



 High School

Advanced English Reading & Writing

PREFACE

“Reading is like breathing in,
and writing is like breathing out.”

– Pam Allyn

숨쉬기가 인간의 기본적인 생존 활동이듯이, 읽기와 쓰기 역시 인간으로 살아가는 데 기본적인 활동입니다. 이미지와 영상의 시대라고 해도 스마트폰과 태블릿, 인터넷과 인공 지능을 사용할 때 의사소통을 위해 우리는 항상 읽기와 쓰기를 하고 있습니다. 더 예민하게 읽고 더 예리하게 쓰는 것은 사람과의 소통은 물론이고 인공 지능을 활용할 때도 반드시 필요한 능력이 되었습니다. 본 교과서는 영어로 읽고 쓰는 능력을 키워 숨 막히게 빠르게 변화하는 세상에서 여러분의 숨쉬기가 한결 편해지기를 바라는 마음으로 만들었습니다.

본 교과서의 모든 단원은 하나의 주제, 하나의 질문으로 시작합니다. 각각의 질문은 이 세상에서 인생을 가꾸어가는 모든 사람이 한 번은 생각해 볼만한 질문들입니다. 그 질문에 대한 답을 찾아가는 데 단서가 될 만한 글을 단원마다 두 개씩 실었습니다. 때로는 예술과 과학이, 때로는 소설과 사회과학이 짝을 지어 각 질문에 대한 여러분의 답을 찾아가는 데 서로 다르면서도 저마다 도움이 되는 경로를 보여줄 것입니다. 또한 각 단원의 마지막에는 Further Reading을 수록하여, 충분한 양의 읽기 자료를 제시하고자 하였습니다.

본 교과서는 어휘, 숙어, 문장 패턴을 활용하여 문장을 만들고, 어법에 맞게 영작하는 등 기본적인 쓰기를 연습할 수 있는 활동들에서부터, 쓰기 전략과 단계별 예시 및 가이드에 따라 특정 주제와 장르의 글을 직접 써보고 검토, 편집하여 완성하는 활동까지 제시함으로써 학생들이 체계적으로 쓰기 역량을 향상할 수 있도록 하였습니다.

본 교과서는 독해와 작문 중심으로 구성되어 있으나, 듣기와 말하기 또한 자연스럽게 병행될 수 있는 구성을 취하고 있습니다. 또한, 온라인 검색을 통한 자료 수집 및 분석, 동영상 시청 등 다양한 매체를 활용한 활동도 제시하고 있으며, 과학, 문학, 기술 등 타 교과와 연계된 단계별 프로젝트 활동을 통해 토론과 협업이 이루어지도록 구성하였습니다.

본 교과서를 공부하면서 영어로 된 글에 대한 여러분의 이해의 폭이 더 넓고 깊어지기를 바라며, 또한 영어로 된 글을 통해 자신이 전달하고자 하는 바를 명확하게 표현할 수 있는 역량 또한 갖추 수 있게 되기를 바랍니다.

저자 일동

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SCOPE & SEQUENCE

LESSON	Big Question	Reading 1	Reading Strategy	Reading 2
1 New Frontiers	What field do you want to pioneer or influence?	History & Physics The Far Away and the Tiny: Observing the Invisible	Identifying the 5Ws and 1H	History & Earth Science The Answers Found at the Bottom of the World
2 Sustainability	What policies are needed to make your country more sustainable?	Social Studies and Culture Giving the City Back to the People	Identifying cause & effect / problem & solution	Economics Doughnut Economics: A Sustainable Approach to Economics
3 Making Choices	What values guide your actions?	Literature & Ethics Omelas: Le Guin's Questioning of Utilitarianism	Matching pronouns with their referents	Social Studies and Culture Why Do We Join the Herd?
4 Blurring the Lines	What interests can you combine in order to develop something innovative?	Arts & Physics Bringing Light to Art	Making inferences	Arts & Engineering Pushing the Limits of Human-Machine Collaboration
5 More than Meets the Eye	Does noticeability or visibility correspond to importance in life? Why or why not?	Social Studies and Culture Invisibles: Society's Hidden Contributors	Identifying similarities and differences	Biological Science The Wondrous Power of the Fungi Kingdom
Special Lesson	Literature The Paper Menagerie			

Reading Strategy	Grammar	Writing	Writing Type	Project	Further Reading
Inferring the meaning of a word or phrase	It was Jane that won the debate competition.	Inspirational Pioneers	Personal	Physics & Biology & Earth Science Creating Your Own Booklet	Mapping the Depths Below
Recognizing the repetition of ideas	Brian ran down the street with his dog following behind him.	How Green Is It?	Analytical		Trashcans for the Ocean
Recognizing transition words and phrases	The orchestra scheduled a performance on <i>the assumption that the violinist would be available.</i>	What Would You Do?	Opinion	Literature Different Choice, Different Ending	Intuitions: Are They Reliable?
Understanding figurative language	Who is <i>the girl talking to Simon at the school library</i> ?	The Increasing Use of AI in Our Lives	Persuasive		Geomungo: Presenting Tradition, Crafting Innovation
Recognizing text coherence	Without leadership, there would be no direction in the organization.	Meet the Unsung Hero of Our School	Journalistic	Engineering The Tiny Parts in Almost Everything	A Little Comma Can Make a Big Difference

INTRODUCTION

In this book, students will learn to read and write in English through a variety of activities based on academic and everyday topics. All activities are explained with step-by-step instructions and are designed to allow students to check their own progress between sections.



Listening activity



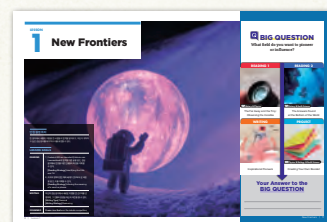
Speaking activity



Internet browsing activity

LESSON INTRODUCTION

- Briefly introduces each lesson's learning objectives, readings, reading strategies, writing tasks, and language forms.
- Presents the Big Question and the related topics for each section and invites students to write their own answer to the Big Question.

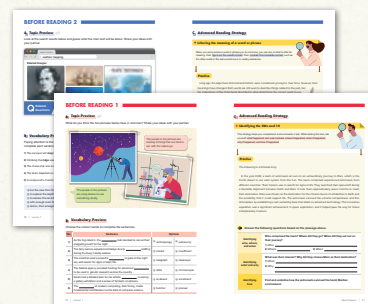


BEFORE READING 1, 2

- Includes simple practice activities about the main topic and key vocabulary, and introduces the target reading strategy.

A. Topic Preview → **B. Vocabulary Preview**

→ **C. Advanced Reading Strategy**



READING 1, 2

- Includes two readings (of around 1,000 words each) that relate to the Big Question and the lesson topic.
- Provides opportunities for students to apply paragraph-by-paragraph reading strategies in order to gain a deeper understanding of each reading.

