

Reading Explorer 5 Unit 12 Lesson B

DIRECTIONS: Choose the best answer for each question.

The Rush for White Gold

[A] One early Saturday morning in La Paz, Alvaro Garcia Linera - the silver-haired vice president of Bolivia - greets me in the spacious salon outside his office overlooking Plaza Murillo. The politician is known in his country as a Marxist ideologue,¹ but today he presents himself as a capitalist pitchman.²

[B] The pitch in question involves lithium. Garcia Linera speaks of his country's natural resource in a simultaneously factual and awestruck way. Lithium, essential to our battery-fueled world, is also the key to Bolivia's future, the vice president assures me. A mere four years from now, he predicts, it will be "the engine of our economy." All Bolivians will benefit, he continues, "taking them out of poverty, guaranteeing their stability in the middle class, and training them in scientific and technological fields so that they become part of the intelligentsia³ in the global economy."

[C] But as the vice president knows, no pitch about lithium as Bolivia's economic salvation is complete without addressing the source of that lithium: the Salar de Uyuni. The 10,000-square-kilometer salt flat, one of the country's most magnificent landscapes, will almost certainly be altered - if not forever damaged - by mining the resource underneath it.

[D] "Have you been to the Salar de Uyuni?" Garcia Linera asks. When I reply that I'll be heading there soon, the vice president loses his air of detachment and seems full of nostalgia. "When you go to the Salar," he instructs me, "go there one night. Spread a blanket in the center of the Salar, and turn on some music."

* * *

[E] It takes a day to drive from the world's highest capital city to the world's largest salt flat. The route passes steadily downhill through small villages, until leveling out, at about 3,600 meters, into a mostly vacant stretch of land occasionally animated by llamas.⁴ By late afternoon, the salt flat can be seen across the plain.

[F] I reach the Salar - Spanish for "salt flat" - just before sunset, and for over a kilometer I drive along its smooth and firm surface until it becomes evident that this is the middle of nowhere. The spectacle seems unreal: kilometers of whitewashed level terrain, its starkness perfected by the cloudless blue sky and the Andean peaks in the distance. Motorcycles and 4x4s drive across the roadless surface, destinations unknown. Here and there solitary people wander about, gazing into what the Bolivian vice president calls "the infinite table of snowy white."

[G] Somewhere out of sight on infinity's edge, bulldozers are plowing evaporation pools in the Salar - long and precise excavations, like a grid of enormous swimming pools. The bulldozers will be moving this way soon - how soon, no one can say with any certainty.

[H] Here is what we do know. First, that underneath the world's biggest salt flat lies another wonder: one of the world's greatest lithium deposits - perhaps 17 percent of the planet's total. Second, that by exploiting its lithium reserves, the government of Bolivia - where 40 percent of the people live in poverty - envisions a pathway out of its economic misfortune.

[I] The salt flat had long been regarded by Bolivians as little more than a geographical anomaly.⁵ While surrounding mountains are celebrated in indigenous stories, "the Salar has never had cultural significance," says Uyuni's mayor, Patricio Mendoza. "People were afraid that if they took a walk on it, they might get lost and die of thirst or their llamas would damage their hooves on the salt."

[J] The Salar's fortunes changed in the 1980s, when a La Paz tour operator named Juan Quesada Valda laid eyes on it. Quesada was searching for a tourist destination to rival Lake Titicaca.⁶ When he beheld the Salar, he experienced a revelation, recalls his daughter Luca: "You can find lakes anywhere," she says, "but you cannot find a salt flat like this anywhere else in the world. He knew he could sell this place."

[K] An architect by training, Quesada proceeded to build the first of several hotels made almost entirely out of blocks of salt in Colchani, a village at the eastern edge of the Salar. Adventurous foreigners began to show up to bask⁷ in the great pale desert. Weddings, yoga lessons, and automobile races would eventually be staged on it. Today the salt hotels are typically full and Uyuni has become a vacationland bustling with college-age backpackers.

[L] "Maybe 90 percent of our economy is tourism," Mendoza says. All of which is to say that in Bolivia's morose history of economic disappointments, the Salar provides a happy if modest exception. But now comes Bolivia's future, in the form of lithium.

* * *

[M] What gold meant to earlier eras, and petroleum to the previous century, lithium may eclipse in the coming years. Long used in medication to treat bipolar disorders - and in items as varied as ceramics and nuclear weapons - it has emerged as an essential component for the batteries in computers, cellphones, and other electronic devices.

