

Dinner was always lively for the Jungs – mother, Shih-li; 15-year-old, Jen-hai; 12-year-old, Ranna; Grandma; and Granddad. This evening, Granddad wasn't home, but Ranna's friend, Ashley, was there.

"I heard some news today," Shih-li began. "Leabeau County has been chosen for the first all-out test of the cashless society. Everyone is going to have to use stored-value cards, credit cards, or electronic money for all transactions that take place within this county."

"That means no cash or checks?" asked Ashley. As Shih-li nodded yes, Ashley went on. "It's going to be confusing and hard on my family. Dad has been out of work three years. My parents don't have any credit cards. We use cash mostly. We don't even own a computer. Mom gets us smart cards at the bank for the few things we kids need to buy — she thinks it's safer for us than carrying cash. But, it's been hard for my sister who spent all her card on makeup last week — it was empty before she realized it. And, my little brother is too young to remember a PIN, so his card is never locked."

"Those are real concerns, Ashley," said Shih-li. "We need to explore the challenges of the pilot test and how they might affect each of us. Let's start by identifying what we use now."

The group was quick to identify a variety of methods of exchange they used:

- Cash and checks. Used by the Jungs mostly to exchange money between families, such as Jen-hai paying back a small loan from a friend; used as a regular form of exchange by some other families, such as Ashley's.
- Stored-value cards, such as the DigiCash Smart Card. Used for every-day expenses such as school lunches and other small purchases; loaded by ATM or computer; balance read by an inexpensive card scanner owned by many families; 'locked' with a 16-digit PIN to avoid unapproved use.
- Credit cards. Used for most purchases over MO.
- Electronic bill-paying. Many bills pre-approved and paid automatically from the Jungs' bank account.
- DigiDollar Units (DDU) and CyberChange Units (CCU). True e-currency, existing only online and not handled by banks; purchased from DDU or CCU and stored on a home computer; used by sending the units in an e-mail-order to businesses, with not all e-stores accepting all types of e-currency. (Grandma noted, though, that she couldn't get used to the idea of e-currency, since it "doesn't really exist except on computer.")

Just then, Granddad rushed in. "Sorry I'm late, but listen to what happened today. I got an e-bill from 'Earth on Link' that said we were past due in paying \$175. I immediately sent electronic payment from our bank to the bank listed in the e-bill, and then realized that our online service is called 'Earth on Line.' I'm afraid I've been taken for a ride. I know the systems are almost completely secure these days, and we've got good laws that regulate transactions, but there are still a lot of other problems!"

Leabeau County in 2013 is sitting on the edge of a very different economic system: the cashless society. Help the group continue their analysis of the cashless society and its meanings for the individual citizens of Leabeau County in 2013.

Commander Bretta Brutan and her crew closely examined the debris they had just pulled from the retrieval portal. "It's only a frozen lump of rocket fuel," a crew member moaned. Brutan shrugged, "Jettison it. We already have a sample of that." Brutan's spaceship, the Astralorbitor, was created for the sole purpose of collecting valuable space artifacts and her crew wasn't about to weigh down their ship with duplicates or worthless junk.

In 2007, Google's Lunar X-Prize opened the door for privately funded teams to compete in the race to conquer space. Now, in 2044, over thirty privately owned spaceships are in orbit, with more on the way. Their goal? The ZPrize: A ten billion dollar prize for collecting the most significant historic artifacts floating in space. Z-Prize money is donated by benefactors dedicated to supplying artifacts for a recently created space station museum. The orbiting museum is the logical destination for space tourists who can optimize a trip into space by viewing space history as well.

The museum currently houses a multitude of small items, and its developers plan to use ion thruster technology to change the orbit of large historic items to bring them near the museum. But ion thrusters take months to change the orbits of large artifacts, and prize-seekers like Commander Brutan are too impatient for that. They are racing to cash in on the large items by tethering them to their spaceships and towing them to orbits near the museum. Commander Brutan boasts, "Vanguard 1 was launched in 1958 and is still in orbit, and the defunct Hubble telescope is out there, too. When we deliver these relics, just think what historians can learn - and, of course, we'll definitely win!"

The goal of winning is shared by other Z-Prize competitors who are using extreme measures to be the first to reach and deliver these prized artifacts. Mid-space collisions are an ever-present danger. Early in the competition, two prize-seeking spaceships collided, killing all on board. Recently, the Astralorbitor's tether destroyed a Chinese communication satellite. But most prize-seekers share Brutan's philosophy, "The reward is worth the risk." Museum personnel are dismayed at this attitude, yet can't help but be excited about the number of historically valuable items the prize-seekers will deliver.