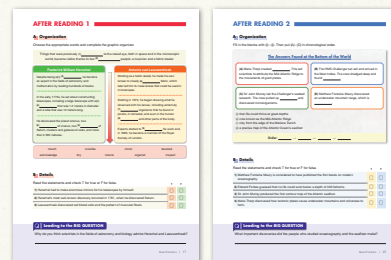


AFTER READING 1, 2

- Includes practice activities that allow students to check their understanding of the text.

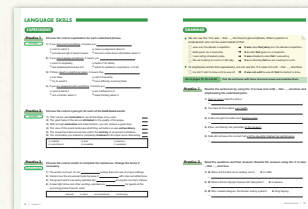
A. Organization → **B. Details**

→ **Q | Leading to the BIG QUESTION**



LANGUAGE SKILLS

- Introduces vocabulary, expressions, and key language forms from the reading materials, and provides practice exercises to reinforce understanding.



WRITING

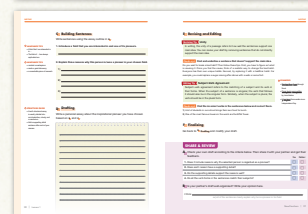
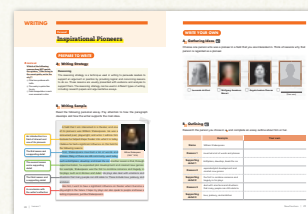
- Introduces a variety of writing types. Guides students through the writing process with before-, during-, and after-writing activities.

PREPARE TO WRITE

A. Writing Strategy → **B. Writing Sample**

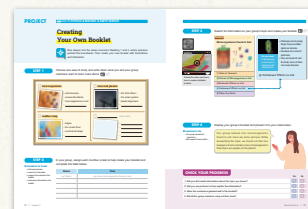
WRITE YOUR OWN

A. Gathering Ideas → **B. Outlining** → **C. Building Sentences**
D. Drafting → **E. Revising and Editing** → **F. Finalizing**



PROJECT LESSON 1, 3, 5

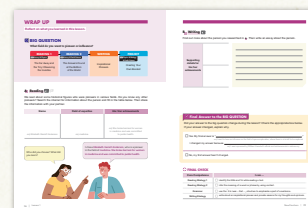
- Provides instructions for group assignments related to the topic.
- Fosters collaborative learning, with opportunities for researching and presenting.



WRAP UP

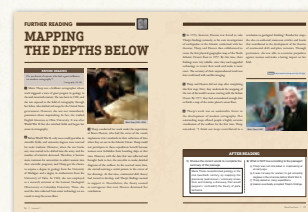
- Includes further practice activities about the readings and the writing tasks to help students reflect on what they learned in each lesson.

A. Reading → **B. Writing** → ☒ **Final Answer to the BIG QUESTION**



FURTHER READING

- Provides engaging reading material that expands on the lesson topic.
- Introduces the reading with a thought-provoking “Before Reading” question and provides “After Reading” questions to reinforce comprehension of the text.



LESSON

1

New Frontiers

단원 설정 취지

한 분야에서 새롭게 지평을 연 사람들의 업적을 알아보고, 자신이 개척하고 싶은 관심 분야를 파악하고 이를 표현할 수 있다.

LESSON GOALS

READING

1. Frederick William Herschel과 Antonie van Leeuwenhoek의 업적을 다룬 글을 읽고, 관심 분야에서 진보를 이룬 인물들의 특징을 이해할 수 있다.
[Reading Strategy] Identifying the 5Ws and 1H
2. 미지의 영역이었던 해저 세계가 연구되어 온 과정을 읽고, 이를 이해할 수 있다.
[Reading Strategy] Inferring the meaning of a word or phrase

WRITING

자신의 관심 분야에서 새로운 지평을 연 선구자를 선정하여, 그 인물과 관련된 자신의 의견을 쓸 수 있다.
[Writing Type] Personal
[Writing Strategy] Reasoning

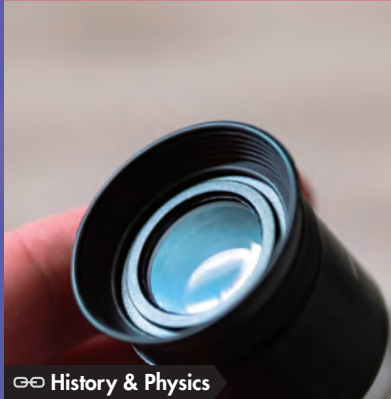
GRAMMAR


It was *Jane* that won the debate competition.

BIG QUESTION

What field do you want to pioneer or influence?

READING 1




 History & Physics

The Far Away and the Tiny:
Observing the Invisible

READING 2



 History & Earth Science

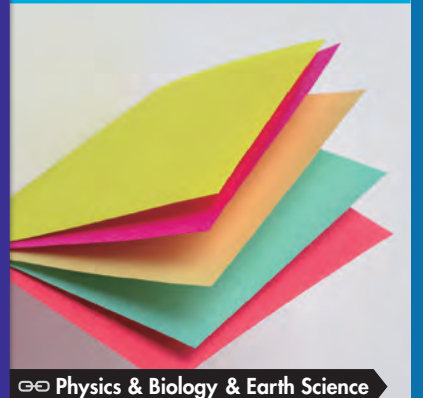
The Answers Found
at the Bottom of the World


