

This week's issue:

SHOULD OUR USE OF PAPER OR PLASTIC BE REGULATED?



“Paper or plastic?” asks a grocery clerk in Des Moines. You no longer hear that question in San Francisco. In 2007, the San Francisco Board of Supervisors banned grocery stores from using plastic bags to bag groceries. Groceries are now put in paper bags or bags that customers bring from home. Since then, numerous other cities around the world have **phased** out the distribution of plastic bags by banning their use. Some say that the city government has overstepped its bounds. They feel the city took action that it should not have taken.

Supporters say banning plastic bags is a good **strategy**. They **cite research** that says plastic bags are bad for the environment. Our country uses 30–100 billion plastic bags per year, and the bags are piling up in landfills. Most plastic is not biodegradable, and plastic bags will stay in the landfills for hundreds of years. Plastic bags also litter the streets. Some drift out to sea and kill turtles and other sea creatures. Plastic bags are made from petroleum, or oil, a costly resource. People who support the ban say that our earth is being polluted and its resources are being wasted. These people argue that we need government intervention to protect the earth and its resources.

Opponents state that city governments have no authority to ban plastic bags. They argue that storeowners are doing their part to help the environment. Some storeowners are phasing in recycling strategies, such as placing recycling bins for the plastic bags in their stores. People against the ban also point out that plastic bags do not pose any immediate danger. They claim that there are **no data** that prove that paper is better. After all, we chop down trees to make paper bags. In addition, paper bags weigh more than plastic bags, so it costs more to transport them from the factory to the store. They are not as strong as plastic, so we use more of them. Finally, people against the ban argue that private industry pays for the bags, not the taxpayers, so private industry should decide. What is your opinion? Should city governments ban plastic bags or should the grocery stores decide?

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cite | research | data | phase | strategy

USE THE FOCUS WORDS *and alternate parts of speech

cite (*verb*) to refer to as an example or as proof

➞ **Sample Sentence:** My principal **cited** alarming statistics about what happens to people who are bullied and who do the bullying.

🗣️ **Turn and Talk:** Why is it important to **cite** evidence when you are making an important argument?

research (*noun*) systematically collected information; systematic investigation into a subject

➞ **Sample Sentence:** Greg examines online **research** before buying new items like skateboards and video games.

🗣️ **Turn and Talk:** When conducting **research** online, how can you tell if the information is true or not?

***research** (*verb*) to collect and analyze information about a subject

➞ **Sample Sentence:** In **researching** the North and South Pole, Gayle learned that the polarities have reversed several times in the last million years.

🗣️ **Turn and Talk:** Think of some animals that you might see in an African safari. Of these animals, which would you most like to **research**?

data (*noun*) facts, information, statistics

➞ **Sample Sentence:** Before changing the cafeteria lunch menu, the school collected **data** about the kinds of food that students like.

🗣️ **Turn and Talk:** Imagine you had to plan a class party. What kind of **data** would you collect to make sure that everyone had a good time?

phase (*verb*) to do gradually in steps according to a plan

➞ **Sample Sentence:** Many countries have started **phasing** out the use of traditional light bulbs and are replacing them with new, energy-efficient bulbs.

🗣️ **Turn and Talk:** How might a person **phase** in a good exercise routine?

***phase** (*noun*) a step in a process; a short period of time

➞ **Sample Sentence:** The first **phase** of Juan Camilo's exercise plan included doing twenty sit-ups and push-ups each morning. In the second **phase**, he would increase the number to thirty.

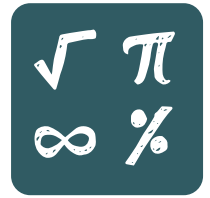
🗣️ **Turn and Talk:** Eden's mother dismissed her poor behavior by saying, "She's going through a **phase**." What do you think she meant by that?

strategy (*noun*) a systematic plan or method

➞ **Sample Sentence:** Changing your passwords frequently is a good **strategy** to stay safe online.