[N] The global market's annual consumption of lithium in 2017 was approximately 40,000 metric tons, representing a roughly 10 percent increase year by year since 2015. Meanwhile, in the same period, lithium prices nearly tripled - a clear reflection of how fast demand has been rising.

[O] That will likely intensify as electric cars become more popular. One version of the Tesla Model S runs on a battery pack with about 65 kilograms of lithium compounds - the equivalent of what's in 10,000 cellphones. The investment firm also projects that every time electric-vehicle sales replace a percentage of all vehicles sold, the demand for lithium increases by 70,000 metric tons a year. Given that France and the United Kingdom have already announced that they'll ban the sale of cars running on gas or diesel by 2040, it would seem evident that a country abounding with lithium need never fear poverty.

[P] However, Bolivia first faces several hurdles, and the most daunting is a scientific one. Producing battery-grade lithium from brine involves separating out sodium chloride, potassium chloride, and magnesium chloride. This last is particularly expensive to remove. Bolivia's lithium deposits have a relatively high magnesium content. "While the ratio of magnesium in Chile is 5 to 1, in Uyuni it's 21 to 1," says Bolivian chemical engineer Miguel Parra, "four times the concentration. So it's a much simpler operation for them. For us, separating magnesium from lithium is the biggest challenge."

[Q] There are other issues, such as: What does Bolivia intend to do with the heaps of magnesium waste? The Bolivian government claims that it has a unique processing method that will somehow reduce waste, but just how much is speculative. "The environmental impact in Chile and Argentina is low," claims Bolivian geologist Juan Benavides, "but we're not able to extrapolate,⁸ really, because the magnesium content in Bolivian lithium is very high. All we know is ... that the lithium regulations and laws in Argentina and Chile are more stringent⁹ than in Bolivia."

[R] Among the greatest concerns is how much water will be required to extract the lithium. Two rivers flow into the salt flat. One is thin enough to be a creek; the other, shallow enough to wade across. Both are crucial to the local growers of quinoa,¹⁰ of which Bolivia is the world's second largest supplier, after Peru. Though the Bolivian government insists that 90 percent of the water it uses will come from salt water rather than underground, some experts are skeptical. "Year after year, the water is going to be the major resource that is needed," says Oscar Ballivian Chavez, a Bolivian geologist. "They'll need vast quantities, more than any other mine in Bolivia."

[S] And finally, there's the unspoiled natural wonder of the Salar itself. Though revered by human visitors for its boundless austerity,¹¹ it is also a breeding ground for several animal species such as the Chilean flamingo. "Our plant is located far away from these sanctuaries," Garcia Linera says, adding, "This demonstrates our commitment to the environment."

[T] I thought about these unanswered questions as I headed once again through the colorless daydream of the Salar - an illusion of simplicity that apparently goes on forever, but in fact, cannot.

¹ An **ideologue** is someone who follows a certain set of political beliefs.

² A **pitchman** is a person who tries to sell something to someone, especially one who aggressively markets their goods.

³ The **intelligentsia** of a country or community are its most educated people.

⁴ A **llama** is an animal used to carry loads, especially in South America.

⁵ If something is an **anomaly**, it is different from what is usual or expected.

⁶ **Lake Titicaca** is a large, high-altitude lake between Bolivia and Peru.

⁷ If you **bask** in a place, you lie there and enjoy its warmth and sunshine.

⁸ If you **extrapolate** from facts, you use them as a basis for general statements about a situation.

⁹ Rules and laws that are **stringent** strictly control something.

¹⁰ **Quinoa** is the small seeds of a plant eaten as a grain and popular as a health food.

¹¹ **Austerity** refers to a place having no human warmth or comfort.

- _____ 1. Which would be the best alternative title for this passage?
- a. Bolivia's Lithium - Is It Worth The Cost?
 - b. The Many Uses of Lithium
 - c. How To Tour Bolivia's Salar de Uyuni
 - d. Lithium Is Powering Today's Technology
- _____ 2. Which of the following statements would Garcia Linera most likely agree with?
- a. There is nothing much to do at the Salar, so it can be quite boring.
 - b. Bolivia doesn't have any natural resources, so it has to depend on tourism.
 - c. Lithium is an important part of Bolivia's economic future.
 - d. Most Bolivians are middle class and trained in science and technology.
- _____ 3. The following sentence would be best placed at the end of which paragraph?

He added, "Turn it up loud, relax, and stare up at the sky."

