

# CLIMATE KEEPERS

## Teacher's Guide

Grades 7-8



Engaging  
Student  
Activities

Four Climate  
and Clean  
Energy Lessons



Dear Teacher,

PGE Project Zero is pleased to introduce *Climate Keepers: Agents of Project Zero*, a new environmental education comic for students in grades 4-8. PGE Project Zero is our commitment to engaging students in learning about climate science and clean energy. Through this comic and associated lessons, your students will learn about climate change and participate in thoughtful discussions.

*Climate Keepers: Agents of Project Zero* (available in English and Spanish) is designed to help young people explore ways they can make positive change to fight the climate crisis. The comic provides a springboard to implementing a range of student-friendly classroom activities to help you meet your science and language arts curriculum objectives. The Teacher's Guide provides four lessons aligned to language arts and science standards, engaging reading and activity sheets (available in English and Spanish), and online resources for extended student learning.

[PGE Project Zero](#) aids youth in learning about climate change science and exploring clean energy, and empowers them to make a positive impact on the planet. After you complete the activities, we look forward to hearing your feedback.

Sincerely,

Portland General Electric





### OVERVIEW

#### TARGET AUDIENCE

The program is designed for students in grades 7-8.

#### OBJECTIVES

- Increase awareness of climate change causes, issues, and related vocabulary
- Explore ways to be Climate Keepers by taking climate-friendly actions as part of everyday living
- Offer online learning resources to extend student learning

#### COMPONENTS

- *Climate Keepers: Agent of Project Zero*, a full-color comic (available in English and Spanish)
- Teacher's Guide featuring:
  - Four lessons with instructional guidelines
  - Reading and activity sheets (available in English and Spanish)
  - Online resources for extended student learning
- [Climate Keepers](#) website

#### THE LESSONS ARE:

**Lesson 1:** Meet the Climate Keepers

**Lesson 2:** Climate change causes and solutions

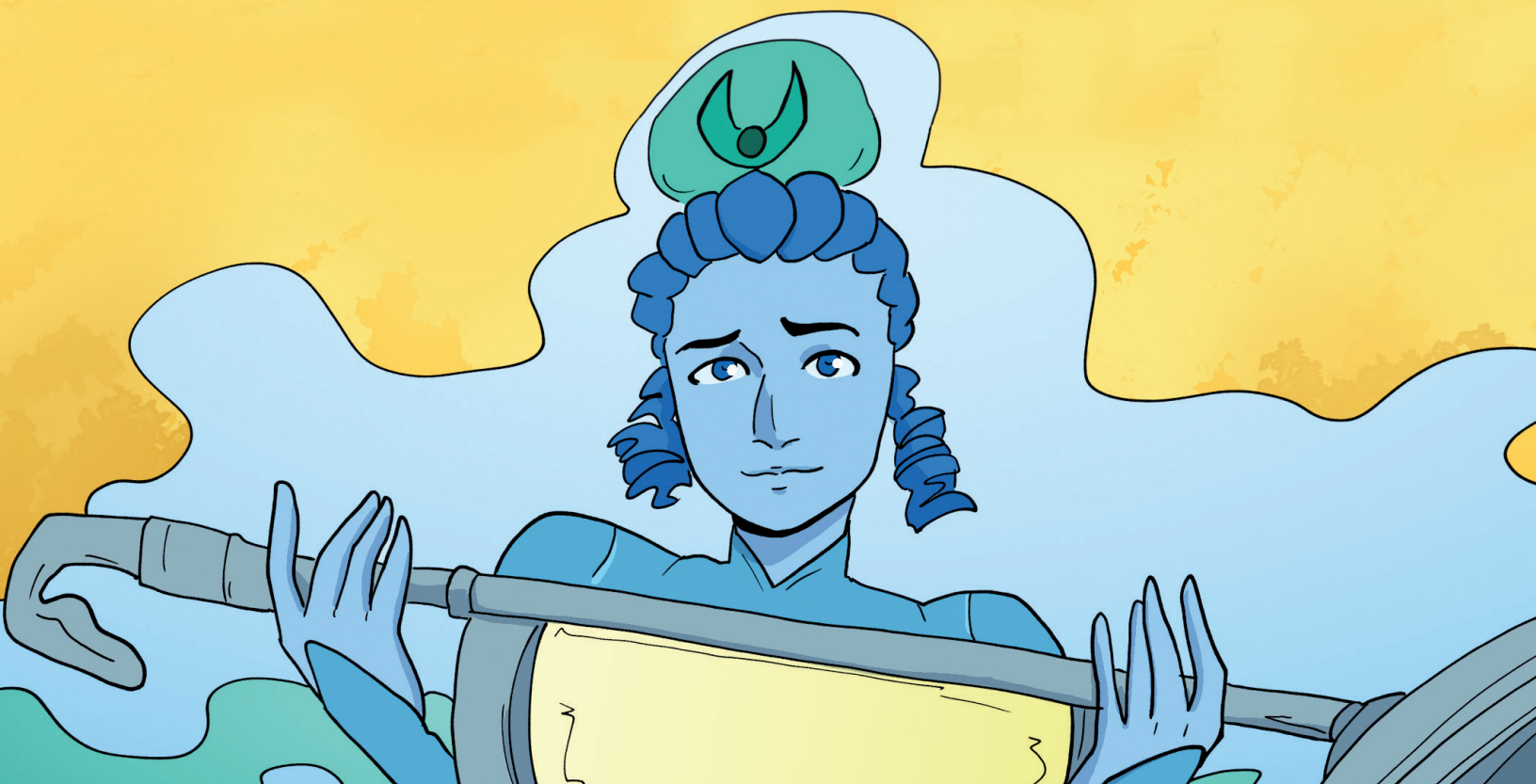
**Lesson 3:** The power of carbon dioxide