WRITING



Inspirational Pioneers

PROJECT



 Physics & Biology & Earth Science

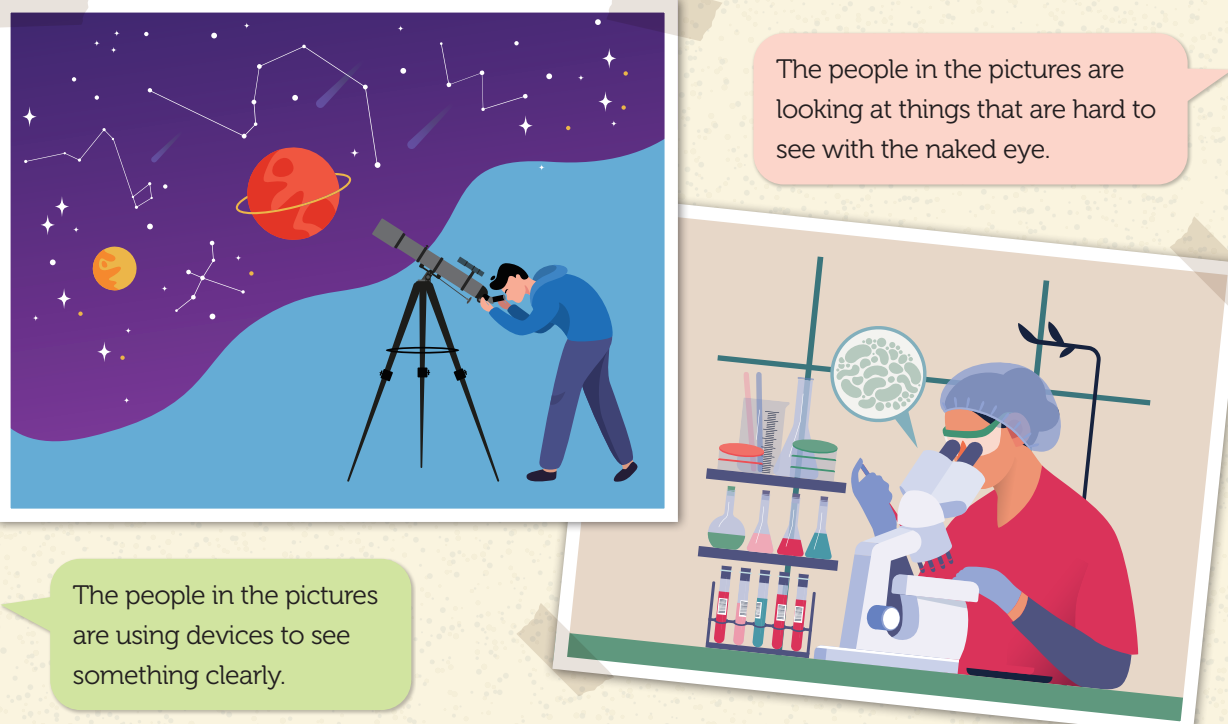
Creating Your Own Booklet

**Your Answer to the
BIG QUESTION**

BEFORE READING 1

A Topic Preview

What do you think the two pictures below have in common? Share your ideas with your partner.



The people in the pictures are looking at things that are hard to see with the naked eye.

The people in the pictures are using devices to see something clearly.

B Vocabulary Preview

Choose the correct words to complete the sentences.

No.	Sentence	Options	
1)	As the fog rolled in, the _____ club decided to cancel their stargazing event for the night.	a) anthropology	b) astronomy
2)	The ferry service experienced delays due to _____ staffing during the busy holiday season.	a) instant	b) insufficient
3)	The scientist used a powerful _____ to gaze at the night sky and search for signs of alien life.	a) telegraph	b) telescope
4)	The federal agency provided funding for advanced _____ to be used in genetic research across the country.	a) drills	b) microscopes
5)	Sarah had a detailed plan for her artistic _____, involving a gallery exhibition and a series of fantastic sculptures.	a) endeavor	b) enrollment
6)	The _____ of modern computing, Alan Turing, made fundamental contributions to the field of computer science.	a) butcher	b) pioneer

C Advanced Reading Strategy

● Identifying the 5Ws and 1H

This strategy helps you comprehend and summarize a text. While reading the text, ask yourself: what happened, who was involved, where it happened, when it happened, why it happened, and how it happened.



Practice

The following is a fictional story.

In the year 2040, a team of astronauts set out on an extraordinary journey to Mars, which is the fourth planet in our solar system from the Sun. The team comprised experienced astronauts from different countries. Their mission was to search for signs of life. They launched their spacecraft during a favorable alignment between Earth and Mars. It took them approximately seven months to reach their destination. Mars was chosen as the destination for the mission due to its similarities to Earth and the possibility that it could support life. The astronauts survived the extreme temperatures and thin atmosphere by establishing a self-sustaining base that relied on advanced technology. This innovative expedition was a significant achievement in space exploration, and it helped pave the way for future interplanetary missions.



Answer the following questions based on the passage above.

Identifying <i>who, where, and when</i>	Who comprised the team? Where did they go? When did they set out on their journey? 1) Who: _____ 2) Where: _____ 3) When: _____
Identifying <i>what and why</i>	What was their mission? Why did they choose Mars as their destination? 1) What: _____ 2) Why: _____ _____
Identifying <i>how</i>	Find and underline how the astronauts survived the harsh Martian environment.



SEARCHING

William Herschel

William Herschel achievements

Look up information about the two pioneers named below and their achievements.

- 1) Frederick William Herschel
- 2) Antonie van Leeuwenhoek

1 Identifying the main idea

The desire to explore the unknown led to revolutionary discoveries in astronomy and biology by two individuals: a m_____ and a f_____.
d_____.

The Far Away and the Tiny: Observing the Invisible

1 For as long as humans have lived, we have wanted to explore the unknown. However, the vast majority of things in existence are so far away or so small that they cannot be seen with the naked eye. Most of the objects in outer space, for example, are so far away that their distance from our planet must be measured in light-years, which is a measurement of the distance that light travels in one year, about 9.46 trillion kilometers. Mirroring the extraordinary vastness of space is the equally extraordinary tininess of the microscopic world. Despite these daunting challenges, it was a musician and a fabric dealer who revealed these invisible worlds of the far away and the tiny, bringing about revolutions in the fields of astronomy and biology.

5

10

Reaching for the Stars

2 Frederick William Herschel was a German-born musician who had a successful career as an organist in England. In addition to his professional dedication to music, he also enjoyed studying mathematics and astronomy. In his free time, he would admire the night sky with his sister, Caroline Lucretia Herschel. He read hundreds of books on astronomy and mathematics and became quite well-informed in these fields. Inspired by Newton's writings on vision and telescopes, William began combining his love of astronomy with his love of mathematics. He would observe the night sky with a reflecting telescope and measure the angles between stars and planets in order to calculate the distances between them.



Frederick William Herschel
(1738–1822)

15

20

Vocabulary

- trillion
- extraordinary
- daunting
- revolution
- dedication
- vision
- calculate

Your Dictionary

Find and write words that you need to study.

- _____
- _____
- _____



Part of *Sir William Herschel and Caroline Herschel* by Alfred Richard Diethe (1896)

3 In the early 1770s, eager to see farther into space, William set about constructing a more powerful telescope. Soon, he was building larger and larger telescopes, including one with a primary mirror that was 1.2 meters in diameter* and a tube that was 12 meters long. For some of his largest telescopes, a framework was needed to hold the device up, and a ladder was required to help the user reach the eyepiece. Building the mirror for such a sophisticated instrument was not easy. To do so, William and Caroline created a mold using horse manure**, poured a melted mixture of metals into it, and then carved the hardened mixture into a rounded form. To maintain the mirror's properties and brightness, they had to polish it regularly, a time-consuming job that they had to repeat every few days.

*diameter 지름 **manure 거름

4 The odd structures and enormous mirrors of the Herschels' telescopes not only enlarged remote objects but also allowed for more light to be captured, thus showing faint objects more brightly. The Herschels' endeavors paid off: objects that had never been seen before could now be observed through the curious equipment. It was in 1781 that William made his most well-known discovery: the planet Uranus.

He became famous overnight and gained a reputation not only as a musician but also as an accomplished astronomer, despite his amateur background.



William Herschel's 40-foot telescope, constructed between 1785 and 1789

3 Identifying the 5Ws and 1H

How did William and Caroline Herschel maintain the properties and brightness of their large telescope mirror?

i

주경 (primary mirror)

망원경의 반사경에서 지름이 가장 크고 빛이나 전파를 최초로 모으는 거울이다.

