

Blue Impact: Introduction

Answer Key

DIRECTIONS

Answer the following questions while watching the New England Aquarium's **Blue Impact Introduction** video. It is a good idea to read all the questions before you start the video. You may also need to pause or replay sections to help you answer the questions.

QUESTIONS

1. Climate change is mostly due to _____ **b.** _____ .
 - a. thicker blankets covering the planet.
 - b. an increase in greenhouse gases in the atmosphere.**
 - c. more heat energy coming from the sun.

2. Is the following statement true or false?
You will need to explain your answer after the video.

Scientists have just recently discovered that more carbon dioxide in the atmosphere is increasing the temperature of the planet.

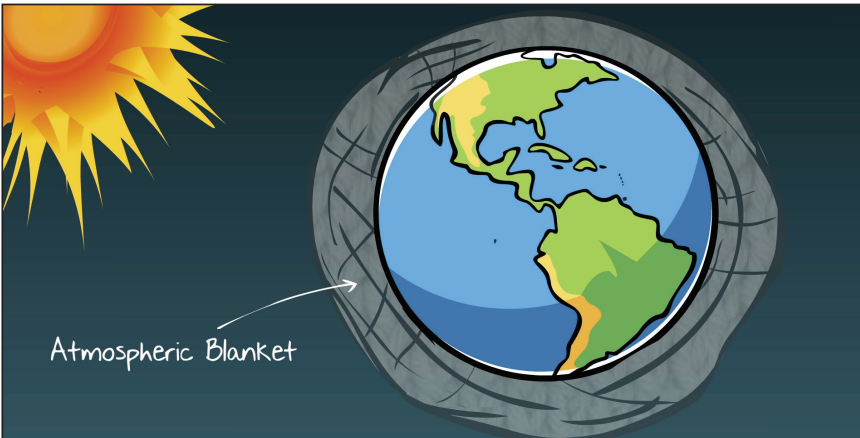
False

For Question #3, pause at minute 2:52.

3. Draw and describe how a car engine releases CO₂.

When we drive, our engines ignite fuel to create thrust and releases exhaust, which contains CO₂. This CO₂ floats up into the atmosphere and joins with other gases making a sort of BLANKET around the world.

4. Using words and/or drawings, explain how carbon dioxide in the atmosphere is like a blanket.



CO₂ floats up into the atmosphere and mixes with other gases making a sort of BLANKET around the world.

5. What percentage of the atmosphere is made up of CO₂?
- a. ***less than 1%***
 - b. 30%
 - c. 60%
6. How much has the carbon dioxide level in the atmosphere risen in the last 60 years?
- a. less than 1%
 - b. ***30%***
 - c. 60%

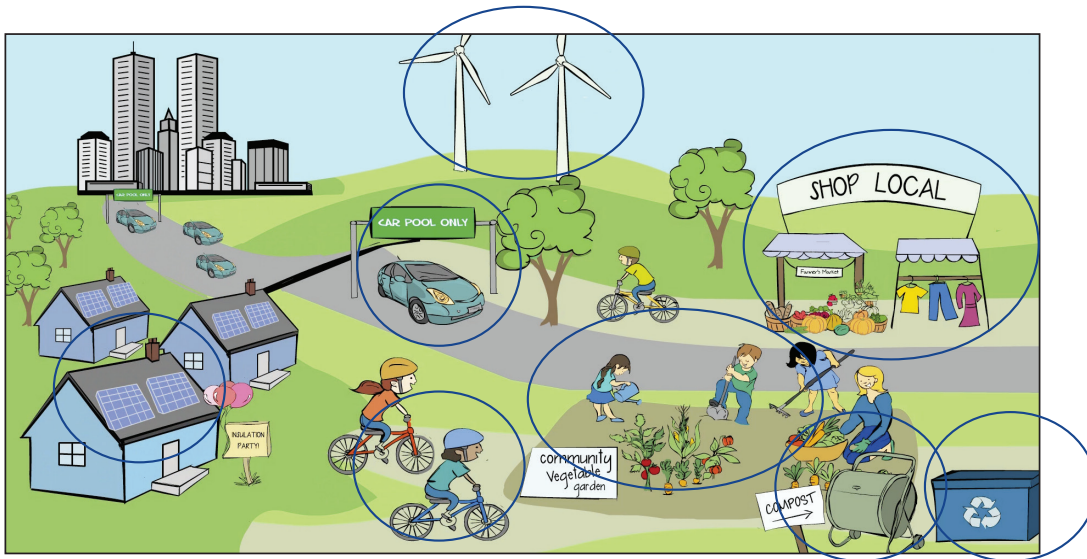
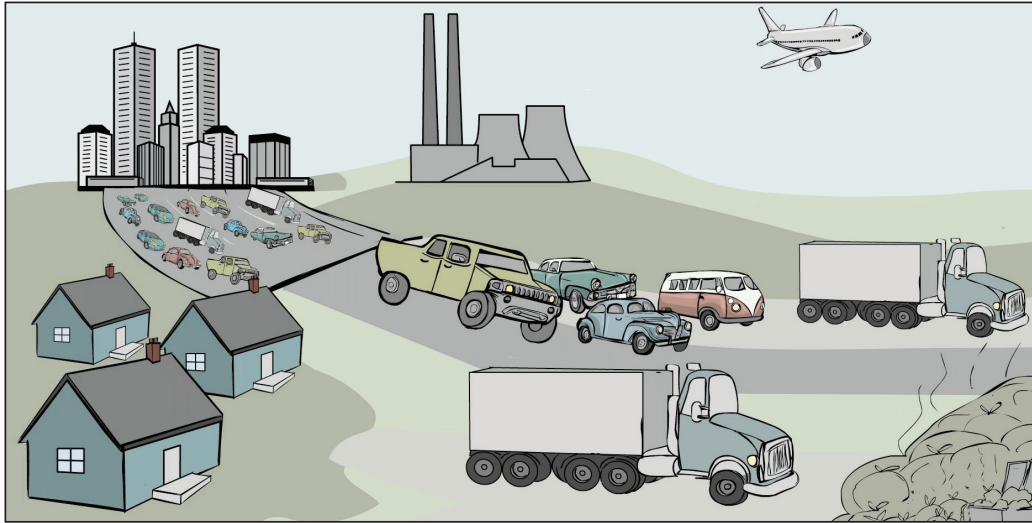
POST FILM QUESTIONS