**Lesson 4:** A call to action

#### EACH LESSON'S ACTIVITY INCLUDES:

- Explanation of lesson
- Time needed to lead the lesson
- Objectives for students
- Step-by-step teacher instructions
- Alignment to Common Core Standards for Science and English Language Arts and Literacy where applicable
- Reading and activity sheets (available in English and Spanish)

Email PGE your questions about Climate Keepers.





### Lesson 1: Meet the Climate Keepers



**Introduction:** This lesson will introduce *Climate Keepers: Agents of Project Zero* as a springboard to learning about climate change.



**Time:** One class period (45-60 minutes)



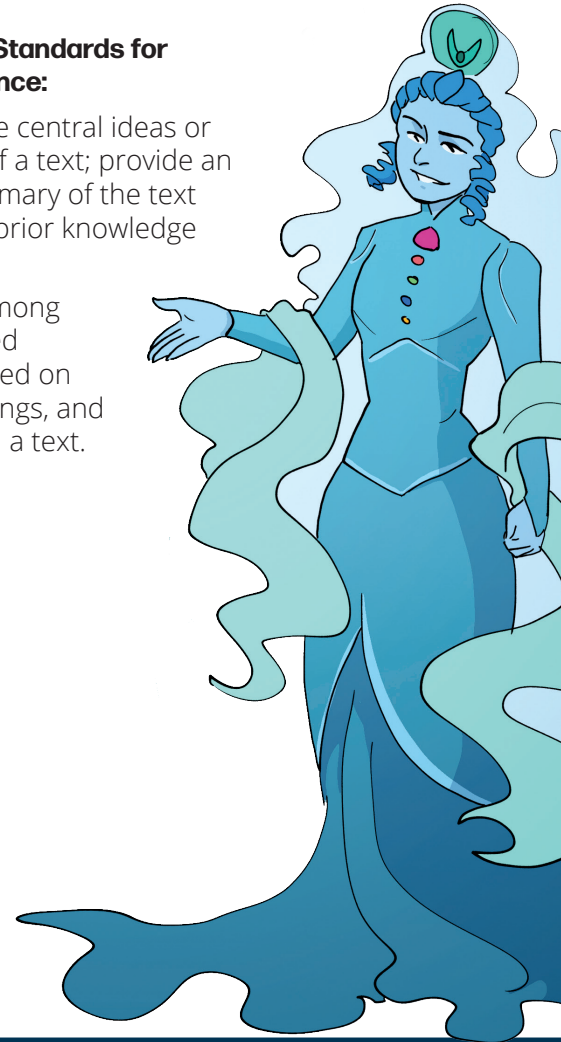
#### Objectives for Students:

- Read and discuss the comic *Climate Keepers: Agents of Project Zero*, with a focus on science
- Define *climate change* and discuss causes, including those identified in *Climate Keepers*
- Develop a list of vocabulary related to climate change



#### Common Core Standards for Literacy in Science:

- Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
- Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.



