Class: **6th Science** Dates**: 4/20-4/24 – week 1** Expected time on tasks: **30 Min / school day**

Grading in Science: In our Distance Learning term, your science "class" will be project based. Each week there will be a final project that is required. The project will be broken into chunks that will each get independent grades that will be outlined in the Focus chart like the one below.

Week 1 Project: Design a Time Capsule – you may have already started this as part of the "Challenge" last week, in the project you'll be adding a little science to it!

TASK: Build an on-going Corona Virus Time Capsule. *YOU, right now, are participating in the World's history! That's right, this time, Spring 2020, will be something identified in history books and articles going forward, your own children or grand-children may learn about your experiences, and the experiences of others all over the world, in* ***their*** *history classes in school!* ***Can you imagine helping your grand-kids do their history homework because YOU actually lived what they are reading about????***

Content Focus and Materials	Directions	Check-ins and support	Submission of work
Focus: ***How does a global event change science?*** Background research: • Virus article • Carbon Pollution article Response Journal (can be completed on regular writing paper, does not need to be printed.)	1) Read the background research articles on Viruses and on Carbon Pollution and complete the response activity (2 pages) 2) Add additional writings in a more "diary" style about what a "normal" day is like now. What sorts of things do you do? What are you learning? How? What are your feelings? What is different? What is the same? These don't all have to be diary entries, some can be poems or song lyrics, or even pictures with captions or memes 3) Add notes about other things you have seen, heard or read (from professional sources) about the impacts that the Shelter-in-Place and the virus are having on the world. Try to keep your notes related to "science-y" stuff – medical sciences, engineering sciences, research sciences, social sciences, environmental sciences, etc. 4) Include at least one list – some things you might list are: games you are playing, music you are listening to, books you are reading, or movies or shows you are watching 5) Finally add some pictures – they can be drawings or photos (or some of each), you can be in them or not.	**E-mail office hours**: every school day, 8AM-3:30PM, after hours emails may be available if teacher schedules allow. **Video office hours:** **JOHNSTON** (history/science): Monday-Friday: 10:30 AM-12:30 PM Includes "Lunch with your Teachers" **MARTIN** (math/science): Monday – Thursday: 9:00 AM – 10:30 AM and 4:45 PM – 5:15 PM Friday: 9-10:30 and 12-12:30 "Lunch with your Teachers" **WHITE** (ELA/science): Monday-Thursday: 10:00 AM – 11:00 AM Friday: 10:00AM-11:30 and 12:00-12:30	***Since hard-copy work will not be returned to students, we request that the work on this project be submitted via email or pictures if at all possible.*** On-line work is due no later than 2:30 PM Friday. If necessary, hard-copy work can be turned in at Freiler following the calendar, however that work will **NOT** be returned to students.

Will coronavirus reduce carbon pollution?

By The Guardian, adapted by Newsela staff on 04.02.20
Word Count **687**
Level **1090L**

Image 1. An aerial view of a main road during the first day of national quarantine to stop the spread of the new coronavirus on March 25, 2020, in Bogota, Colombia. With factories, airports and entire cities shutting down, analysts say it is possible that this will lead to the first fall in global emissions since 2008. Photo: Daniel Munoz/VIEWpress/Getty Images

The coronavirus outbreak has caused alarm around the world. To slow the spread of the virus, many countries have ordered factories and businesses to temporarily close. They've also told citizens to stay at home.

This decrease in productivity has resulted in a worldwide decrease in carbon dioxide (CO_2) emissions. When people burn fossil fuels such as coal and oil, they release gases such as carbon dioxide into the atmosphere. The gases trap heat in the atmosphere, contributing to global warming, or an overall increase in temperatures around the world.

Environmental activists say that the virus has demonstrated how leaders can take emergency actions to protect their citizens. These activists believe that officials should act with this same urgency when it comes to the environment.

The First Fall In 10 Years

The coronavirus first appeared in China, the country that is also the world's largest carbon dioxide emitter. The government shut down many factories because of the virus. While this means that the country is producing fewer goods and making less money, it has also resulted in less pollution released into the air.

On the advice of health authorities, millions of people around the world are avoiding going to school, the office or traveling. The cancellations of conferences and large gatherings around the world mean that airplanes are releasing thousands of tons less carbon dioxide. Global air traffic decreased by 4.3 percent in February.

If this trend continues, experts say it might lead to the first drop in global emissions in more than 10 years. Even a slight decrease in carbon dioxide emissions could help climate action.

Rob Jackson is the chair of the environmentalist group Global Carbon Project. He said this trend would only be meaningful if it led to behavioral change in the longterm. "If this could change the way we travel, it could lead to more virtual meetings," he said. Otherwise, "I see no silver lining to the coronavirus," as it won't result in meaningful change in the long term, he said.

The Crisis May Slow But Not Reverse Emissions

Scientists estimate that so far, the virus has stopped China from releasing about 200 megatons of carbon dioxide. A megaton is 1 million tons. However, these gains could be short-lived if factories later reopen and crank up production to make up for lost business.

Experts say it is too early to know if the coronavirus will push global carbon emissions into a decline. It is hard to predict the likelihood of keeping global temperatures down. It depends on how far the outbreak spreads, and whether the economic effects are prolonged.

Corinne Le Quéré is a professor of climate science at the University of East Anglia in England. She said that so far the crisis is only likely to slow carbon emissions, not reverse them. Over the past 10 years, emissions have grown about 1 percent each year, meaning that "you would need a really big reduction to see a fall this year." It's possible, she said, "but I don't think we can say at this stage."