4 Identifying the 5Ws and 1H

When did William Herschel discover the planet Uranus?

Vocabulary

- framework
- mold
- harden
- property
- enormous
- endeavor
- reputation

Your Dictionary

- _____
- _____
- _____

5 Identifying the 5Ws and 1H

What else did Herschel discover besides Uranus?

5 William Herschel went on to discover two moons of Uranus, two moons of Saturn, clusters and galaxies of stars, and more than 2,500 nebulae*. He cataloged and documented these discoveries in numerous publications. Even though his telescopes have since been surpassed in size and power, his great work set the stage for many more astronomical discoveries, and his passion and patience live on as inspiration for astronomers today.



Photograph of Uranus, taken by Voyager 2 in 1986

*nebula (p/l. nebulae) 성운

Six largest moons of Uranus



천왕성의 위성

천왕성의 위성 중 최초로 발견된 것은 윌리엄 허셜이 1787년에 발견한 티타니아와 오베론이다. 현재까지 알려진 천왕성의 위성은 모두 27개이고, 이들은 암모니아와 이산화 탄소로 추정되는 물질이 응결된 얼음과 암석으로 구성되어 있다.

Discovering the World of the Tiny



Antonie van Leeuwenhoek (1632–1723)

6 About a century before William looked up to the sky, a modest merchant was looking down at the smallest details right here on our home planet. Antonie van Leeuwenhoek also had a passion for astronomy and mathematics, as well as a particular fascination with chemistry, but he had no formal education in any of these fields. Leeuwenhoek worked as a fabric dealer in a small store he had opened with his wife in the Dutch city of Delft. Incredibly, this occupation would eventually lead him to become the father of a new branch of science: microbiology.

Vocabulary

- catalog
- document
- surpass
- modest
- fascination

Your Dictionary

- _____
- _____
- _____



Part of *Leeuwenhoek with His Microscope* by Ernest Board (1912)

7 For his job, Leeuwenhoek had to closely inspect fabric to judge its quality and condition, but he had terrible eyesight, and eyeglasses at the time were insufficient for his needs. This led him to start making his own more powerful glasses, and the activity of making lenses grew into a passion.

67 Summarizing

Antonie van Leeuwenhoek, a fabric dealer, became the father of m_____ by making his own l_____.

8 Leeuwenhoek started making round lenses, each smaller and more powerful than the last, with some being as little as one millimeter across. He used these lenses not to correct his eyesight, but to build microscopes and see things that could not be seen with the naked eye. He devised small microscopes capable of magnifying objects close to 300x, a record for his time. And once he could see the tiniest details, he became obsessed with the world of the tiny. He built numerous microscopes, made countless observations, and drew what he saw through his lenses. By the time of his death, he had built over 500 optical lenses* and had made invaluable scientific discoveries.



Leeuwenhoek's microscope

*optical lens 광학렌즈

3 Identifying details

How many optical lenses had Leeuwenhoek built by the time of his death?

Vocabulary

- insufficient
- magnify
- obsessed
- invaluable

Your Dictionary

- _____
- _____
- _____

10 Inferring the meaning of a word

What do you think "microbes" in line 13 means?

11 Finding synonyms

Find and write the words in paragraph 11 that can replace the words below.

- 1) admit → a _____
- 2) assumptions → h _____
- 3) field → d _____

Source <https://www.britannica.com/위> (p.180 참조)

9 It was in the 1670s and 1680s that Leeuwenhoek made his most significant observations, starting in 1673, when he drew detailed, close-up depictions of bee stingers and fungi. This was just the beginning, however, as his increasingly zoomed-in observations led him to discover extremely tiny living beings, now known as microorganisms. He first saw them in pond water and rainwater, but he later found them in the human mouth and other parts of the body; he had discovered bacteria.

10 His contributions to scientific advancement did not stop there. He examined approximately 200 biological species, and he also contributed to a better understanding of the human body. For example, he discovered red blood cells and the pattern of muscular fibers. Encouraged by a doctor, Leeuwenhoek shared his research with the Royal Society of London. He started by describing how the number of microbes in a mixture of water and ground pepper increased to the point where there were nearly three million microbes in each drop.

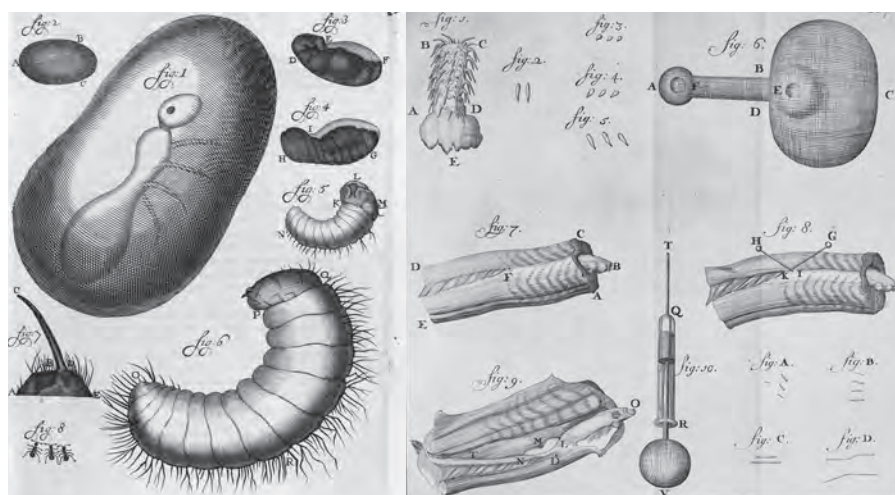
11 Since Leeuwenhoek was an amateur without a background in higher education, his claims were first met with doubt by the scientific community. Yet little by little, experts began to acknowledge that his work was worth pursuing. In 1680, with the help of others who proved his hypotheses, Leeuwenhoek became the first amateur scientist to become a member of the Royal Society of London. Despite his unconventional background, Leeuwenhoek went down in history as a pioneer of microbiology, and his influential work helped establish a whole new scientific discipline.

Vocabulary

- advancement
- fiber
- acknowledge
- hypothesis
- unconventional
- discipline

Your Dictionary

- _____
- _____
- _____



Illustrations of microorganisms and bacteria drawn by Antonie van Leeuwenhoek

AFTER READING 1

A Organization

Choose the appropriate words and complete the graphic organizer.

Things that were previously (1) _____ to the naked eye, both in space and in the microscopic world, became visible thanks to two (2) _____ people: a musician and a fabric dealer.

Frederick William Herschel

Despite being a(n) (3) _____, he became an expert in the fields of astronomy and mathematics by reading hundreds of books.

In the early 1770s, he set about constructing telescopes, including a large telescope with a(n) (4) _____ that was 1.2 meters in diameter and a tube that was 12 meters long.

He discovered the planet Uranus, two (5) _____ of Uranus, two (5) _____ of Saturn, clusters and galaxies of stars, and more than 2,500 nebulae.