### EXTEND STUDENT LEARNING

#### What Is Climate Change?

<https://www.youtube.com/watch?v=EuwMB1Dal-4>

#### Climate Change Terms and Definitions

<https://climatechange.ucdavis.edu/climate/definitions>

#### Climate Change Indicators in the United States

<https://www.epa.gov/climate-indicators>

#### Earth's Changing Climate

<https://education.nationalgeographic.org/resource/earths-changing-climate>



#### MATERIALS

- *Climate Keepers: Agents of Project Zero* comic for each student (available in English and Spanish)
- Reading Sheet: "Who's Who in *Climate Keepers*?" (available in English and Spanish)
- Activity Sheet: "True or False?" (available in English and Spanish)



#### ACTIVITY DIRECTIONS

1. Distribute *Climate Keepers: Agents of Project Zero*, an entertaining comic with an important message about climate change. Have students read the comic individually. Also distribute the reading sheet "Who's Who in *Climate Keepers*?" to students to help guide their understanding.
2. Discuss the comic as a class:
  - What is climate change? (*Climate change* is a long-term change in Earth's overall temperature with massive and permanent consequences.)
  - What is causing climate change in the comic?
  - What role does carbon play?
  - What can be done to stop climate change?
  - Which parts of the comic's story sound like solutions?
3. Have students collect unfamiliar climate change vocabulary in their notebooks. Examples might include *fossil fuels*, *greenhouse gases*, *carbon*, and *carbon emissions*.
4. Distribute the activity sheet "True or False?" Have each student complete the left column. Gather the completed sheets for use in Lesson 4 (students will then review their original answers and record correct answers with their new knowledge in the right-hand column).
5. Share next steps for research and activities. Let students know they will be researching, conducting an experiment, and developing an understanding of how they can impact climate change in a positive way.

## Lesson 1: Reading Sheet

# Who's Who in *Climate Keepers*?

### CAST OF CHARACTERS

Gaia	Intergalactic alien who leads the Climate Keepers; <i>Gaia</i> is the Greek personification of Earth
Ipsium	Gaseous human-like being, personification of carbon pollution; <i>Ipsium</i> is Latin for "yourself"
Ignatius	Band member and Climate Keeper
Van	Band member and Climate Keeper; he is deaf and uses American Sign Language
Ailani	Climate Keeper
Rowan	Climate Keeper
Mira	Inventor and Climate Keeper
Nebulae	Assistants to Gaia

### STORY

The story begins with an introduction to Gaia, protector of all Earth. Metro Marina is a city setting. Ipsium, a grey cloud, is looking for a place to acquire carbon. This cloud moves around the city area but doesn't settle anywhere. The citizens of Metro Marina have worked hard to minimize their carbon footprint.

Gaia realizes that the villain Ipsium is back. Ipsium settles at the outskirts of the city, where there is factory smoke and a trucking yard. After Ipsium gathers strength by absorbing carbon, it decides to wreak havoc on the urban environment by encompassing the area in a smoke-like fog.

At first, Ignatius and Van, Climate Keepers and members of a band playing in Metro Marina, think the fog machine has been left on. But then, they discover this is not true. The trapped heat soon disturbs people too.

Ailani and Rowan, two more of the Climate Keepers, receive an emergency message from Gaia to come to Headquarters. Gaia explains the problem and shows them the solution. Another Climate Keeper, Mira, explains why Ipsium has returned and introduces a device she and her father created—a vacuum powered by geo rings. The vacuum removes the carbon in the black clouds and turns them into harmless Nebula. The Climate Keepers power up their rings. They fight a fierce battle with Ipsium in the fueling yard, spilling some oil. Rowan creates a bag of oil absorbent granules to soak up the oil. Finally, they win the battle.

Afterward, the owner of the trucking yard speaks with Ailani and Mira about the best ways to make the space more green and eco-friendly.



