Apollo Middle School: 7th Grade Summer Writing Assignment

Prompt: You have been asked to write an argumentative essay for your school's environmental club on why people should stop using plastic water bottles. Use the information presented in the "Plastic Pollution" text set to support your points. Make sure to include information from at least two passages in your essay.

Manage your time carefully so that you can

- read the passages;
- plan your response;
- write your response; and
- revise and edit your response.

Be sure to

- include a claim;
- address counterclaims;
- use evidence from multiple sources; and avoid overly relying on one source.

Your response should be in the form of a multi-paragraph essay.

Sources

Source 1: All Bottled Up

by Jodie Mangor

1 Voss and Imsdal come from Norway, Bisleri is bottled in India, and Vata is an Iranian brand. Around the globe, people are quenching their thirst with bottled water. In the past 10 years, sales in Asia and South America have tripled. In 2007, people in the United States drank more than 8 billion gallons of bottled water. The United States currently consumes the most bottled water in the world, followed by Mexico, China, and Brazil. Compared to sugary, caffeinated soft drinks, this seems a healthy choice. But is it a wise one?

Water for One

2 A single-serve water bottle offers great convenience. It can be bought almost anywhere, carried around for a while, and then thrown away.

3 The impact of bottled water on the environment, however, is staggering. Approximately 2.7 million tons of plastic are turned into disposable bottles each year. This requires large quantities of crude oil and water. It also produces greenhouse gases. Bottled water is often shipped long distances to reach consumers, sometimes transcontinentally. This uses even more fossil fuels and creates more pollution.

4 Although the bottles can be recycled, only a fraction of them are. The United States only recycles about 23 percent. The rest are part of a growing solid waste problem.

Bottled Over Tap?

5 Convenience isn't the only reason for bottled water's rise in popularity. Words like "pristine" and "pure," together with images of mountains or glaciers, are used to market bottled water. Many people believe that it must be cleaner and more healthful than tap water from public water systems. But this is a misconception. In developed nations such as the United States and in Europe, regulations that ensure safe water are often stricter for tap than for bottled water. In the United States, tap water is regulated by the Environmental Protection Agency (EPA). Bottled water, which is viewed as a packaged food product, is regulated by individual states if it stays within their borders or by the Food and Drug Administration (FDA) if it crosses state lines.

6 Jermuk water, which is bottled in Armenia, provides an example of how bottled water standards vary from place to place. In 2007, Jermuk water was pulled from American shelves by the FDA because it contained arsenic levels as high as 674 micrograms per liter. Armenian standards allow as much as 700 micrograms of arsenic per liter of water, but U.S. standards set the limit at 10 micrograms per liter.

7 It may come as a surprise that as much as 40 percent of the water bottled in the United States starts out as tap water. Before bottling, some companies filter it, and they might add minerals for taste.

8 Despite its sometimes humble origins, bottled water can cost anywhere from 240 to 10,000 times more per gallon than tap water.

Is the Bottle Ever Better?

9 At times, bottled water is the best available option. Hurricanes, other natural disasters, and emergency situations such as the terrorist attacks on the Pentagon and World Trade Center in 2001 can negatively affect the safety of public water. Reliable water systems may not be in place in developing nations and war-torn countries. In these cases, bottled water can provide an important source of clean, safe, drinking water.

Future Solutions

10 "Back to the tap" movements are cropping up around the world. In order to save money, use fewer resources, and create less waste, they advocate using tap water and reusable "sports" bottles rather than bottled water. San Francisco and other cities across the United States no longer allow their

governmental departments to buy single-serve water bottles. Cities in Canada, Australia, and the United Kingdom are considering similar bans.

11 Many bottled water companies are trying to do their part, too. They have reduced the amount of plastic in their bottles and bottle caps. Both the Colorado-based BIOTA company and the English company Belu Water use biodegradable plastic bottles derived from corn. Belu takes it a step further by donating some of its profits to clean water projects.

12 Bottled water has become an international phenomenon. While it is an important source of safe drinking water, we should not lose sight of a more environmentally friendly source: the water that comes out of our taps.

Source 2: Are We Living in the Plastic Age?

by Danny Lewis

1 For centuries, historians and archaeologists have defined periods of human history by the technologies or materials that made the greatest impact on society. Examples include the Stone Age, Bronze Age and Iron Age. But what age are we in now? According to Atlas Obscura's Cara Giamo, for some researchers, that question can be answered with one word: plastics.

2 The idea of named ages is not to be confused with geologic subdivisions of time like the Holocene. Nor should it be confused with the proposed Anthropocene—the proposed age is a period resulting from massive human impact on the planet. This most recent geologic epoch is not yet official, but there have been many calls for its designation. A recent study argued that the Anthropocene began during the mid-20th century with the detonation of the first nuclear bombs, said Ker Than, writing for Smithsonian.com.

3 The last geologic epoch was the Holocene. It is thought to encompass both the Bronze and Iron Ages. But we do not yet have a tool or material to define our current age. Scientists point to a few specific changes that humans have wrought on the planet. These include nuclear fallout and the rapid spread of materials like aluminum, concrete, and silicon as forensic proofs of humanity's influence on Earth.

