

Earth, Our Fragile Home: Waste, Methane and Climate Change

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Overview

Our Earth, our fragile home, has been experiencing many changes in its climate and environment over the past century. The evidence in these changes can be seen by studying the weather, oceans, and our ecosystems. Since the 1800s, our temperature has increased by an average of more than 1.5 degrees Fahrenheit. Although there are some natural causes for this change, humans have a huge impact on this problem. We, as humans, are releasing tons and tons of Carbon Dioxide and Methane, which are the two major greenhouse gases, also known as GHG. These greenhouse gases (GHG) are getting trapped in our Earth's atmosphere with nowhere to go, in return causing the temperatures and weather patterns to change. This change to our society is usually referred to as global warming, the greenhouse effect, and climate change.

Climate change has created a variation in our precipitation patterns. Increased our ocean temperatures. Melted our glaciers. Changed the intensity and frequency of natural disasters such as hurricanes. Altered the characteristics of the seasons as we know it. Threatened our health as humans. And we are in desperate need for finding a solution.

One of the causes of these two gases in our atmosphere is the use of landfills. The decomposition in landfills produces Carbon Dioxide and Methane, if the landfills are not maintained and treated properly.

Students will take two- three weeks around Earth Day to study the many aspects around this issue, in particular, what effects our waste has on climate change. Students will practice using different instruments in order to collect and record data from the weather. They will have to compare and contrast the weather recorded previously in history. Once they see how much our daily weather has changed over 50 years, students

will then look into the causes of our climate change, mainly focusing on what we do with our waste. By the end of this unit, students will have to work together to create possible solutions that they can incorporate to their everyday lives, in order to help our global situation.

In this curriculum unit, we are combining concepts in math and science, as well as having the students take ownership to protect their home, Earth. Taking this approach will allow students to interactively apply math skills in real life situations with concepts that are the key to their futures. Students will collaborate with fellow students and gain independent knowledge of how to help our Earth stay safe from the greenhouse gases that are released by our own waste.

Rationale

Nowadays, our curriculum is so focused on only what is tested, but as a teacher, I believe it is imperative that my students are educated on what is going on around them. Climate change is a great topic for students to study because it integrates so many subjects. It touches on various sciences such as: environmental, biology, chemistry, geography, etc. Besides the science standards, this topic requires students to use analytical tools and math skills to exercise their abilities to research, think, and understand complex issues.

Standards

Math

- CC.2.1.6.E.2 Identify and choose appropriate processes to compute fluently with multi-digit numbers.
- CC.2.1.6.E.4 Apply and extend previous understandings of numbers to the system of rational numbers.
- CC.2.4.6.B.1 Demonstrate an understanding of statistical variability by displaying, analyzing, and summarizing distributions.

Science

- 3.3.4.A5. Describe basic weather elements. Identify weather patterns over time.
- 3.3.5.A5. Differentiate between weather and climate. Explain how the cycling of water, both in and out of the atmosphere, has an effect on climate.
- 3-ESS2-2. Obtain and combine information to describe climates in different regions of the world.
- MS-ESS3-5. Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.
- MS-ESS2-5. Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions.

Objectives

This unit is intended for students in Grade 6. This sixth grade is an inclusion classroom with 28 students. The students cycle once in the first half of the day. One sixth grade teacher teaches literacy and social studies, while I teach math and science. The students have a 45-minute lunch, along with a 45-minute prep in the morning, which includes the following: music, computer, gym, and School Academic Music Program.

The Objectives of the unit will include the following:

Science

- SWBAT use tools IOT to collect and record data of the weather.
- SWBAT access and understand long term local climate data IOT identify the effects of the climate change to our Earth.
- SWBAT understand the general distinctions between weather and climate.
- SWBAT understand the limitations of sending municipal waste to a landfill IOT create and innovate solutions.
- SWBAT understand the process of waste disposal IOT identify the consequences of our landfills.
- SWBAT develop and express an opinion on solid waste management.