Antonie van Leeuwenhoek

Working as a fabric dealer, he made his own lenses to closely (6) _____ fabric, which later led him to make lenses that could be used in microscopes.

Starting in 1673, he began drawing what he observed with his lenses, including extremely (7) _____ organisms that he found in ponds, in rainwater, and even in the human (8) _____ and other parts of the body.

Experts started to (9) _____ his work and, in 1680, he became a member of the Royal Society of London.

mouth invisible mirror devoted
acknowledge tiny moons organist inspect

B Details

Read the statements and check T for true or F for false.

	T	F
1) Herschel had to make enormous mirrors for his telescopes by himself.	<input type="checkbox"/>	<input type="checkbox"/>
2) Herschel's most well-known discovery occurred in 1781, when he discovered Saturn.	<input type="checkbox"/>	<input type="checkbox"/>
3) Leeuwenhoek discovered red blood cells and the pattern of muscular fibers.	<input type="checkbox"/>	<input type="checkbox"/>

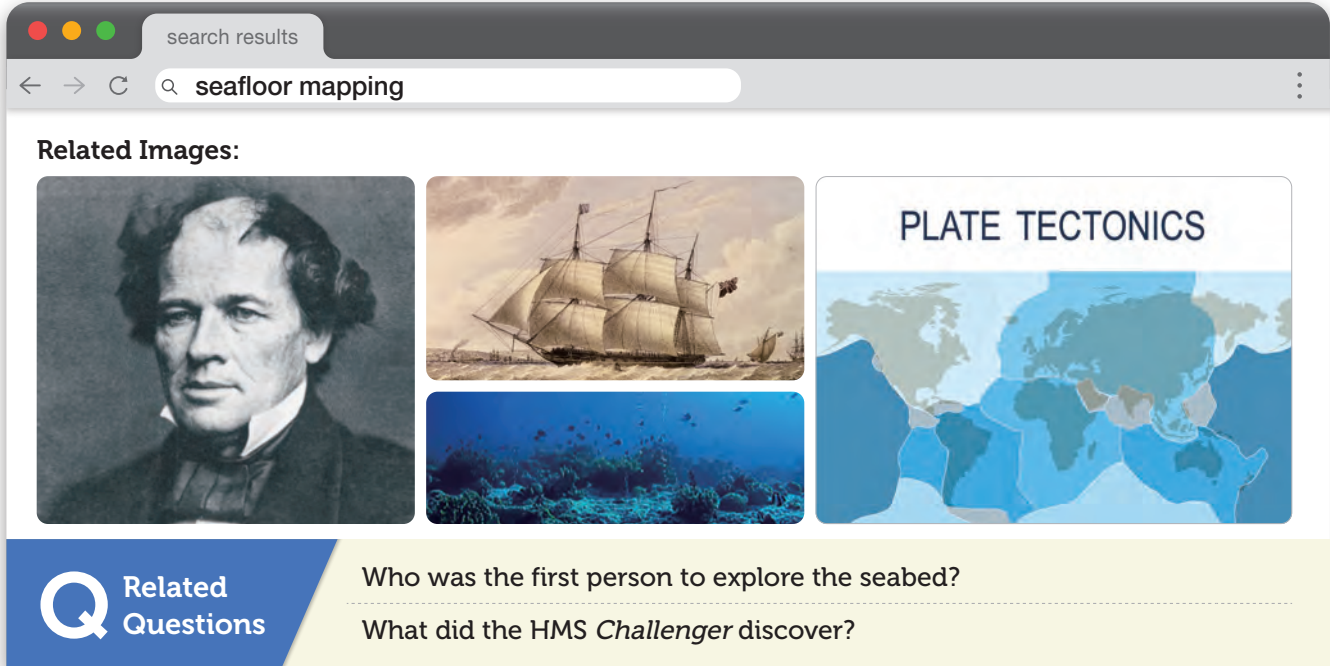
Q Leading to the BIG QUESTION

Why do you think scientists in the fields of astronomy and biology admire Herschel and Leeuwenhoek?

BEFORE READING 2

A Topic Preview

Look at the search results below and guess what the main text will be about. Share your ideas with your partner.



The screenshot shows a web browser window with the address bar displaying 'search results' and the search bar containing 'seafloor mapping'. Below the search bar, there is a section titled 'Related Images:' which contains four images: a portrait of a man, a sailing ship, a deep-sea hydrothermal vent, and a world map titled 'PLATE TECTONICS'. Below the images, there is a blue box with a white 'Q' icon and the text 'Related Questions'. To the right of this box, there are two questions: 'Who was the first person to explore the seabed?' and 'What did the HMS Challenger discover?'.

I think the main text will be about **how people started to explore the seabed and what they found.**

B Vocabulary Preview

Paying attention to the **bold-faced** words, choose the correct clause or phrase from the box to complete each sentence.

- 1) The surveyor will **map** the property _____.
- 2) Climbing the **ridge** was challenging, _____.
- 3) The cruise ship was a luxurious **vessel** _____.
- 4) The team departed on a daring **expedition** _____.
- 5) A compound's chemical **composition** refers to the relative proportion of _____.

- Ⓐ but the view from the top was worth it
- Ⓑ to explore the depths of the Mariana Trench
- Ⓒ to resolve the land dispute between the neighbors
- Ⓓ with enough room for more than 3,000 passengers
- Ⓔ atoms, their arrangement, and their ratio in one of its molecules

C Advanced Reading Strategy

● Inferring the meaning of a word or phrase

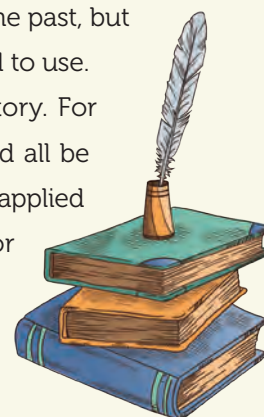
When you come across a word or phrase you do not know, you can use context to infer its meaning. First, figure out the overall context. Then consider the immediate context, such as the other words in the same sentence or in nearby sentences.



Practice

Long ago, the adjectives *historical* and *historic* were considered synonyms. Over time, however, their meanings have changed. Both words are still used to describe things related to the past, but the importance of the thing being described is what determines the correct word to use.

Historic is only used to describe important events, objects, or places in history. For instance, Anne Frank's house, Cleopatra's life story, and the first computer could all be considered historic. On the other hand, *historical* is a general word that can be applied to anything from the past, no matter how significant or insignificant it is. For example, a soldier's breakfast during the American Civil War would only be considered a historical event, unless it somehow became part of a pivotal moment in history.



➔ Answer the following questions based on the passage above.

Figuring out the overall context

What is the passage mainly about?

- Ⓐ events that affected history
- Ⓑ factors that change word meanings
- Ⓒ a typical breakfast of soldiers in the past
- Ⓓ the difference in meaning between two words

Considering the immediate context

Write *historic* or *historical* for each event, object, or place.