- a. Paragraph D
- b. Paragraph F
- c. Paragraph I
- d. Paragraph Q

- _____ 4. In paragraph F, what does Linera mean by *the infinite table of snowy white*?
- a. It is almost always freezing at the Salar.
 - b. The white salt flats stretch out as far as the eye can see.
 - c. The salt mined from the Salar makes the finest table salt.
 - d. It often snows for long periods in Bolivia.
- _____ 5. What do Bolivians NOT feel about the Salar de Uyuni?
- a. It is a unique geographic feature.
 - b. It is a sacred site.
 - c. It is vast and easy to get lost in.
 - d. It has turned the economy around.
- _____ 6. Which of the following events happened last?
- a. Quesada saw the Salar for the first time.
 - b. Uyuni became a popular vacation spot.
 - c. Quesada was searching for a tourist destination.
 - d. Hotels were built out of salt blocks in Colchani.
- _____ 7. Which of the following is closest in meaning to *indigenous* in paragraph I?
- a. ancient
 - b. religious
 - c. true
 - d. native
- _____ 8. What is true for both Chile and Bolivia?
- a. The country has large lithium deposits.
 - b. Separating magnesium from lithium is their biggest challenge.
 - c. The environmental impact of lithium extraction is low.
 - d. There are stringent regulations and laws governing lithium extraction.
- _____ 9. In the second sentence of paragraph Q, what does the word *it* refer to?
- a. the magnesium waste
 - b. Bolivia
 - c. the Salar de Uyuni
 - d. the Bolivian government
- _____ 10. According to paragraph S, what has the Bolivian government done to protect the environment?
- a. They taxed the excessive use of water.
 - b. They built nature reserves to protect the wildlife population.
 - c. They located the plant far away from nature sanctuaries.
 - d. They restricted the number of human visitors to the area.

DIRECTIONS: Choose the best answer for each question.

The Secret Ingredients of Everything

[A] Most of us would be hard-pressed to locate Inner Mongolia, Jiangxi, or Guangdong on a map. Yet many of the high-tech devices we depend on - cellphones, laptops, and hundreds of others - would not exist without an obscure group of elements mined, sometimes illegally, in those three and other regions of China.

[B] Rare earths, as the elements are called, were discovered beginning in the late 18th century as oxidized minerals - hence "earths." They're actually metals, and they aren't really rare; they're just scattered. A handful of dirt from your backyard would probably contain a smidgen, maybe a few parts per million. The rarest rare earth is nearly 200 times more abundant than gold. But deposits large and concentrated enough to be worth mining are indeed rare.

[C] The list of things that contain rare earths is almost endless. Magnets made with them are much more powerful than conventional magnets and weigh less; that is one reason so many electronic devices have gotten so small. Rare earths are also essential to a host of green machines, including hybrid cars and wind turbines. The battery in a single Toyota Prius contains more than 20 pounds of the rare earth element lanthanum; the magnet in a large wind turbine may contain 500 pounds or more of neodymium.

[D] "They're all around you," says Karl Gschneidner, a senior metallurgist with the Department of Energy's Ames Laboratory in Ames, Iowa, who has studied rare earth elements for more than 50 years. "The phosphors in your TV - the red color comes from an element called europium. The catalytic converter on your exhaust system contains cerium and lanthanum. They're hidden unless you know about them, so most people never worried about them as long as they could keep buying them."

[E] Now a lot of people are worried. China, which supplies 97 percent of the world's rare earth needs, rattled global markets in the fall of 2010 when it cut off shipments to Japan for a month during a diplomatic dispute. Over the next decade China is expected to steadily reduce rare earth exports in order to protect the supplies of its own rapidly growing industries, which already consume about 60 percent of the rare earths produced in the country. Fears of future shortages have sent prices soaring. Dysprosium, used in computer hard drives, now sells for \$212 a pound, up from \$6.77 eight years ago. Over just two months last summer, prices on cerium jumped more than 450 percent. World demand now exceeds supply, says Mark A. Smith, president and CEO of Molycorp, an American company that reopened a rare earth mine at Mountain Pass, California, in 2010.

[F] "We're in a supply crunch right now, and it's a pretty severe one," says Smith. "This year the demand will be 55,000 to 60,000 tons outside of China, and everyone's best guess right now is that China will be exporting about 24,000 tons of material."