## Lección 1: hoja de actividades

# ¿Quién es quién en Guardianes del Clima?

### ELENCO DE PERSONAJES

Gaia	Extraterrestre intergaláctico que lidera a los Guardianes del Clima; Gaia es la personificación griega de la Tierra.
Ipsum	Ser humanoide gaseoso, personificación de la contaminación por carbono; <i>Ipsum</i> es la palabra latina para "tú mismo"
Ignatius	Miembro de la banda y Guardián del Clima
Van	Miembro de la banda y Guardián del Clima; es sordo y usa el lenguaje de señas americano
Ailani	Guardián del Clima
Rowan	Guardián del Clima
Mira	Inventora y Cuardiana del Clima
Nebulae	Asistentes de Gaia

### HISTORIA

La historia comienza con una introducción a Gaia, protectora de toda la Tierra. Metro Marina es un entorno ciudadano. Ipsum, una nube gris, está buscando un lugar para adquirir carbono. Esta nube se mueve por el área de la ciudad pero no se asienta en ninguna parte. Los ciudadanos de Metro Marina han trabajado arduamente para minimizar su huella de carbono.

Gaia se percata de que el villano Ipsum ha vuelto. Ipsum se instala en las afueras de la ciudad, donde hay humo de fábrica y un patio de camiones. Después de que Ipsum se fortalece al absorber carbono, decide causar estragos en el entorno urbano al abarcar el área con una niebla similar al humo.

Al principio, Ignatius y Van, Guardianes del Clima y miembros de una banda que toca en Metro Marina, creen que la máquina de humo se ha quedado encendida, pero después descubren que esto no es cierto. El calor atrapado pronto molesta también a las personas.

Ailani y Rowan, otros dos Guardianes del Clima, reciben un mensaje de emergencia de Gaia para que vayan a la sede. Gaia les explica el problema y les muestra la solución. Otra Guardianiana del Clima, Mira, explica por qué Ipsum ha regresado y presenta un dispositivo que ella y su padre crearon: una aspiradora alimentada por geoanillos. El vacío elimina el carbono de las nubes negras y las convierte en Nebula inofensiva. Los Guardianes del Clima encienden sus anillos. Luchan en una feroz batalla con Ipsum en el patio de combustible, y derraman un poco de aceite. Rowan crea una bolsa de gránulos absorbentes de aceite para absorber el aceite. Finalmente, ganan la batalla.

Posteriormente, el propietario del patio de camiones habla con Ailani y Mira sobre las mejores maneras de hacer que el espacio sea más verde y ecológico.





## Lesson 1: Activity Sheet

### True or False?

Student Name: \_\_\_\_\_

After reading the comic and participating in the class discussion, review each statement and decide if you think it is True (T) or False (F). Write your answer in the left-hand column. (You will fill out the second column in a later lesson to see what you've learned. You may find that the answers are tricky!)

T or F		T or F
_____	1. Planting trees reduces carbon in the atmosphere.	_____
_____	2. Electric vehicles produce carbon tailpipe emissions.	_____
_____	3. It is possible to clean dirty air.	_____
_____	4. Carbon-filled air is gray or black.	_____
_____	5. Solar and wind power is clean power.	_____
_____	6. Carbon dioxide is the only greenhouse gas.	_____
_____	7. Global warming is not affecting coral reefs.	_____
_____	8. Transportation is a small source of carbon emissions.	_____
_____	9. Eating less beef can help reduce greenhouse gases.	_____
_____	10. Global warming is a natural phenomenon.	_____
_____	11. Some areas of the world are more responsible for producing greenhouse gases.	_____
_____	12. Climate change does not affect people the same across the world.	_____



## Lección 1: hoja de actividades

### ¿Verdadero o falso?

Nombre del estudiante: \_\_\_\_\_

Después de leer el cómic y participar en el análisis en clase, revisa cada afirmación y decide si crees que es verdadera (V) o falsa (F). Escribe tu respuesta en la columna de la izquierda. (Completarás la segunda columna en una lección posterior para ver lo que has aprendido. ¡Tal vez las respuestas que resulten complicadas!)

V o F		V o F
_____	1. Plantar árboles reduce el carbono en la atmósfera.	_____
_____	2. Los vehículos eléctricos producen emisiones de carbono por el tubo de escape.	_____
_____	3. Es posible limpiar el aire sucio.	_____
_____	4. El aire lleno de carbono es gris o negro.	_____
_____	5. Las energías solar y del viento son energías limpias.	_____
_____	6. El dióxido de carbono es el único gas de efecto invernadero.	_____
_____	7. El calentamiento global no está afectando a los arrecifes de coral.	_____
_____	8. El transporte es una pequeña fuente de emisiones de carbono.	_____
_____	9. Comer menos carne de res puede ayudar a reducir los gases de efecto invernadero.	_____
_____	10. El calentamiento global es un fenómeno natural.	_____
_____	11. La producción de gases de efecto invernadero es más alta en algunas áreas del mundo que en otras.	_____
_____	12. El cambio climático no afecta a las personas de la misma manera en todo el mundo.	_____





### Lesson 2: Climate Change Causes and Solutions



**Introduction:** This lesson will help students identify the causes of climate change and possible solutions to the problem.