- 1) the first computer _____
- 2) Anne Frank's house _____
- 3) Cleopatra's life story _____
- 4) an American Civil War soldier's breakfast _____

Inferring the meaning of the word

Find and write two synonyms of the underlined word in the passage.



The Answers Found at the Bottom of the World



i

해양학 (oceanography)

바다 및 바다에 사는 생명체를 연구하는 자연 과학으로, 물리 해양학, 화학 해양학, 지질 해양학, 생물 해양학으로 나뉜다.

Vocabulary

- abound
- humankind
- expedition

Your Dictionary

Find and write words that you need to study.

- _____
- _____
- _____

1 The oceans form a continuous body of about 1.37 billion cubic* kilometers of salt water that covers more than 70 percent of the earth's surface. As oceans provide roughly 97 percent of the earth's water supply, their importance to all life on our planet is undeniable. The oceans abound with diverse forms of life, including everything from microscopic single-cell organisms to the planet's largest-ever living being, the blue whale. Despite how much it has been studied, this vast underwater world remains one of the biggest mysteries to humankind, with more than 80 percent of it still unexplored.

*cubic 세제곱의

2 The ocean is not just teeming with life; it holds the keys to understanding much of the planet's history. And while oceanography began to develop in the 19th century, it was not until the 20th century, when researchers began using sonar* technology to map the ocean floor, that people started to realize the great importance of understanding the ocean.

*sonar 수중 음파 탐지

1 2 Inferring the meaning of a word

Guess what "teem" in line 9 means by using context.

3 In the 1850s, Matthew Fontaine Maury, an American navy officer, published what can be considered the first books on modern oceanography. Analyzing logbooks, collecting information from whaling ship captains, and leading his own expeditions, Maury gathered and documented invaluable knowledge about ocean currents and winds. Among his works is the first contour* map of the Atlantic seafloor, where he documented a strange discovery: an underwater mountain range, which he called "Middle Ground" and which is now known as the Mid-Atlantic Ridge**.

*contour 등고선 **Mid-Atlantic Ridge 대서양 중앙해령



Matthew Fontaine Maury
(1806–1873)

Little did Maury know that this discovery would play a big role in understanding the planet's formation. More than a century would pass before scientists would be able to explain why this ridge exists.

3 Identifying the 5Ws and 1H

Find and underline how Maury gathered information about ocean currents and winds.

4 Maury's chart of the Atlantic may have been the beginning of modern oceanography, but it was incomplete, and it included only 200 depth measurements of more than 1,000 fathoms. As the average depth is over 2,000 fathoms, this meant

that the vast majority of the ocean was still unknown. This uncharted territory caused a lot of rumors and controversies. A highly respected naturalist by the name of Edward Forbes famously guessed that below about 300 fathoms, freezing conditions made life impossible. This claim was strongly rejected by Charles Darwin, the father of evolutionary biology. According to Darwin, the ocean held in its depths the answer to the mystery of life's origins.



팩덤 (fathom)

물의 깊이를 측정하는 단위 중 하나로, 1팩덤은 대략 1.83미터와 같다.

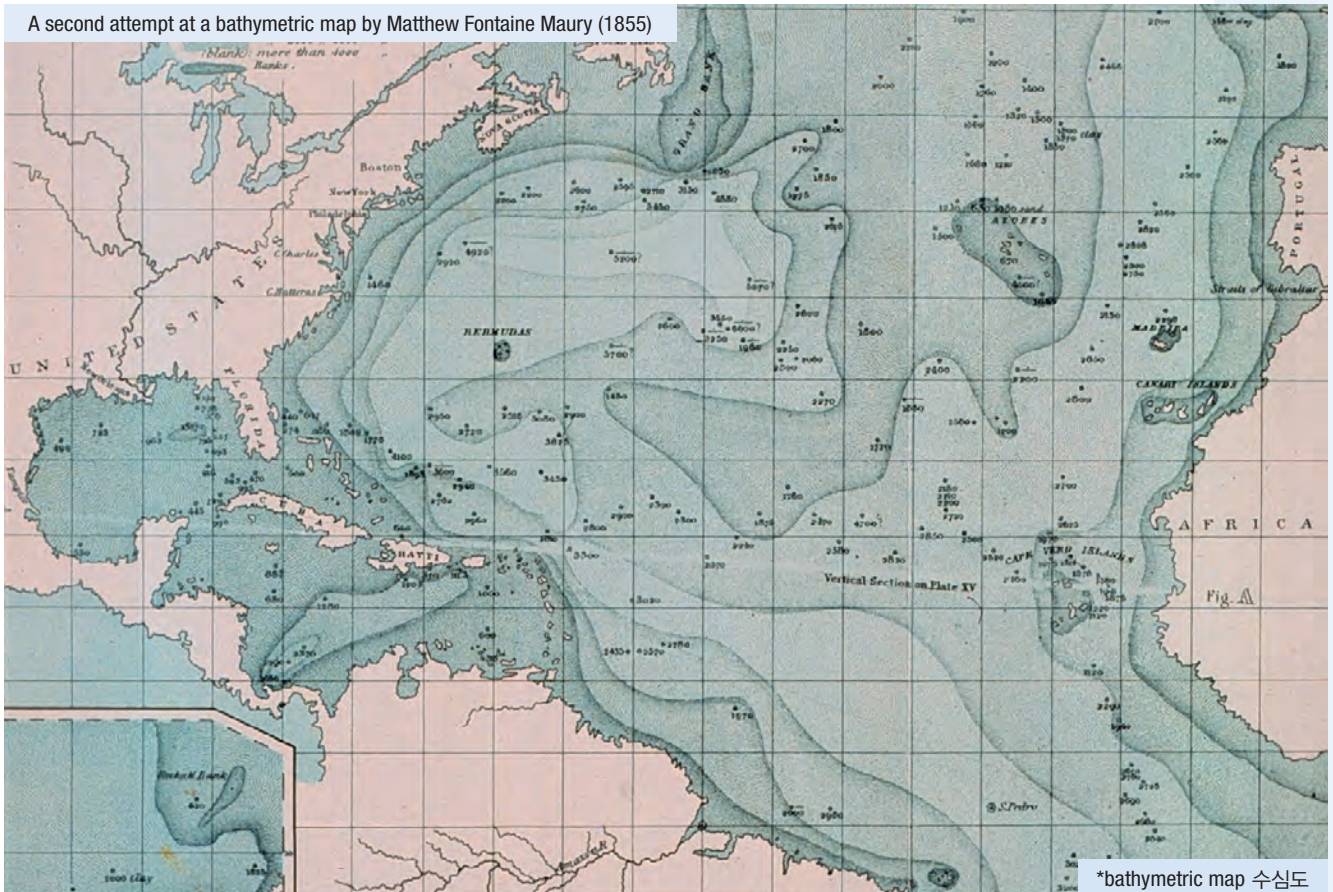
Vocabulary

- uncharted
- territory
- controversy

Your Dictionary

- _____
- _____

A second attempt at a bathymetric map by Matthew Fontaine Maury (1855)



i

준설기 (dredge)

물속의 흙이나 모래 등을 파내는 데 쓰이는 기계이다.