Math

- SWBAT use a set of numerical data IOT recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.
- SWBAT understand a set of data collected IOT answer a statistical question that has a distribution which can be described by its center, spread, and overall shape.
- SWBAT use a set of numerical data IOT recognize that a measure of center for a numerical data set summarizes all of its values with a single number.
- SWBAT use a set of numerical data IOT recognize that a measure of variation describes how its values vary with a single number.
- SWBAT use numerical data and apply statistical properties IOT display line plots on a number line.
- SWBAT use numerical data and apply statistical properties IOT display histograms on a number line.
- SWBAT use numerical data and apply statistical properties IOT display box-and-whisker plots on a number line.
- SWBAT report the number of observations IOT summarize numerical data sets in relation to their context.
- SWBAT give quantitative measures of center (median and/or mean) IOT summarize numerical data sets in relation to their context.

- SWBAT give quantitative measures of variability (range, interquartile range and/or mean absolute deviation) IOT summarize numerical data sets in relation to their context.
- SWBAT describe any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered IOT summarize numerical data sets.
- SWBAT relate the choice of measures of center and variability to the shape of the data distribution IOT summarize numerical data sets in relation to their context.

This unit will take approximately two weeks. The activities are intended to be cross-curricula, including mathematics, social studies, and science.

Background

Weather

Weather is the mix of different events that are occurring in the atmosphere (air) at a specific place and time. Weather is reported daily and includes six basic elements which are temperature, humidity, atmospheric pressure, wind, precipitation and cloudiness.

- Precipitation- falling products of condensation in the atmosphere, as rain, snow, or hail. The amount of rain, snow, hail, etc., that has fallen at a given place within a given period, usually expressed in inches or centimeters of water. (Merriam Webster)
 - Rain- moisture condensed from the atmosphere that falls visibly in separate drops. (Merriam Webster)
 - Snow- atmospheric water vapor frozen into ice crystals and falling in light white flakes or lying on the ground as a white layer. (Merriam Webster)
 - Sleet- a form of precipitation consisting of ice pellets, often mixed with rain or snow. (Merriam Webster)
 - Hail- pellets of frozen rain that fall in showers from cumulonimbus clouds. (Merriam Webster)
 - Ice- frozen water, a brittle, transparent crystalline solid. (Merriam Webster)
- Wind- the perceptible natural movement of the air, especially in the form of a current of air blowing from a particular direction. (Merriam Webster)
- Temperature- the degree or intensity of heat present in a substance or object, especially as expressed according to a comparative scale and shown by a thermometer or perceived by touch. (Merriam Webster)

Climate

Climate is the long-term pattern of weather in a particular area. It is measured by assessing the patterns of variation in temperature, humidity, atmospheric pressure, wind, precipitation, atmospheric particle count and other meteorological variables in a given region over long periods of time. (Merriam- Webster Dictionary) Climate could also be defined as the “average weather” for a specific place over an extended period of time. Climate Change/ Global Warming

Climate affects the interaction of our atmosphere and things like land, air, and water through the exchange of gases. Some of these gases are called Greenhouse Gases, also known as GHG. Environmentalists have classified these gases as “greenhouse gases” because they have the same “heat- trapping” effect of greenhouses, which are used to grow plants under many different conditions. There are three main gases classified under GHG. These gases are carbon dioxide, nitrous oxide, and methane. Basically, these gases are trapping the heat from the whole planet and thus warming our planet, hence “climate change”.

Our temperatures across the world are rising. When you look at the data, many places have seen changes in rainfall, resulting in more floods, droughts, or intense rain. Our planet's oceans and glaciers have also undergone some big changes. For instance, our oceans' temperatures are fluctuating, which is causing our glaciers and ice caps around the world to melt. With this being said, it only makes sense that our sea levels are rising due to the increased input of freshwater from melting snow and ice. As these and other changes become more pronounced in the coming decades, they will likely present challenges to our society and our environment.

