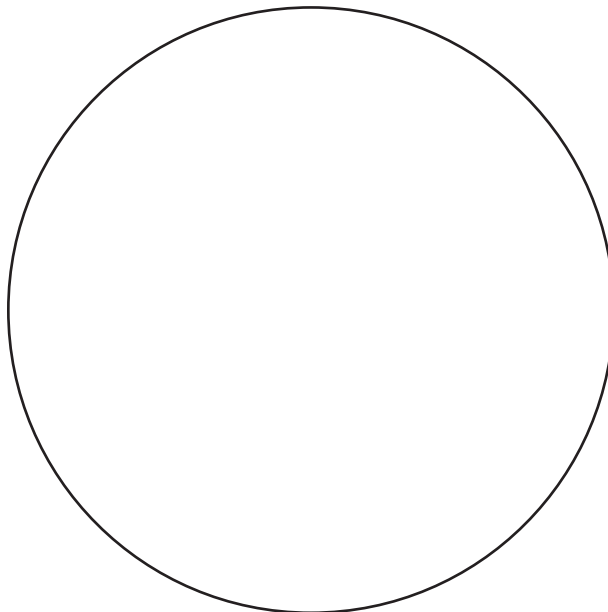
A pie chart can help you visualize the parts of a whole.

Create a pie chart for all of the gases in the atmosphere. Remember that nitrogen makes up 78% of the atmosphere, and oxygen makes up 21%. That leaves 1% for all the other gases, which you can label "other."

To divide the sections of the pie chart, remember that a complete circle contains 360 degrees ($^{\circ}$). Since the total gases in the atmosphere add up to 100%, divide $360/100$ to find out the number of degrees that represent 1%. Now, multiply the % of each gas to find the number of degrees for that section of gas. For example, if 1% takes up a degrees, then the section for nitrogen should be $78 \times a$. Fill in the number of degrees for each section in the chart below. You can check your work by adding the number of degrees for all three sections (it should add up to 360).

gas	percentage	degrees
nitrogen	78%	
oxygen	21%	
other	1%	

Using a ruler, draw a radius line on the circle below, or draw a circle in your science notebook using a compass. Then use a protractor to mark out the number of degrees from the radius line you drew to the first section. Continue until you have all three sections marked.



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Activity Four



Greenhouse gases are on the rise! Television News Report

Imagine that you are a news reporter for your local TV news channel. In groups of three or four, you will create a news report on the rising amounts of greenhouse gases in the atmosphere.

BEFORE YOU BEGIN

Do you regularly watch the news? If not, spend some time in the evening watching different news programs. Think about how the news reporters are presenting their stories. What tone of voice do they use? What kinds of information do they present? How do they use visuals to help viewers understand the story?

DO YOUR RESEARCH

Using up-to-date references, collect information about the rise in the amount of carbon dioxide, methane, and nitrous oxide in the atmosphere. Find out how scientists measure the concentration of these gases in the atmosphere, how many years scientists have data for these gases, and how the concentration of the gases in the atmosphere have changed since scientists have been measuring.

WRITE YOUR NEWS REPORT

Based on your research, put together a 5–10 minute news report. Be sure to include the following in your report:

- An introduction, which gives an overview of the information you will present, including the link between greenhouse gases and climate change.
- How scientists measure the concentration of gases in the atmosphere.
- How the concentration of gases has changed.
- What is causing the change in the concentration of greenhouse gases.
- A summary, which explains what might be done to address the problem.

PRESENT YOUR REPORT

Record your news report using a video camera or digital device. Then, show the film in class. If you do not have a recording device, set up a table in your classroom and give your presentation live. Be sure to practice a few times first!