4 Plastic "has redefined our material culture and the artifacts we leave behind." It "will be found in stratified layers in our trash deposits," said archaeologist John Marston.

5 There is no place on Earth that plastics are naturally made. The wide variety of synthetic polymers would not exist if it weren't for human action.

About six billion tons of plastics have been made and spread around the planet, from forests to oceans since the first plastic polymers were invented. Plastics are one of the most significant changes that humans have made to the Earth's makeup, along with the first nuclear detonations in 1945, Andrew C. Revkin reports for *The New York Times.*

6 To add to the problem, most plastics don't easily degrade, and recycling isn't an adequate solution. Not all types of plastic are easily recyclable, and there are only a few recycling plants in the United States that can process all varieties of plastic.

7 This means that much of the materials thrown into recycling bins can crisscross the planet several times before they are processed to produce rugs, sweaters, or other bottles, Debra Winter writes for *The Atlantic*. Although millions of tons of plastic are recycled every year, millions more end up in landfills or the ocean. The problem has reached the point where it's possible that in just a few decades there might be more plastic in the world's oceans than fish.

8 "With a presumed life span of over 500 years, it's safe to say that every plastic bottle you have used exists somewhere on this planet, in some form or another," Winter writes.

9 Even if human populations worldwide change their plastic-using ways, the damage may already be done. With plastics filling landfills and washing up on coastlines around the world, the Plastic Age might soon take its place next to the Bronze Age and the Iron Age in the history of human civilization.

Source 3: Billions of Pieces of Plastic Spread Disease in Coral Reefs

by Brigit Katz

1 It's no secret that the world's coral reefs are in bad shape. Climate change has led to widespread coral bleaching. Overfishing has disrupted the ecosystems that keep reefs healthy. Toxic runoffs from human industry are destroying the so-called "rainforests of the sea." A new study has highlighted the distressing scope of yet another threat to coral reefs: plastics. That's according to Ed Yong, reporting for *The Atlantic.*

2 The study was published in the journal Science. Researchers analyzed more than 124,000 corals from 159 reefs. The reefs were in Myanmar and

Thailand. They were also in Indonesia and Australia. Almost everywhere they looked, they saw bits of plastic.

3 “We came across chairs, chip wrappers, Q-tips, garbage bags, water bottles, old nappies [diapers],” said Joleah Lamb. She is a marine disease ecologist at Cornell University. She is also the lead author of the study. “Everything you see on the beach is probably lying on the reef.”

4 The team estimates that at least 11 billion plastic items are trapped in coral reefs in the Asia-Pacific. And they believe that number will increase by 40 percent by 2025. This could spell disaster for the world’s reefs. The team found that the likelihood of the corals developing a disease jumps from four to 89 percent when corals come into contact with plastics.

5 Further investigations are needed to determine precisely how and why plastics make coral open to different diseases. But generally speaking, it seems that plastic debris slices open the skin of the corals. This exposes them to pathogens.

6 “Plastic debris can cause physical injury and abrasion to coral tissues. It does so by facilitating invasion of pathogens or by exhausting resources for immune system function during wound-healing processes,” the authors of the study write.

7 Drew Harvell is a professor of marine ecology. He works at Cornell. He is co-author of the study. He tells Darryl Fears of the *Washington Post* that plastics also “shade the light coral needs and cut off water flow.”

8 It is vital to preserve the health of coral reefs for a number of reasons. For one, many marine creatures make their homes within the reefs. The reefs support “more species per unit area than any other marine environment.” That’s according to the NOAA. Reefs also protect coastlines from waves and tropical storms. They support both local and international fishing industries. They also generate billions of dollars for the worldwide tourism industry every year.

9 Throughout the course of their research, scientists involved in the new study noticed that the plastics problem was not evenly distributed. Reefs near Indonesia had the highest amount of plastic trash, while reefs near Australia had the lowest. This could be because Australia boasts the best waste removal system. It suggests that there is a relatively easy fix to the issue.

10 “We can clean up the problem,” Harvell told Fears. “It’s so much easier than climate change.”

Source 4: Cleaning Up the Ocean

by Brian S. McGrath

1 The Ocean Cleanup has a system for removing plastic from the sea. The group ran into problems early on. But now the system is up and working.

2 "I am very proud to share with you that we are now catching plastics," the group's founder, Boyan Slat, says. He spoke to reporters on October 2.

3 The Ocean Cleanup system is a floating barrier. It uses a giant screen that hangs below the water's surface. The screen traps pieces of plastic as they float by. It does not trap marine animals.

4 The barrier didn't work well last year. It floated at the same speed as the plastic it was meant to catch. Since then, an underwater parachute has been added. This slows down the barrier. Now it can catch the faster-moving plastics.

5 The device is being used in an area of the Pacific Ocean known as the Great Pacific Garbage Patch. Some 1.8 trillion pieces of plastic have collected there. The pollution harms animals. It also gets into the food chain. Slat hopes to get half of the trash cleaned up by 2025.

6 The next step is to improve the barrier so it will be able to gather plastic trash for a year. Then a ship will carry the trash away. "It's definitely not going to be easy," Slat says.