[G] Although China currently monopolizes rare earth mining, other countries have deposits too. China has 48 percent of the world's reserves; the United States has 13 percent. Russia, Australia, and Canada have substantial deposits as well. Until the 1980s, the United States led the world in rare earth production. American dominance ended in the mid-1980s. China, which for decades had been developing the technology for separating rare earths (not easy to do because they're chemically so similar), entered the world market with a roar. With government support, cheap labor, and lax or nonexistent environmental regulations, its rare earth industries undercut all competitors. The Mountain Pass mine closed in 2002, and Baotou, a city in Inner Mongolia (an autonomous region of China), became the world's new rare earth capital. Baotou's mines hold about 80 percent of China's rare earths, says Chen Zhanheng, director of the academic department of the Chinese Society of Rare Earths in Beijing. But Baotou has paid a steep price for its supremacy. Some of the most environmentally benign and high-tech products turn out to have very dirty origins indeed.

[H] Rare earth mines often also contain radioactive elements, such as uranium and thorium. Villagers near Baotou reportedly have been relocated because their water and crops have been contaminated with mining wastes. Every year the mines near Baotou produce about ten million tons of wastewater, much of it either highly acidic or radioactive, and nearly all of it untreated. Chen maintains that the Chinese government is making an effort to clean up the industry.

[I] "The government has already made strict regulations to protect the environment and weed out the backward techniques, equipment, and products," Chen wrote in an email. "Those factories without abilities of environmental protection will be closed or merged with bigger companies."

[J] The Chinese government may eventually be able to regulate the large rare earth mining industry around Baotou. But some of the smaller mines in southern China will be more difficult to control - because they are operating outside the law to begin with. Violent criminal gangs run dozens of heavily polluting - and profitable - rare earth mines in Jiangxi and Guangdong Provinces. If you own a smart phone or a flat-screen television, it may contain contraband rare earths from southern China.

[K] The world is now scrambling to find other sources of supply; the development of rare earth mines in the U.S., Australia, Russia, and other countries may eventually cut into the smugglers' business. Molycorp intends to produce 3,000 to 5,000 tons of rare earths from stockpiled ore at its Mountain Pass mine this year and has big expansion plans. "The current U.S. demand is somewhere between 15,000 and 18,000 tons per year," says Smith. "In principle, Mountain Pass could eventually make the United States independent in rare earths." According to Chen, China's present dominance of the market is not in its own long-term interests. "This situation is obviously not sustainable," he noted, "for China's rare earth industry and for the world's high-tech industry."

- _____ 11. Which would be the best alternative title for this passage?
- a. Rare Earths Are Becoming Rarer
 - b. Rare Earths Are All Around Us
 - c. The Rise of Rare Earth Exports
 - d. Losing Out On Rare Earths' Market
- _____ 12. In paragraph B, what does the word *smidgen* mean?
- a. a lot
 - b. some
 - c. a huge amount
 - d. a tiny amount

_____ 13. The following sentence would be best placed at the end of which paragraph?

In addition to green machines, rare earths are also used in the military for night-vision goggles, cruise missiles, and other weapons.

- a. Paragraph B
- b. Paragraph C
- c. Paragraph D
- d. Paragraph E

_____ 14. According to the passage, what is NOT a negative result of mining rare earths?

- a. It can contaminate water and crops.
- b. It can release radioactive elements into the environment.
- c. Many high-tech products using rare earths are environmentally unsafe.
- d. It has encouraged organized crime in China.

_____ 15. In paragraph K, what does the word *smugglers* mean?

- a. violent criminal gangs
- b. people who export things like smartphones and flat-screen televisions
- c. people who illegally carry something across a border
- d. people who heavily pollute Chinese mines

_____ 16. What does *others* refer to in the second sentence of paragraph A?

- a. Inner Mongolia, Jiangxi, or Guangdong
- b. many of the high-tech devices we depend on
- c. cellphones and laptops
- d. an obscure group of elements

_____ 17. What does *that* in the second sentence of paragraph C refer to?

- a. the list of things that contain rare earths
- b. conventional magnets
- c. magnets made with rare earths being more powerful and weighing less
- d. rare earths being essential to a host of green machines

_____ 18. What does the first *they* in the last sentence of paragraph D refer to?

- a. the phosphors in your TV
- b. the catalytic converter in your exhaust system
- c. cerium and lanthanum
- d. rare earths

_____ 19. What does *it* in the third sentence of paragraph H refer to?

- a. uranium and thorium
- b. water and crops
- c. wastewater
- d. mining wastes

_____ 20. What does *its* in the fifth sentence of paragraph K refer to?

- a. the United States'
- b. Mountain Pass's
- c. China's
- d. the market's

DIRECTIONS: Complete the sentences with the correct form of the words in the box.