**Time:** One class period (45-60 minutes)



#### Objectives for Students:

- Develop a better understanding of climate change and its impact on the world
- Understand the major causes of climate change
- Identify possible solutions to the problem



#### Common Core Standards for Science:

- Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
- Ask clarifying questions based on evidence about the factors that have caused climate change over the past century.

### EXTEND STUDENT LEARNING

#### U.S. Environmental Protection Agency Climate Change

<https://www.epa.gov/climate-change>

#### Causes of Climate Change

<https://www.epa.gov/climatechange-science/causes-climate-change>

#### Natural Resources Defense Council

<https://www.nrdc.org/stories/what-are-causes-climate-change>

### ACTIVITY SHEET ANSWER KEY

*Climate change* is a long-term change in Earth's overall temperature with massive and permanent consequences.

*Carbon dioxide, nitrous oxide, and methane* are examples of greenhouse gases.

Three Main Human Activities That Impact the Greenhouse Effect:

- *Fossil Fuel Burning*
- *Animals, Agriculture, and Deforestation*
- *Waste and Recycle Pollution*



#### MATERIALS

- Activity Sheet: "Climate Change: We Are the Problem and the Solution" (available in English and Spanish)



#### ACTIVITY DIRECTIONS

1. Ask a student to define *climate change*, as a review. Record the definition on a whiteboard, blackboard, or large easel sheet. Then ask the class the causes of climate change and record them.
2. Distribute the activity sheet "Climate Change: We Are the Problem and the Solution." (Students will be completing Step 1 questions after they have watched the video.)
3. Have students watch the YouTube video "[Climate Change: We Are the Problem and the Solution](#)"
4. Discuss the video, briefly reviewing and updating the information on the whiteboard as students record the answers on their activity sheets.
5. Tell students that they will be watching the video again in a group. Organize the students into three groups, focused on these three causes of climate change:
  - Fossil Fuel Burning
  - Animals, Agriculture, and Deforestation
  - Waste and Recycle Pollution
6. Have the student groups rewatch the video and collect the information for their topic. Then ask one student from each group to share a summary of its findings.
7. Help the class develop a list of solutions. Ask students, with a show of hands, which solutions they can impact personally. Record the totals.
8. Have the class indicate their feelings about the ability of humans to reduce climate change: Very optimistic/Somewhat optimistic/Somewhat pessimistic/Very pessimistic. Record the totals.
9. After a review of this quick survey, end class by watching this short video called "[A Reason for Hope](#)"



## Lesson 2: Activity Sheet

# Climate Change: “We Are the Problem and the Solution”

**Step 1:** Fill in the questions after your first viewing of the video.

**What is climate change?**

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**What is the greenhouse effect?**

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**What are three examples of greenhouse gases?**

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

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

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

**What are the three main human activities that impact the greenhouse effect?**

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

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

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

**Step 2:** Write down the important information for your group’s focus as you review the video.

**Your group’s focus is on:** \_\_\_\_\_

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## Lección 2: hoja de actividades

# Cambio climático: "Somos el problema y la solución"

**Paso 1:** Completa las preguntas después de ver el video.

¿Qué es el cambio climático?

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¿Qué es el efecto de gas invernadero?

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Escribe tres ejemplos de gases de efecto invernadero.

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

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

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

¿Cuales son las tres actividades principales del ser humano que tienen repercusiones sobre el efecto de gas invernadero?

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

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

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

**Paso 2:** Escribe la información importante para el enfoque de tu grupo mientras revisan el video.

El enfoque de tu grupo es en: \_\_\_\_\_.

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### Lesson 3: The Power of Carbon Dioxide



**Introduction:** This hands-on lesson will investigate the greenhouse effect and the power of carbon dioxide.

#### EXTEND STUDENT LEARNING

##### NASA Climate Kids

<https://climatekids.nasa.gov/carbon/>

##### The Effects of Carbon Dioxide on Air Pollution

<https://sciencing.com/list-5921485-effects-carbon-dioxide-air-pollution.html>

##### Caring About Sound Science: Carbon Is Not Carbon Dioxide

<https://www.carolinajournal.com/opinion/caring-about-sound-science-carbon-is-not-carbon-dioxide/>



**Time:** One class period (45-60 minutes)



#### Objectives for Students:

- Simulate Earth's atmosphere and the greenhouse effect
- Demonstrate the role of carbon dioxide gas



#### Common Core Standards for Science:

- Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
- Ask clarifying questions based on evidence about the factors that have caused climate change over the past century.