According to NASA, here are the following statistics of climate change which are currently affecting our Earth:

- Our global temperatures have increased 1.4 degrees Fahrenheit (0.78 degrees Celsius) since 1880. What is most shocking though, is that the 10 hottest years on record are since the year 2000.
- Our carbon dioxide levels have risen to around 403 parts per million. This is the highest it has been in over 650,000 years.
- The Arctic ice has melted 13.5% in just 10 years, making it the lowest amount in history.
- Ice on land is diminishing by 287 billion metric tons per year. Between 1996 and 2005, Greenland's ice volume has decreased by more than half.
- Our sea level is on average rising about 3.5mm per year. Over the past 100 years, our sea level has risen a whopping 7 inches.
- Global methane levels have risen to 1800 parts per billion by 2011. This is the highest methane levels have been since at least 800,000 years. Its levels are

higher in the Northern Hemisphere since most sources (both natural and human) are located on land and the Northern Hemisphere has more land mass.

Causes of Climate Change: Methane Gas

Carbon dioxide, nitrous oxide, and methane are all natural gases that are necessary for our atmosphere to function, but with the rising and threatening levels, we have to realize that humans are the main, if not the sole contributor to the climate change we are experiencing.

Carbon dioxide is our most common GHG because it is produced when we burn fossil fuels to generate energy. “Fossil fuel is a general term for buried combustible geologic deposits of organic materials, formed from decayed plants and animals that have been converted to crude oil, coal, natural gas, or heavy oils by exposure to heat and pressure in the earth's crust over hundreds of millions of years (Merriam- Webster).” Although it is the most common GHG, it is not the most potent. In fact, methane proves to be our worst GHG that we produce here on Earth.

Methane is a gas that is created through the breakdown of organic materials from our waste in landfills. These organic materials include wood, paper products, gardening materials, and wasted food. Methane gas is also released due to the general warming from melting permafrost. Unfortunately, methane is 80 times more potent than carbon dioxide, which makes this gas extremely harmful to our Earth and one of the leading factors to the greenhouse effect, global warming.

Landfills

Landfills are places where we dispose of waste materials, such as paper, wood, food, etc., by burying these materials in the land. These materials cover a wide range from household trash to industrial waste. Once the waste is placed in the landfill, this waste is then covered with soil, which is the method of filling. According to the Environmental Protection Agency, the United States has 3,091 active landfills and over 10,000 old landfills that are no longer in use.

In 2015, the journal Nature Climate Change published a figure that shows Americans disposed a total of 262 million tons of waste in 2012 (Nature Climate Change). It is clear that we as Americans enjoy our material items. When our economy is prosperous, and items are cheaper, we feel we can afford to waste or “throw out” and get something new. Americans as a whole over consume materials. Think about how often we use and dispose of plastic bags, paper, soda cans, etc. When these items are disposed, they are taken to a landfill. Each of these items has a so-called life expectancy of how long they will take to decay, if ever.

Here is a list of various items that are common wasted products and the length of time it takes to decompose into the environment:

Item	Length of Time to Decompose (Avg.)
Glass Bottle	1 million years
Plastic Bottle	450 years
Aluminum Can	80-200 years
Newspaper	6 weeks
Orange/ Banana Peel	2-5 weeks
Plywood	1-3 years
Leather	50 years
Paper bag	1 month
Rubber Sole (on the bottom of your shoe)	50-80 years
Disposable Diapers	450 years
Paper Towel	2-4 weeks
Mirror	Indefinite
Batteries	Indefinite

These are just some of the items that we have placed in the trash and in turn in our landfills. When these items breakdown and decompose, methane gas is produced and released into our atmosphere. Methane gas created from waste in landfills accounts for roughly 85% of the total greenhouse gas emissions of methane. In the article, "Landfill and Climate Change", it was stated that the methane is largely produced by our paper products sitting in the landfills. Paper is currently the largest component in landfills making up about 32% of the total landfill.

The Environmental Protection Agency estimates that landfills are the third largest cause of methane gas emissions in the United States.