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Activity Five



Greenhouse Gas Concept Web

Create a detailed concept web to organize the information you learned about greenhouse gases. Begin your concept web with the main topic, "Greenhouse gases," and include links to each of the gases you learned about in this book:

water vapor

carbon dioxide

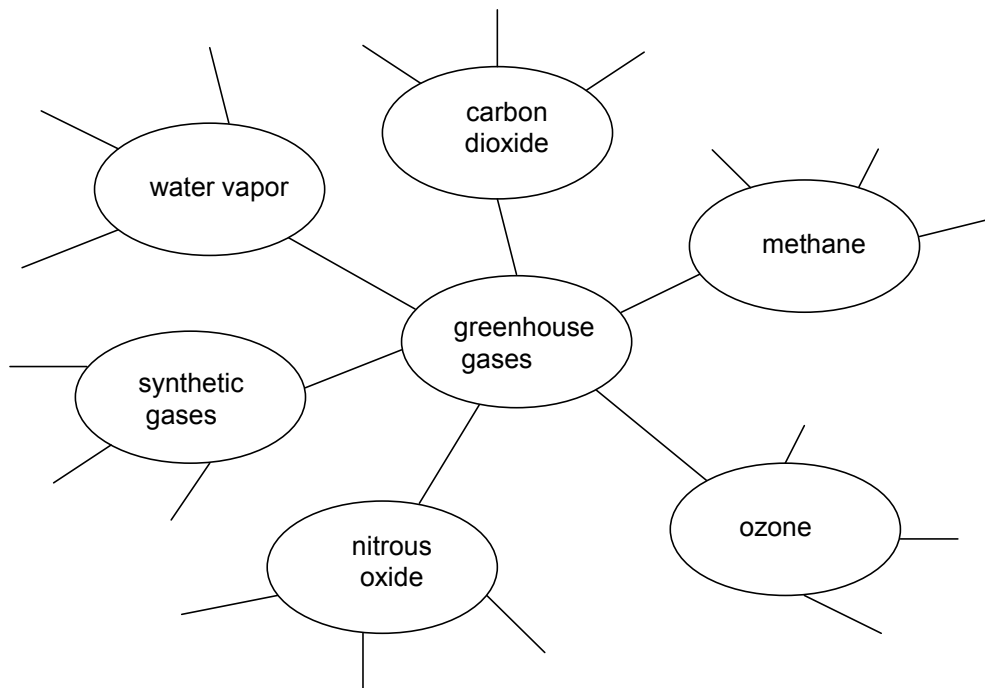
methane

ozone

nitrous oxide

synthetic gases

Construct your map on a large piece of poster paper so that you have plenty of room to include all of the main concepts about each of the greenhouse gases. You may use your main topic as a central concept, as shown below, or as a top-level concept if you would like to do a pyramid-style map.



Add links to each of the greenhouse gases to include information about its main sources, its ability to absorb heat energy, its residence time in the atmosphere, and whether it is part of a natural biogeochemical cycle.



Activity Six



Create a Brochure

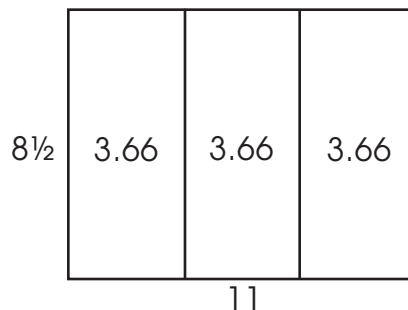
A brochure is a handy way to get information to people. You can create a brochure showing the sources of the major greenhouse gases. People can use the information in your brochure to understand where greenhouse gases come from, and to make choices that can lead to fewer greenhouse gases in the atmosphere.

GET IDEAS

Start by looking through sample brochures to get ideas about how they are laid out, and how graphics and text are used to present main ideas in a small space. Organizations such as banks, waste management companies, state parks, and water districts often put out brochures to help give people information. Ask your teacher or librarian for help finding a selection of brochures to study.

LAY OUT YOUR BROCHURE

Usually, brochures are made by folding an $8\frac{1}{2}$ x 11 in. paper into thirds.



Decide where you are going to put the information about each type of greenhouse gas. Be sure to include:

- The main sources of carbon dioxide, methane, ozone, nitrous oxide, and synthetic gases.
- The effects of greenhouse gases in the atmosphere.
- A few ideas for ways people can lessen their output of greenhouse gases.
- Graphics on each of the panels of the brochure.

DISTRIBUTE YOUR BROCHURE

Ask your teacher for help making double-sided copies of your brochure. Fold the brochures and give them to your family and friends. You may want to share your brochures with other classrooms at your school.