#### MATERIALS

- Activity Sheet: "Recording Results" (available in English and Spanish)
- 3 large clear glass jars with lids
- 3 thermometers that can fit inside the jars
- 3 heat lamps
- A measuring cup and a tablespoon
- A tablespoon
- A jar of vinegar
- A box of baking soda



#### ACTIVITY DIRECTIONS

1. Have students watch the YouTube video "[Climate Science in a Nutshell #4: Too Much Carbon Dioxide](#)". Review with students that the greenhouse effect is a natural process that makes life on Earth possible and that greenhouse gases include carbon dioxide, methane, nitrous oxide, and water vapor.
2. Organize the class into groups of three or four students. Distribute the activity sheet "Recording Results."
3. Introduce the group activity, which will demonstrate the effect of an increase in carbon dioxide in a greenhouse. Explain that the reaction between baking soda and vinegar produces carbon dioxide gas. Ask students to predict what will happen and record it on their activity sheet.
4. Have each student group:
  - Record the temperature of the room on the activity sheet.
  - Label the three jars: (1) is the control (Air only), (2) will have vinegar and baking soda without lid, and (3) will have vinegar and baking soda with lid.
  - Place a thermometer in the Jar 1 and cover with lid.
  - Measure 2 ounces of vinegar and put it in Jar 2. Do the same for Jar 3.
  - Place one thermometer in Jar 2 and one in Jar 3.
  - Measure 2 tablespoons of baking soda into Jar 2. Do NOT cover this jar. (Students should see a bubbling reaction as the combination of baking soda and vinegar creates carbon dioxide.)
  - Measure 2 tablespoons of baking soda into Jar 3. Cover it quickly with a lid.
5. Help the groups set up the three jars about 4 inches (10 cm) from the heat source. After 5 minutes, have them record the temperatures of the three thermometers.
6. Meet as a class to share results and complete the activity sheet.
  - What conclusions can they draw from the recorded temperatures? (*The lidded Jar 3 simulates Earth's atmosphere. The added carbon dioxide should raise the temperature several degrees more than "only air" Jar 1 and the unlidded Jar 2, which doesn't trap the additional carbon dioxide.*)
  - What else did they learn from doing their own experiments about climate change?
  - Do a couple of degrees warmer matter?
7. Have students watch the YouTube video "[What Happens If Earth Gets 2°C Warmer?](#)"
8. Explain that the next lesson will address how they can help make a difference in climate change.



## Lesson 3: Activity Sheet

# Recording Results

### Group Activity: What Happens When You Put a Lid on It?

1. Record temperature of the room: \_\_\_\_\_

2. Record what you predict will happen ...

For JAR 1 (Air only): \_\_\_\_\_

What will the temperature be after adding heat source for 5 minutes? \_\_\_\_\_

For JAR 2 (Vinegar & baking soda without lid): \_\_\_\_\_

What will the temperature be after adding heat source for 5 minutes? \_\_\_\_\_

For JAR 3 (Vinegar & baking soda with lid): \_\_\_\_\_

What will the temperature be after adding heat source for 5 minutes? \_\_\_\_\_

3. Record what happened ...

For JAR 1 (Air only): \_\_\_\_\_

What was the temperature after adding heat source for 5 minutes? \_\_\_\_\_

For JAR 2 (Vinegar & baking soda without lid): \_\_\_\_\_

What was the temperature after adding heat source for 5 minutes? \_\_\_\_\_

For JAR 3 (Vinegar & baking soda with lid): \_\_\_\_\_

What was the temperature after adding heat source for 5 minutes? \_\_\_\_\_

4. What conclusions can you draw from this activity? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5. Does it matter if the world gets warmer by a couple degrees Celsius (3.6 degrees Fahrenheit)? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



## Lección 3: hoja de actividades

# Registro de resultados

### Actividad grupal: ¿qué sucede cuando le pones una tapa?

1. Registra la temperatura de la habitación: \_\_\_\_\_

2. Registra lo que predices que sucederá ...

Para el FRASCO 1 (sólo aire): \_\_\_\_\_

¿Cuál será la temperatura después de agregar la fuente de calor durante 5 minutos?