Strategies

This unit will contain age- appropriate activities that will be included cross- curricular in both science and mathematics. Lessons will be differentiated to meet IEP learning goals and reach every student. Students will access a wide variety of sources, including web, text, videos, and art in order for students to get a deeper understanding of the difference between weather and climate and the effects that it has on our earth. Students will do research and hands-on activities to help them better understand these concepts, both mathematically and scientifically. Hopefully, with these strategies, they will also be able to apply their new found knowledge to innovate ways that they can help protect our Earth now and for their future.

Blended Learning

As educators teaching students in the 21st century, it is imperative that we incorporate technology in their learning environment and experiences. In a blended learning environment, students will learn partially through face- to- face instruction and the other part will allow students to complete or research necessary items through their own navigation of online media. Students will be given guidelines and general timelines to complete the task at hand, but they will also have some control of how they go about completing the task.

Journal Reflections

Within this two-week curriculum unit, students will engage in journaling. At the beginning of every class, students will be given a picture, it could be of a landfill, and animal who lives in the arctic, different mines, etc. Each journal will include a brief and general description, along with prompts and questions to help guide the students in creating their own thoughts and opinions. The students will be given five to ten minutes to write freely in response to the prompt. This strategy allows students to integrate the knowledge they have learned in previous classes about the climate change, as well as the knowledge the students have attained from their day-to- day life. Journaling helps document the students' growth throughout the curriculum unit and it will allow students to record questions or interesting facts. Setting this activity at the beginning of each lesson ensures that the students are reflecting and focusing on the topic at hand, so that they are ready for the lesson ahead.

Choice Boards

One of my main objectives as a teacher is to encourage and guide students to become independent learners. Students need to take ownership of their learning process and the activities they complete. Choice boards are an excellent strategy, which gives the students an active role in their learning by giving the student options. For a choice board, the teacher first has to determine the objective. Once the objective and purpose have

been established, the teacher will choose activities, which help reach the outcome of the designated objective. There should be a wide variety of activities that will inspire the many different types of learners within the classroom. The choices will then be visually represented to the students, whether in words, or by examples. Students will then be given the direction to choose one, or more than one activity that is consistent with their needs. With this strategy, it allows students to choose a project or activity that they are interested in, which will result in a better product and comprehension.

Differentiation

In a classroom there are many types of learners. Each student comes to class with different cultural backgrounds, academic backgrounds, interests, learning styles, etc. It is important to differentiate the content, instruction, and student products in order to ensure the success of all students. Differentiation is the matching of appropriately challenging curriculum and instruction with a student's ability, interests, and learning styles through a variety of activities, strategies, and material ("Differentiation"). In this curriculum unit, all students will be learning the same content, but each student's needs will be addressed throughout the unit. Students will show their understanding in a variety of ways that is personal to their needs. Lessons will ensure to challenge students through tiered activities and higher order questioning. With planning, differentiation will help each child accelerate as a life long learner, while reaching the goal of each objective for the unit.

Comparing and Contrasting (Venn Diagrams)

This unit focuses on the changes that our Earth has undergone from the past to the present. Using the strategy of comparing and contrasting will encourage students to identify the similarities and differences of our climate from 100 years ago to today. Students will be able to classify the information being taught, which will help them recognize what the past and present have in common, along with pinpointing what is different. Students will be looking at both statistics, which will include sea level, temperature, emissions, etc. Having students classify the similarities and differences will help them think deeper as to what is causing these changes and how we might be able to stop them.

Share- Alouds

Classroom Activities

Lesson 1: Understanding the difference between climate and weather

Time: One 45- minute social studies/science block

Objectives:

1. SWBAT understand the general distinctions between weather and climate.
2. SWBAT use tools IOT collect and record data of the weather.

Materials:

- Venn Diagram (Appendix B)
- Video link- Weather vs. Climate <https://www.youtube.com/watch?v=YbAWny7FV3w>
- Index card

Procedure:

1. At the beginning of the lesson, hand students an index card. Allow students a few minutes to write down everything that they know about weather on one side of the index card and climate on the other side. (By 6th grade, students have learned the contents of weather and climate in various grades, so it should be prior knowledge.) Students will then share aloud with their group about their previous knowledge. Students will be able to remind one another about the key details they remember of climate and weather.
2. Show video to class.
3. As a class, we will share the important facts from the video create notes.
4. In partners, students will then complete a Venn diagram to compare and contrast the similarities and differences of weather and climate.
5. Students will come to the board and create a class Venn Diagram as an anchor chart throughout the unit.