1. Explain your answer to #2.

True or False? Scientists have just recently discovered that more carbon dioxide in the atmosphere is increasing the temperature of the planet.

False. Scientists have been monitoring the increase of carbon dioxide in the atmosphere for many years. The video “Unchained Goddess” shows scientists from the 1950s explaining how this increase is enhancing the greenhouse effect by warming the atmosphere.

2. Compare the two images from the video. Circle all the ways the community in the second picture has reduced their carbon footprint.



3. Pick one of the improvements that you circled in the second picture. Describe what has improved and how it helps reduce greenhouse gasses. An example has been done for you.

Describe what you see	What actions are they taking?	How does this help decrease the CO₂ blanket?
<i>Wind turbines instead of power plants</i>	<i>Making electricity from wind</i>	<i>Turbines do not need fossil fuels (stored carbon) to create electricity. They use natural windpower to create electricity. It does not add CO₂ to atmosphere like coal-power plants.</i>
Hybrid car in car pool lane	Investing in hybrid car and carpooling	Hybrid vehicles make less CO₂ emissions. More people per car means fewer cars and fewer emissions.
Shop local sign	Buying clothes and produce from local areas	Products that are made locally do not need to be transported as far by automobile, boat or plane. This reduces the amount of fuel consumed and reduces CO₂ in atmosphere.
Community vegetable garden	People working together to plant vegetables close to their homes	Products that are grown locally do not need to be transported as far by automobile, boat or plane. This reduces the amount of fuel needed and reduces CO₂ put into the atmosphere.
Compost bin	Composting food and other biodegradable materials instead of throwing the in the trash	Food scraps that are sent to a landfill decompose with the help of bacteria. The bacteria in landfills, which exist in the absence of oxygen (anaerobic environment), produce methane (CH₄). This is a greenhouse gas. Keeping a small compost bin at your house or school helps to keep food out of landfills and cuts down on the greenhouse gases.
Recycling bin	Recycling materials instead of throwing them in the trash	It takes energy to create new products. If products are reused and recycled then the overall amount of energy used is reduced. Using less energy means using less fossil fuels, which reduces the amount of excess greenhouse gasses. Also when we keep items out of landfills, we are helping to reduce the amount of methane (CH₄) produced in landfills.
Person riding bike	Riding a bike instead of driving/riding in a car	Riding a bike requires zero fossil fuels. This is a great way to get exercise and help the planet.

CHALLENGE QUESTION

1. Feedback Loops

Using the definition of positive feedback loop and the example from the video, explain how melting sea ice can lead to an even warmer atmosphere.

Light-colored surfaces, like ice and snow, reflect the heat generated from the sun. This prevents absorption of too much heat on our planet, which keeps the temperature just right.

Dark-colored surfaces, like water and land, absorb the heat from the sun, which makes the dark surfaces warmer.

As the planet becomes warmer, the amount of ice decreases, leading to less light-colored surfaces. The more the ice melts, the more dark surfaces appear, which absorb even more heat. The ocean temperatures are rising since they absorb more heat and it creates a cycle of warming. This is called a positive feedback loop. This is not because it's a good (positive) thing, rather it adds to the heating problems creating more warming, hence the positive or additive result.