A Slowdown Could Help Activists

A slowdown in emissions would gain time for activists, noted Le Quéré. It would allow for advances in technology and more time to put public pressure on governments to change their plans. The response to the coronavirus also shows that taking action can make a difference.

American author and environmentalist Bill McKibben wrote that no environmentalist should welcome a crisis, but they could learn from it. Economic disruption is not a good way to deal with global warming in the long term, he says.

However, McKibben is satisfied with the demonstration that people can change. He noted that millions of people seem to have learned new patterns, and companies are allowing employees to

work from home. With the opportunity to work from home, he explained, we can benefit from using less gasoline and needing less room for offices.

Quiz

1 Which sentence from the section "The First Drop In 10 Years" BEST explains WHY pollution has decreased?

(A) The coronavirus first appeared in China, the country that is also the world's largest carbon dioxide emitter.

(B) On the advice of health authorities, millions of people around the world are avoiding school journeys, shopping runs and office commutes.

(C) If this trend continues, experts say it might lead to the first drop in global emissions in more than 10 years.

(D) Otherwise, "I see no silver lining to the coronavirus," as it won't result in meaningful change in the long term, he said.

2 Which section from the article BEST explains why carbon dioxide emissions lead to climate change?

(A) introduction [paragraphs 1-3]

(B) "The First Drop In 10 Years"

(C) "The Crisis May Slow But Not Reverse Emissions"

(D) "A Slowdown Could Help Activists"

3 Which statement would be MOST important to include in a summary of the article?

(A) Fossil fuels release carbon dioxide into the atmosphere, which contributes to climate change.

(B) Environmental activists think that governments should protect people from climate change.

(C) Reactions to the coronavirus outbreak have led to a temporary decrease in pollution.

(D) The first case of the coronavirus was detected in China, but people are not sure what caused it.

4 Which two of the following sentences from the article include central ideas of the article?

1. *This decrease in productivity has resulted in a worldwide decrease in carbon dioxide (CO_2) emissions.*
2. *Global air traffic decreased by 4.3 percent in February.*
3. *However, these gains could be short-lived if factories later reopen and crank up production to make up for lost business.*
4. *With the opportunity to work from home, he explained, we can benefit from using less gasoline and needing less room for offices.*

(A) 1 and 2

(B) 1 and 3

(C) 2 and 4

(D) 3 and 4

Modified from: **Ducksters: Viruses** https://www.ducksters.com/science/biology/viruses.php

What are viruses? Viruses are very small particles that can infect animals and plants and make them sick. Viruses are made up of genetic materials like DNA and are protected by a coating of protein. Viruses hijack the cells of living organisms. They inject their genetic material right into the cell and take over. They then use the cell to make more viruses and take over more cells.

***Are viruses alive?** Scientists differ on whether viruses are actually alive or not. Many people say they are non-living because they cannot reproduce without the aid of a host. Viruses also do not metabolize food into energy or have organized cells, which are usually characteristics of living things. When viruses invade a body's cells and begin to multiply, they make the host sick. Viruses can cause all sorts of diseases.

Characteristics of Viruses

- They do not have an organized cell structure.
- They have no cell nucleus.
- They typically have one or two strands of DNA or RNA.
- They are covered with a protective coat of protein called the CAPSID.
- They are inactive when not inside a living cell, but are active when inside another living cell.

How do viruses spread? Viruses are very small and lightweight. They can float through the air, survive in water, or even on the surface of your skin. Viruses can be passed from one person to another by shaking hands, touching food, through water, or through the air when a person coughs or sneezes. Viruses can also be passed on by insect bites, animals, or through bad food.

Examples of Viruses There are many viruses that can infect people and make them sick. One of the most common is influenza which causes people to get the flu. Other diseases caused by viruses include the common cold, measles, mumps, yellow fever, and hepatitis.

How to Avoid Getting Infected There are things you can do to help reduce your chance of getting infected by a virus. Here are a few examples:

- Wash your hands (probably one of the most important ones).
- Don't put your hands or fingers in your mouth, nose, or eyes. Rubbing your nose or eyes can cause a virus on your hands to infect your body.
- Make sure your food is well-cooked, especially meat.
- Get plenty of sleep and exercise. This helps to strengthen your immune system to fight off viruses.

How are viruses treated? There is little that doctors can do to treat viruses. In most cases our body's immune system fights off the virus. Scientists have developed vaccines that help our bodies to build up immunity to a specific virus. One example of a vaccine is the flu shot. The flu shot helps the body to develop its own defenses against the flu called antibodies.

Interesting Facts about Viruses

- Viruses are not classified in any of the five kingdoms of living things. This means they are not bacteria, fungi, protists, plants, or animals.
- Most viruses are so small they cannot be seen with an optical microscope.
- The word "virus" comes from the Latin word "virulentus" meaning "poisonous."
- Viruses can sometimes attack and kill bacteria.
- The first human virus discovered was the yellow fever virus in 1901 by Walter Reed.

Response and Reflection

Response and Reflection
Do this after reading **BOTH** articles

In your own words, describe how carbon dioxide emissions lead to climate change.	Scientists disagree about whether to classify viruses as "living" or "nonliving" – which do you think? Give at least 3 pieces of evidence to support your opinion.
Explain in well-written sentences how the articles are related to each other **and** why the information is good to have in your time capsule.	Explain at least two predictions you have about how the science world might be different after the Pandemic.
If you had to pick only ONE important thing the world is learning from the Pandemic, what would it be?	