Lesson 2: Landfills and Waste Management: Recycle, Reuse, or Place in a Landfill

Time: One 45- minute social studies/science block

Objectives:

1. SWBAT understand the process of waste disposal IOT identify the consequences of our landfills.
2. SWBAT understand the limitations of sending municipal waste to a landfill IOT create and innovate solutions.
3. SWBAT develop and express an opinion on solid waste management.

Materials:

- Journal 1 (Appendix A)
- Video Link- Kids Talking Trash <https://www.youtube.com/watch?v=L9iNQucNaGI>
- Pre-made waste basket for each group of students. (Example: In a small bin, place a variety of items that are disposed of on a regular basis. These items could include water bottles, paper, wrappers, paper towels, etc.)

Procedure: Students will start the lesson with a reflection journal. This journal has a list of items found in landfills and how long it takes them to decompose. After a brief discussion with the journal, each group of students will be given a pre-made waste basket with commonly disposed of items. As a group, students will dig through the trash and make a list of the items they found. Once the items are identified, students will then sort through the items and decide whether the items should be recycled, reused, or placed in a landfill.

Lesson 3: Landfills and Waste Management

Time: One 45- minute social studies/ science block

Objectives:

1. SWBAT understand the process of waste disposal IOT identify the consequences of our landfills.
2. SWBAT understand the limitations of sending municipal waste to a landfill IOT create and innovate solutions.
3. SWBAT develop and express an opinion on solid waste management.

Materials:

- Journal 3 (Appendix A)
- Video Link- Video Field Trip- Landfills <https://www.youtube.com/watch?v=mA608GJ-EzM>
-

Procedure: Students will complete journal reflection and share their thoughts on the picture. Students will watch a short video clip how landfills work.

Lesson 4: Landfills

Time: Two 45- minute social studies/science block

Objectives:

1. SWBAT understand the process of waste disposal IOT identify the consequences of our landfills.
2. SWBAT understand the limitations of sending municipal waste to a landfill IOT create and innovate solutions.
3. SWBAT develop and express an opinion on solid waste management.

Materials:

- Journal 4 (Appendix A)
- Trash bags
- Masking Tape/ Duct Tape
- Water
- Measuring Cups

Procedure: Students will start the lesson with a journal reflection. Students will use the knowledge they have learned thus far to come up with reasons as to why ice is diminishing by 287 billion metric tons per year. Students will create a sequence chart/ timeline of the processes of landfills.

Day 1: Students can watch the following

video: <http://study.com/academy/lesson/sanitary-landfills-definition-and-issues.html>

After watching the video, there is an interactive quiz/ questions that they can answer independently or collectively. Will show the set- up of landfill and the types of pollution it creates.

Day 2: Water Pollution: Hands- On Activity: In the previous lesson, students will have watched a video on landfills. In this activity, students will gain a deeper knowledge of the problems with landfills by creating their own landfill liner. You may groups students together, with as many or as little students as you may like. Each group will be given a trash bag and duct tape. Instruct them to make a plastic bag that can hold one cup of water without leaking. Ask the students to think about why a bag might leak while making their designs. To test the bags, have one student hold the bag over a large beaker or measuring cup. Have the teacher or another student pour exactly one cup of water into the constructed plastic bag. Time one minute and then measure the water that leaked through the bag. Have students record their data on paper or on the board. Ask students to imagine trying to design the same type of liner for a landfill the size of a football field or larger. Would it leak? You can make this into a class competition.