🗣️ **Turn and Talk:** With your partner, think of a **strategy** that you could use to convince your teacher to have a class party.

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DO THE MATH


Option 1: *The Washington Post* wrote an article about cities that are **phasing** out plastic shopping bags and switching to paper bags. The people in these cities think that this **strategy** will help the environment. However, the article **cites data** that might make them change their minds. Researchers discovered that 2,511 BTUs* of energy are used to make a paper bag and just 594 to make a plastic bag. Therefore, the article recommends that a better **strategy** to save energy is for shoppers to bring reusable bags from home.

How much more energy is spent making a paper bag than making a plastic bag?

- A. 2,000 BTUs
- B. 817 BTUs
- C. 1,918 BTUs
- D. 1,917 BTUs

Option 2: Taylor is making her weekly trip to the grocery store. Despite the **research** on the benefits of reusable bags, she still uses paper and plastic. She bags her own groceries in two **phases** using a special **strategy**: meats and cheeses in plastic bags, fruits and vegetables in paper.

Write an equation that shows the relationship between the number of paper and plastic bags Taylor uses and the total number of BTUs it took to make those bags. Use the **data cited** in Option 1. Let p = the number of paper bags, c = the number of plastic bags, and b = the total number of BTUs.

 **Discussion Question:** Researchers have pointed out problems with using paper bags as well as plastic bags. The **data cited** above illustrate one of those problems: Making bags takes energy. To protect the environment, some cities passed laws to **phase** out plastic bags. Was this the best **strategy**? Can you think of a better one?

* BTU (British Thermal Unit) is a standard measurement for heat energy.

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THINK SCIENTIFICALLY

Mr. Seemy and his class were talking about the plastic and paper bags that most people get from the grocery store each time they go. Chantel **cited** her reason for using paper bags instead of plastic. “Most plastic bags take at least a hundred years to break down and be absorbed by the earth.”

“Interesting point, Chantel,” responded Mr. Seemy, “but I just read about a new kind of plastic made from corn that is supposed to break down more quickly. It’s biodegradable.”

“Switching to corn plastic could be a **strategy** to help with the problem of too much trash in landfills,” said Chantel. “I think we should **phase** out regular plastic bags.”

“Not so fast, Chantel,” said Mr. Seemy. “You shouldn’t make a claim just because your teacher mentioned an article. Let’s do some **research** to find out more. Maybe someone in our class can help by doing an experiment and collecting some data.”

Chantel volunteered with her friend Angelo to create an experiment that buried bags in dirt.

Question: Do paper bags, regular plastic bags, and biodegradable plastic bags break down at different rates?

Hypothesis: Paper bags and biodegradable plastic bags will break down faster than regular plastic bags.

Materials:

- ▶ Samples of each bag material
- ▶ Scale
- ▶ Labels to stick in dirt
- ▶ Work gloves
- ▶ Shovel
- ▶ Small plot of land

Procedure:

1. Cut out a portion of a paper bag with a mass of 2,000 milligrams (2 grams). Do the same with regular plastic and with biodegradable plastic.
2. Bury them close to each other and label each spot.
3. Every two weeks, dig up each sample and measure the mass. Then rebury each sample.

Chantel and Angelo's Data

	Paper	Regular Plastic	Biodegradable Plastic
Starting mass	2,000mg	2,000mg	2,000mg
After 2 weeks	1,568mg (moist)	2,500mg (couldn't get all the dirt off)	1,792mg
After 4 weeks	600mg (difficult to find all pieces)	1,968mg	928mg
After 6 weeks	can't get good measurement - traces of paper only	1,984mg	328mg

Do Chantel and Angelo's **data** tell you anything that relates to their hypothesis?

Even if paper bags biodegrade quickly, it doesn't necessarily mean that they are the best choice for the environment. Why do you think these issues are so complex? Do you think scientists can help?

The students cut out 2,000 milligram samples of each bag material. Why is it important that the samples have the same mass? How is mass different from size? Do you think the samples were all the same size?