■ Vocabulary

- vessel
- dwell
- latitude

■ Your Dictionary

- _____
- _____
- _____

5 In order to settle these arguments, various deep-sea expeditions were launched in the 1870s, and the most famous vessel involved in these expeditions was the British government's HMS *Challenger*. In 1872, its crew set sail in the hopes of shining a light on what might dwell in the dark depths of the ocean. After a few months, they arrived in the West Indies and dredged* deeper than anyone had before. And it was from these dredges that they finally made the discovery they were hoping for: life. In the sand they pulled up from the deep ocean floor, they found worms and other organisms that proved life could thrive at great depths. This discovery demonstrated that Forbes's theory was incorrect.

*dredge 준설하다; 준설기

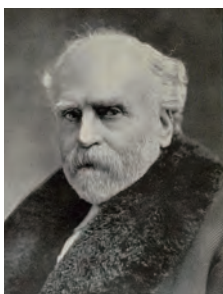
6 During their famous expedition, the crew also took numerous measurements of the speed of the ocean currents and the temperature of the water. The crew compared the temperatures at set depths, and their measurements revealed that the water was warmer in the northeastern part of the Atlantic than in the northwestern part, despite being at the same latitude. It was as if Maury's Middle Ground formed a wall between the east and west Atlantic. Little did they realize, though, how enormous this wall really was.

5/6 Identifying details

Which of the following is NOT mentioned as something that the crew of the HMS *Challenger* learned about during their expedition?

- Ⓐ the temperature of water
- Ⓑ the speed of ocean currents
- Ⓒ tiny organisms at great depths
- Ⓓ the locations of various oceans

The HMS Challenger in the Southern Ocean
by Herbert Swire (1934)



Sir John Murray
(1841–1914)

7 The *Challenger*'s seabed research was led by John Murray, who, as a member of the crew from the start of the expedition, had become an

expert in seafloor composition. According to legend, he had become so skillful in identifying sediment that he could tell where a sample was from just by looking at it, feeling it, or even from tasting it. Yet the seafloor still had a few surprises in store, even for someone with such talent.

7 Inferring the meaning of a word

Guess what "sediment" in line 11 means by using context.

8 After sailing over a depth of around 2,300 fathoms for a few days, the *Challenger* crew lowered the sounding line, as they had done every day, to

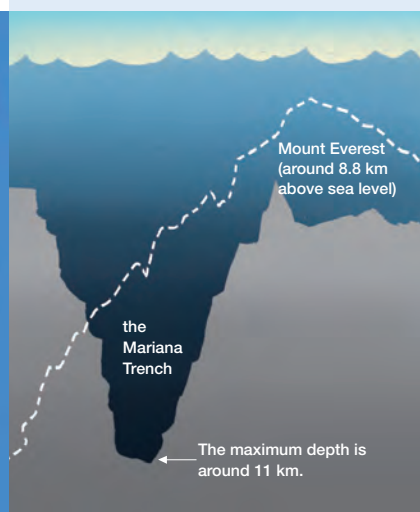
measure the depth. Only this time, it did not stop at 2,300 fathoms. The line kept spooling until it reached an overwhelming 4,500 fathoms, corresponding to about 8.5 kilometers. The *Challenger* had reached an area now known as the Challenger Deep, at the edge of the Mariana Trench. As astonished as the crew may have been, some parts of the Mariana Trench reach an incredible depth of 6,000 fathoms—or around 11 kilometers. To put things in perspective, Mount Everest is less than 9 kilometers high.

9 The discovery of this new depth was followed by another surprise. Observation through a microscope of the clay pulled up from this depth revealed that microorganisms were dwelling in the ocean floor. It was becoming more and more certain that life exists at all ocean levels, no matter how deep or dark.

Location of the Mariana Trench



Comparison of the depth of the Mariana Trench and the height of Mount Everest



i

측연선 (sounding line)

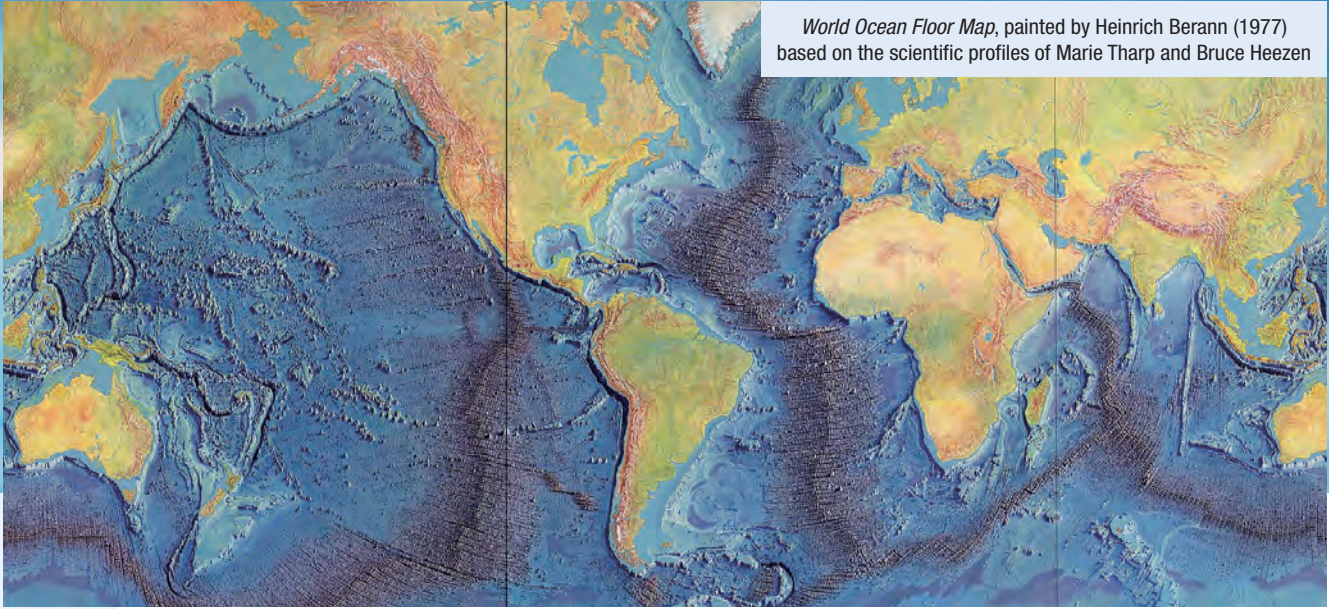
바다의 깊이를 재는 데 쓰이는, 납덩이가 달린 줄이다.