Lesson 5: Project

Time: Approximately 1 week (5 90- minute math blocks)

Objectives:

1. SWBAT collect quantitative data IOT identify the different effects of climate change.
2. SWBAT understand a set of data collected IOT answer statistical question that has a distribution which can be described by its center, spread, and overall shape.
3. SWBAT use a set of numerical data IOT recognize that a measure of center for a numerical data set summarizes all of its values with single number.
4. SWBAT use numerical data and apply statistical properties IOT display histograms on a number line.
5. SWBAT report the number of observations IOT summarize numerical data sets in relation to their context.
6. SWBAT give quantitative measures of center (mean and/or median) IOT summarize numerical data sets in relation to their context.

Materials:

- Climate Change Project and Rubric (Appendix C)
- Computers and Internet Access
(Website: <https://www.wunderground.com/history/>)
- Calculators
- Map of the United States
- Map of the World
- Graph Paper
- Data Worksheet (Appendix D)
- Journal 5 (Appendix A)

Procedure: This is a project that will integrate math and social studies. Students will be able to follow the criteria located on the Climate Change outline located in Appendix D. Students will use the website listed above to collect the temperature for a specific location over the past 50 years. With this data, students will be able to find the mean, median, and mode. With this information they will be able to create line plots and histograms and will be able to write quantitative analysis.

Bibliography

Crashcoursekids. "Weather vs. Climate: Crash Course Kids #28.1." *YouTube*. YouTube, 23 Sept. 2015. Web. 03 May 2016.

- Great video clip that will help students remember the difference between weather and climate.

"Historical Weather." *Weather History & Data Archive*. Web. 17 June 2016.

- This website will allow students to find the weather for various dates, years, and locations for their climate project.

"Landfills And The Environmental Effects." *Live Life Green*. 6 Aug. 2009. Web. 03 May 2016.

- This is a great summary of what landfills are the problems with the pollution that they create. It also starts the discuss

"Newsletter." *Peace Research* 37.1 (2005): 1-10. *JSTOR*. Web. 03 May 2016.

- This is a great summary with specific details about what climate change is and the various reasons that it is occurring.

PearsonBio. "Video Field Trip - Landfill." *YouTube*. YouTube, 24 Mar. 2010. Web. 03 May 2016.

- Since field trips aren't always the easiest to plan, this video will allow students to feel like they are getting a personal tour on how landfills work.

"Public Health, Safety, and the Environment." *Frequent Questions*:. Web. 03 May 2016.

- This is a great cite that answers a wide variety of questions. This can be used to answer your questions or the questions your students might have.

"Quizlet." *Climate Change Vocabulary Flashcards*. Web. 17 June 2016.

- Interactive website with important terms and their definitions. Definitions are written, but can also be audio.

RecycleStuffCDR. "Kids Talkin' Trash (Part 1 of 2)." *YouTube*. YouTube, 05 July 2011. Web. 03 May 2016.

- This is a video made my students that talks about reusing, recycling, and reducing waste.

"Sanitary Landfills." *Study*. Web. 17 June 2016.

- Great video on how landforms work and the types of pollution that is created. There are interactive questions on line for students to answer when completed.

Name _____

Date _____

Journal 2



John Moore / Getty Images

The average person throws away 4.5 pounds of trash a day. This is a picture of a landfill that is located in **Nogales Landfill, Mexico**. Take a good look at the different items you can see in the landfill and reflect on the table form yesterday's journal with how long it takes certain items to decompose. Write a reflection on your thoughts, opinions, concerns, etc.

Name _____ Date _____

Journal 4



Ice on land is diminishing by 287 billion metric tons per year. Think about the videos and discussions we have had. What do you believe is one of the root causes of this?