\_\_\_\_\_

Para el FRASCO 2 (vinagre y bicarbonato de sodio sin tapa): \_\_\_\_\_

¿Cuál será la temperatura después de agregar la fuente de calor durante 5 minutos?

\_\_\_\_\_

Para el FRASCO 3 (vinagre y bicarbonato de sodio con tapa): \_\_\_\_\_

¿Cuál será la temperatura después de agregar la fuente de calor durante 5 minutos?

\_\_\_\_\_

3. Registra lo que sucedió ...

Para el FRASCO 1 (sólo aire): \_\_\_\_\_

¿Cuál fue la temperatura después de agregar la fuente de calor durante 5 minutos?

\_\_\_\_\_

Para el FRASCO 2 (vinagre y bicarbonato de sodio sin tapa): \_\_\_\_\_

¿Cuál fue la temperatura después de agregar la fuente de calor durante 5 minutos?

\_\_\_\_\_

Para el FRASCO 3 (vinagre y bicarbonato de sodio con tapa): \_\_\_\_\_

¿Cuál fue la temperatura después de agregar la fuente de calor durante 5 minutos?

\_\_\_\_\_

4. ¿Qué conclusiones puedes sacar de esta actividad? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

5. ¿Tiene importancia que el mundo se calienta un par de grados Celsius (3.6 grados Fahrenheit)? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



### Lesson 4: A Call to Action



**Introduction:** This lesson will review “True or False?” statements, examine carbon footprints, and create calls to action to help make a difference in climate change.



**Time:** One class period (45-60 minutes)



#### Objectives for Students:

- Identify true or false statements about climate change from Lesson 1 activity sheet
- Understand the meaning of a carbon footprint
- Discover how activities and choices influence their carbon footprint and how they might lower it
- Create a plan for future action



#### Common Core Standards for Science:

- Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
- Ask clarifying questions based on evidence about the factors that have caused climate change over the past century.

### ACTIVITY SHEET ANSWER KEY

1. Planting trees reduces carbon in the atmosphere. (T)
2. Electric vehicles produce carbon tailpipe emissions. (F)
3. It is possible to clean dirty air. (T)
4. Carbon-filled air is gray or black. (T)
5. Solar and wind power is clean power. (T)
6. Carbon dioxide is the only greenhouse gas. (F)
7. Global warming is not affecting coral reefs. (F)
8. Transportation is a small source of carbon emissions. (F)
9. Eating less beef can help reduce greenhouse gases. (T)
10. Global warming is a natural phenomenon. (F)
11. Some areas of the world are more responsible for producing greenhouse gases. (T)
12. Climate change does not affect people the same across the world. (T)

### EXTEND STUDENT LEARNING

#### How to Spread Awareness About Climate Change

<https://www.wikihow.com/Spread-Awareness-About-Climate-Change>



#### MATERIALS

- Activity Sheet: “What Is Your Carbon Footprint?” (available in English and Spanish)
- “True or False?” activity sheets from Lesson 1



#### ACTIVITY DIRECTIONS

1. Hand out the “True or False?” activity sheets from Lesson 1. Ask students to fill out the right-hand column based on what they have learned. Discuss any changes in responses, asking students to highlight any statements they wish to explore further.
2. Have students watch the YouTube video [“The Carbon Footprint”](#) for a simple explanation.
3. Review the meaning of *carbon footprint*. (A *carbon footprint* is the amount of greenhouse gases, including carbon dioxide and methane, that is generated by other actions.) The average carbon footprint for a person in the United States is 16 tons per year, one of the highest in the world. The average global carbon footprint is closer to 4 tons per year.
4. Distribute the activity sheet “Carbon Footprint Worksheet” to each student. Give them 10 minutes to calculate their own personal carbon footprint.
5. Ask the class these questions:
  - How surprised are they by their footprints? How might they reduce their footprints individually? (*Try eating lower on the food chain, replace light bulbs, plant a tree*) Are there any ways they could help reduce their school's carbon footprint? (See [Green Schools Initiative](#))
6. Have students watch the YouTube video [“I Can't Do Anything About Climate Change . . . Right?”](#)
7. Students can be empowered by becoming leaders in change. Discuss some options from the video for how to create calls to action, considering these questions:
  - How can they use their skills and abilities and interests to make a difference? What do they enjoy doing? What are they good at?
8. Ask the class to create calls to action to help make a difference in climate change.