Brutan's crew faces competition not only from other Z-Prize seekers but also from a growing number of space salvage operators who want to capture and sell junk to the highest bidder. Space junk is not necessarily "junk" since its estimated total value is three trillion dollars! Commander Brutan worries that some of the most desirable artifacts will be captured by salvage operators before she can get to them. But she is even more concerned about the recent appearance of spaceships known as "clean sweepers." Using cutting-edge technology, the "clean sweepers" are determined to create easier access to the moon. They use costly lasers to vaporize any space junk they encounter, with no concern about its value or historical significance. They envision the profits from mining the moon to be far greater than what either the Z-Prize or salvaging would generate.

The Astralorbitor also faces an increase in new space objects: updated weather and communication satellites, telescopes, and a vast number of military weapons - many launched by countries new to the space environment. In addition, the prize-seekers are dodging millions of man-made pieces of junk in many different orbits. Recently, the space station museum had to be boosted into a different orbit in order to avoid a derelict rocket.

Most scientists are appalled by the profit-motivated space travelers. Many scientists warn about human exposure to space debris before it can be studied in depth. They point out that some debris can be radioactive or contain other dangerous elements. One of the Z-Prize ships recently returned to Earth with most of the crew suffering from unexplained illnesses.

While Brutan and others race to win the Z-Prize, heated debate continues. The orbiting museum developers argue the value of space junk and its historical significance. As Future Problem Solvers, you are asked to use the six-step problem solving model to address the issues dealing with the space station museum as it builds its collection of artifacts.

ANTARCTICA

Sample FPS Future Scene – 1994

As you and your teammates stepped onto the huge ecotour ship, you knew you were taking the trip of your lives. Now, thinking back, you recall some of the captain's early-morning messages.

Sunday, October 31, 2025

"Welcome aboard the "Ellsworth Clipper!" As we leave New York Harbor, I'll remind you we'll reach the Antarctic Peninsula directly below the tip of South America in about two weeks. I'm delighted to see your excitement about our ecotour. You will assist in research in marine biology, geology, the atmosphere and ecology. You will also serve as ecowatchers: Take careful notes of anything you believe could threaten Antarctica. By the way, you'll be interested in a news bulletin we just received: All nations have signed an agreement banning mining and military operations in Antarctica for the rest of this century. As an added feature of our tour, we'll have evening enrichment programs to prepare you for your activities when we reach the continent. Tonight's program will be: 'Antarctica-The Earth's Thermostat.'"

Wednesday, November 17, 2025

"Attention, all passengers: We are approaching the Antarctic Peninsula. Grab your holocorders and look starboard for some of the most vividly colored icebergs you will ever see. The deep, glowing blues and jade greens indicate these majestic travelers have been at sea a long time. The patches of black are groups of penguins. During the next week, we'll sail down the coast of the Peninsula and make our first landfall at Faraday, one of 20 science bases in this area. This morning, we will stop near the area where the tourist ship, "Snobird," developed a leak in its fuel tanks. As you recall, cleanup of the oil is taking months. This is where some of you will help us take samples of seawater to measure levels of phytoplankton. Tonight's enrichment program is: 'From Seals to Seabirds: A Look at Some of the Polar Natives.'"

Monday, November 23, 2025

"Good morning, shipmates! During the night, we anchored off Faraday. At 10 a.m., we will begin transporting you aboard our Zodiac IIs to land. Please go over the checklist of items you will need. Remember, a summer day here still means below-freezing temperatures. Also, the safety of the area we will visit is very important. Bring back everything you take - don't leave even an MVP wrapper! You will be working with scientists at Faraday. Please be careful of the scientific instruments; simply leaving a door open can ruin months of experiments. Tonight's enrichment program is: 'Antarctica as Natural Laboratory - The Last (Almost) Pristine Place on Earth.'"

Tuesday, December 1, 2025

"I hope you're enjoying our ecotour. Today you're in for a contrast: we're going to visit a different kind of polar tourism. Two years ago, the countries of the Antarctic Treaty voted to end all land claims on the continent. Shortly after that and to loud protests, a group of business people with no ties to the Treaty staked a land claim and built a large resort area on the Peninsula. Let me read one of their tour ads to you: 'Fly to Antipodal Paradise. Travel along Amundsen's trail to the South Pole in the comfort of hovertrains. Ski and ice bike at the bottom of the world! We'll equip you with a picnic lunch and a geology hammer, so you can gather your own rock sample souvenirs!' Quite different, isn't it? Following your visit, tonight's program will be: 'Governing Antarctica: How and Who?'"

Tomorrow, the "Ellsworth Clipper" leaves Antarctica to return to New York Harbor. On the return trip, it will be your team's turn to present an enrichment program on what you see as one of the major areas of concern about Antarctica. You have attended the enrichment programs on the topics given above, and programs on many other topics, as well. Use your knowledge and problem solving skills to examine the challenges faced by Antarctica and develop an action plan.