Name _____

Date _____

Journal 5

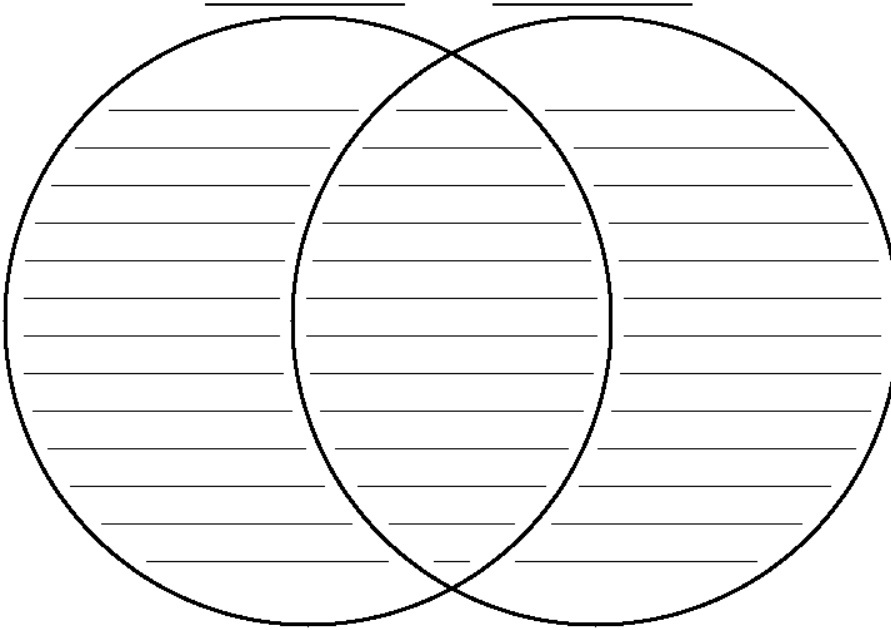


This is a picture of a recycling plant. Knowing that paper takes 2-5 months to decompose, plastic bottles take roughly 450 years to decompose and aluminum cans take between 80- 200 years to decompose. Why is it so important that we take recycling more serious?

Appendix B

Venn Diagram

Name : _____ **Venn Diagram**



Appendix C

Weather and Climate Project

Name _____ Date _____

SWBAT collect quantitative data IOT identify the different effects of climate change.

1. You will gain a greater understanding of weather and climate through an investigative inquiry based study of two cities. One city must be in the Northern Hemisphere. The second city must be in the Southern Hemisphere.



North Hemisphere City, State, Country

Southern Hemisphere City, State, Country

2. Once you have identified your two cities, collect the daily mean temperature for one specific day within every month of every year for the past 60 years. (Start with January ____, 1955 – January 2015)

Hint: What is the **date** of your birth? (For **example**, my birthday is December 20, therefore pick the 20th as the date. I would look up January 20, 1955, February 20, 1955, March 20, 1955.... January 20, 2015)

On the attached table, please list the temperatures for the date of each month of each year for the past 60 years.

3. Use the data for each year, which incorporates 12 months, to find the **mean**, **median**, and **mode**. (12 months for the year of 1955- Find the mean, median, and mode for 1955)
4. Quantitative Analysis- Analyze your full data collection to determine if you can observe the occurrence of climate change. You will need to write a one to two paragraph supporting your claim that climate change is occurring or that climate change is not occurring. You must support your analysis with at least 5 quantitative descriptions.
5. In two separate paragraphs, fully describe the climate of the two cities that you chose. Explain why your city has a particular climate. Describe the location of your two chosen cities in relation to the equator or the North/ South Pole.
6. Describe one to two natural disasters that have occurred in or around your cities in the past 10 years. Describe all aspects of the natural disaster. Include the damage of the land/ property and the lives lost.
7. Complete a box-and-whisker plot for one month of your temperature data for one city that you chose. (Choose the month that you were born.)
Month you were born is _____
City you chose is _____
8. Make a stem- and- leaf plot for the month before your birthday month for the same city you chose.
Month before your birthday is _____
9. Make a line graph for the month after your birthday month for the same city you chose.
The month after your birthday is _____

Rubric for Weather and Climate Project

Name of Student _____

City, State, Country _____

Data	/15
Mean, Median, and Mode	/10
Quantitative Analysis	/10
Climate Information	/10
Natural Disasters	/10
Box- and- Whiskers	/15
Line Graphs	/15
Stem- and- Leaf Plots	/15

Comments

Appendix D

January	
February	
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