assure	commitment	exploit	infinite	proceed
revelation	rival	salvation	skeptical	version

21. He was initially _____ that the hair growth tonic would work, but within days he could see the results.
22. Getting married is not a(n) _____ he feels ready for.
23. Brunei has become very wealthy by _____ the country's vast oil and natural gas reserves.
24. Be sure to buy the latest _____ of the textbook; the facts in older copies are outdated.
25. If no one has any objections, we will _____ to implement this new plan.
26. Few places can _____ the beauty and serenity of the Salar de Uyuni.
27. There's no need to worry; I _____ you, everything is under control.
28. After decades of escalating civil unrest, complete political reform might be the country's only hope for _____.
29. She felt so small when she looked up at the stars and the _____ sky.
30. The _____ that everyone has different working styles had a tremendous impact on him and made him change his approach to dealing with his colleagues.

Reading Explorer 5 Unit 12 Lesson B

Answer Section

1. ANS: A PTS: 1 REF: Pages 259-262
OBJ: Gist TOP: Precious Resources
2. ANS: C PTS: 1 REF: Pages 259-262
OBJ: Inference TOP: Precious Resources
3. ANS: A PTS: 1 REF: Pages 259-262
OBJ: Cohesion TOP: Precious Resources
4. ANS: B PTS: 1 REF: Pages 259-262
OBJ: Paraphrase TOP: Precious Resources
5. ANS: B PTS: 1 REF: Pages 259-262
OBJ: Negative Detail TOP: Precious Resources
6. ANS: B PTS: 1 REF: Pages 259-262
OBJ: Sequence TOP: Precious Resources
7. ANS: D PTS: 1 REF: Pages 259-262
OBJ: Unfamiliar Vocabulary TOP: Precious Resources
8. ANS: A PTS: 1 REF: Pages 259-262
OBJ: Compare and Contrast TOP: Precious Resources
9. ANS: D PTS: 1 REF: Pages 259-262
OBJ: Anaphoric Reference TOP: Precious Resources
10. ANS: C PTS: 1 REF: Pages 259-262
OBJ: Supporting Detail TOP: Precious Resources
11. ANS: A PTS: 1 REF: Unit 12 OBJ: Gist
TOP: Precious Resources
12. ANS: D PTS: 1 REF: Unit 12 OBJ: Unfamiliar Vocabulary
TOP: Precious Resources
13. ANS: B PTS: 1 REF: Unit 12 OBJ: Cohesion
TOP: Precious Resources
14. ANS: C PTS: 1 REF: Unit 12 OBJ: Negative Detail
TOP: Precious Resources
15. ANS: C PTS: 1 REF: Unit 12 OBJ: Unfamiliar Vocabulary
TOP: Precious Resources
16. ANS: B PTS: 1 REF: Page 256 OBJ: Identifying Coherence Devices
TOP: Precious Resources
17. ANS: C PTS: 1 REF: Page 256 OBJ: Identifying Coherence Devices
TOP: Precious Resources
18. ANS: D PTS: 1 REF: Page 256 OBJ: Identifying Coherence Devices
TOP: Precious Resources
19. ANS: C PTS: 1 REF: Page 256 OBJ: Identifying Coherence Devices
TOP: Precious Resources
20. ANS: C PTS: 1 REF: Page 256 OBJ: Identifying Coherence Devices
TOP: Precious Resources
21. ANS: skeptical

PTS: 1 REF: Page 266 OBJ: Vocabulary TOP: Precious Resources

22. ANS: commitment

PTS: 1

REF: Page 266

OBJ: Vocabulary

TOP: Precious Resources

23. ANS: exploiting

PTS: 1

REF: Page 266

OBJ: Vocabulary

TOP: Precious Resources

24. ANS: version

PTS: 1

REF: Page 266

OBJ: Vocabulary

TOP: Precious Resources

25. ANS: proceed

PTS: 1

REF: Page 266

OBJ: Vocabulary

TOP: Precious Resources

26. ANS: rival

PTS: 1

REF: Page 266

OBJ: Vocabulary

TOP: Precious Resources

27. ANS: assure

PTS: 1

REF: Page 266

OBJ: Vocabulary

TOP: Precious Resources

28. ANS: salvation

PTS: 1

REF: Page 266

OBJ: Vocabulary

TOP: Precious Resources

29. ANS: infinite

PTS: 1

REF: Page 266

OBJ: Vocabulary

TOP: Precious Resources

30. ANS: revelation

PTS: 1

REF: Page 266

OBJ: Vocabulary

TOP: Precious Resources