## Lesson 4: Activity Sheet

# What Is Your Carbon Footprint?

Circle the answers to the questions below. Choose one answer unless otherwise stated.

1. How do you get to school?
  - a. Walk (0)
  - b. Bike (0)
  - c. Car (1,115)
  - d. Bus (131)
  - e. Carpool (459)
2. Do you eat mostly ...
  - a. Fast food (4,818)
  - b. Home-cooked food (629)
3. Do you eat mostly ...
  - a. Vegetables and fruits (153)
  - b. Meat (644)
  - c. Bread (364)
4. Do you turn off the lights when you leave a room?
  - a. Yes (133)
  - b. No (268)
5. Do you unplug appliances and chargers when not in use?
  - a. Yes (9)
  - b. No (18)
6. How do you your dry clothes?
  - a. Hang to dry (0)
  - b. Dryer (750)
  - c. Both (375)
7. Do you turn off the water when brushing your teeth?
  - a. Yes (34)
  - b. No (274)
8. If you have a TV, do you turn it off when you're not watching it?
  - a. Yes (47)
  - b. No (140)
9. If you have a video game system, do you turn it off when you're not using it?
  - a. Yes (29)
  - b. No (90)
10. Do you recycle? (Select all that apply for this question only)
  - a. Magazines (-15)
  - b. Newspapers (-90)
  - c. Glass (-7)
  - d. Plastic (-19)
  - e. Aluminum and steel cans (-86)

Now, add up all the numbers in parentheses for your answers and put the total here:

This is your "carbon footprint" in the number of pounds of carbon dioxide per year. The lower the number, the fewer greenhouse gasses are emitted into the atmosphere, which helps slow climate change.

List some changes you might make in your life to reduce your carbon footprint:

I could turn off \_\_\_\_\_.

I could get to school by \_\_\_\_\_.

I could eat more \_\_\_\_\_.

I could recycle \_\_\_\_\_.





## Lección 4: hoja de actividades

### ¿Cuál es tu huella de carbono?

Encierra en un círculo las respuestas a las preguntas que aparecen a continuación. Elige una respuesta a menos que se indique otra cosa.

1. ¿Cómo llegas a la escuela?
  - a. Caminando (0)
  - b. En bicicleta (0)
  - c. En automóvil (1,115)
  - d. En autobús (131)
  - e. En automóvil compartido (459)
2. Principalmente comes:
  - a. Comida rápida (4818)
  - b. Comida casera (629)
3. Principalmente comes:
  - a. Verduras y frutas (153)
  - b. Carne (644)
  - c. Pan (364)
4. ¿Apagas las luces cuando sales de una habitación?
  - a. Sí (133)
  - b. No (268)
5. ¿Desenchufas los aparatos y cargadores cuando no los usas?
  - a. Sí (9)
  - b. No (18)
6. ¿Cómo secas la ropa?
  - a. La cuelgo para que se seque (0)
  - b. Secadora (750)
  - c. Ambos (375)
7. ¿Cierras el grifo cuando te lavas los dientes?
  - a. Sí (34)
  - b. No (274)
8. Si tienes una televisión, ¿la apagas cuando no la estás viendo?
  - a. Sí (47)
  - b. No (140)
9. Si tienes un sistema de videojuegos, ¿lo apagas cuando no lo estás usando?
  - a. Sí (29)
  - b. No (90)
10. ¿Reciclas? (Selecciona todo lo que corresponda sólo para esta pregunta)
  - a. Revistas (-15)
  - b. Periódicos (-90)
  - c. Vidrio (-7)
  - d. Plástico (-19)
  - e. Latas de aluminio y hojalata (-86)

Ahora, suma todos los números entre paréntesis para tus respuestas y pon el total aquí:

Esta es tu "huella de carbono" en el número de libras de dióxido de carbono por año. Cuanto menor sea el número, menos gases de efecto invernadero se emiten a la atmósfera, lo que ayuda a lentificar el cambio climático.

**Lista algunos cambios que podrías hacer en tu vida para reducir tu huella de carbono:**

Podría apagar \_\_\_\_\_.

Podría ir a la escuela en \_\_\_\_\_.

Podría comer más \_\_\_\_\_.

Podría reciclar \_\_\_\_\_.