Vocabulary

- composition
- in store
- spool
- overwhelming
- correspond

Your Dictionary

- _____
- _____
- _____



World Ocean Floor Map, painted by Heinrich Berann (1977)
based on the scientific profiles of Marie Tharp and Bruce Heezen

i

판 구조론
(plate tectonics)

지구의 표면이 여러 개의 판으로 이루어져 있으며, 판들이 이동함에 따라 지진, 화산 등 다양한 지질 현상이 발생한다는 이론이다.

10 By the time the *Challenger* returned to England in 1876, it had sailed 127,600 kilometers, gathered observations from 362 stations, and discovered 4,700 new plant and animal species.

tributed the ridge to the movements of giant plates that rub against each other or come apart, causing mountains and volcanoes to form. The theory of plate tectonics was finally born.

25

11 Inferring the meaning of a phrase

Guess what “a paradigm shift” in lines 22–23 means by using context.

11 During the 20th century, with the advent of sonar technology, humans were able to create more complete and accurate maps of the ocean floor. In 1953, Marie Tharp (1920–2006) began plotting sonar readings on charts, and she discovered several mountain ranges under the sea, including the still-mysterious “Middle Ground” Maury had noticed more than a century earlier. Thanks to her thorough mapping and her colleagues’ data collection, a precise map of the Atlantic Ocean’s seafloor was finally complete. This map included the Mid-Atlantic Ridge and caused a paradigm shift in earth science. Scientists at-

12 What happens at the bottom of the ocean may seem irrelevant to most of us, but exploration of the seafloor has answered many questions that scientists have had about what happens on land. From the formation of our planet to the development of living organisms, many of the world’s greatest secrets are revealed in the ocean’s depths.

30

35

■ Vocabulary

- advent
- plot
- attribute
- irrelevant

■ Your Dictionary

- _____
- _____
- _____

Source Val Ross, *The Road to There: Mapmakers and Their Stories* (p.180 참조)

AFTER READING 2

A Organization

Fill in the blanks with ①–④. Then put (A)–(D) in chronological order.

The Answers Found at the Bottom of the World

(A) Marie Tharp created _____. This led scientists to attribute the Mid-Atlantic Ridge to the movements of giant plates.

(B) The HMS *Challenger* set sail and arrived in the West Indies. The crew dredged deep and found _____.

(C) Sir John Murray led the *Challenger's* seabed research. The crew pulled up _____ and discovered microorganisms.

(D) Matthew Fontaine Maury discovered an underwater mountain range, which is _____.

- ① that life could thrive at great depths
- ② now known as the Mid-Atlantic Ridge
- ③ clay from the edge of the Mariana Trench
- ④ a precise map of the Atlantic Ocean's seafloor

Order: _____ → _____ → _____ → _____

B Details

Read the statements and check T for true or F for false.

	T	F
1) Matthew Fontaine Maury is considered to have published the first books on modern oceanography.	<input type="checkbox"/>	<input type="checkbox"/>
2) Edward Forbes guessed that no life could exist below a depth of 300 fathoms.	<input type="checkbox"/>	<input type="checkbox"/>
3) Sir John Murray produced the first contour map of the Atlantic seafloor.	<input type="checkbox"/>	<input type="checkbox"/>
4) Marie Tharp discovered how tectonic plates cause underwater mountains and volcanoes to form.	<input type="checkbox"/>	<input type="checkbox"/>

Q Leading to the BIG QUESTION

What important discoveries did the people who studied oceanography and the seafloor make?

EXPRESSIONS

Practice 1

Definitions

Choose the correct explanation for each underlined phrase.

- 1) If you document something, it means you _____.
 (a) rush to catch it (b) make a judgement about it
 (c) provide enough of what it needs (d) record or write down information about it
- 2) If you acknowledge something, it means you _____.
 (a) spoil it completely (b) fasten it for safety
 (c) feel depressed because of it (d) admit its existence, importance, or truth
- 3) If things dwell in a particular place, it means they _____.
 (a) live there (b) visit it frequently
 (c) try to avoid it (d) have difficulty surviving there
- 4) If you are obsessed with something, it means you _____.
 (a) cannot stand it (b) are indifferent to it
 (c) are uncertain about it (d) keep thinking about it

Practice 2

Synonyms

Choose the correct synonym for each of the **bold-faced** words.

- 1) Their advice was **invaluable** to me at that stage of my work. _____
- 2) The great taste of the wine is **attributed** to the quality of the grape. _____
- 3) With enough **dedication** and determination, you can achieve a great deal. _____
- 4) The view of the grand landscape stretching out before us was **extraordinary**. _____
- 5) The researchers discovered ruins within the **territory** of an ancient civilization. _____
- 6) The information you shared is completely **irrelevant** to the topic we're discussing. _____

- | | | |
|----------------|----------------|---------------|
| (a) credited | (b) area | (c) precious |
| (d) commitment | (e) incredible | (f) unrelated |

Practice 3

Words in context

Choose the correct words to complete the sentences. Change the forms if necessary.

- 1) The author is known for her _____ writing style and use of unique settings.
- 2) Visitors love the amusement park because it _____ with rides and attractions.
- 3) The government's new policy sparked a(n) _____ among the country's citizens.
- 4) A laser light show and other exciting surprises are _____ for guests at the upcoming product launch event.

abound	in store	unconventional	controversy
--------	----------	----------------	-------------

GRAMMAR

- We can use the 「*it is / was ~ that ...*」 structure to give emphasis. When a person is emphasized, *who* can be used instead of *that*.

<input type="checkbox"/> <i>Jane</i> won the debate competition.	➡ It was <i>Jane</i> that [who] won the debate competition.
<input type="checkbox"/> <i>Math</i> gives me a headache.	➡ It is <i>math</i> that gives me a headache.
<input type="checkbox"/> I was eating <i>strawberry cake</i> .	➡ It was <i>strawberry cake</i> that I was eating.
<input type="checkbox"/> We are meeting for lunch <i>on Monday</i> .	➡ It is <i>on Monday</i> that we are meeting for lunch.
- To emphasize certain time expressions, we can use the 「*it is / was not until ~ that ...*」 structure.

<input type="checkbox"/> He didn't start to draw <i>until he was 40</i> .	➡ It was not <i>until he was 40</i> that he started to draw.
---	---

Go to pages 12, 16, and 20.

Find the sentences with these structures above and underline them.

Practice 1

Rewrite the sentences by using the 「*it is / was (not until) ~ that ...*」 structure and emphasizing the underlined parts.

- 1) Gary or Jenny stole the phone.
→ _____
- 2) You have to think about your health.
→ _____
- 3) Collins bought this fertile land from his uncle.
→ _____
- 4) Ethan and Wendy met yesterday at the museum.
→ _____
- 5) Nate did not leave the concert hall until his daughter finished her performance.
→ _____

Practice 2

Read the questions and their answers. Rewrite the answers using the 「*it is / was ~ that ...*」 structure.

- 1) Q: When did the first moon landing occur? A: In 1969.
→ _____
- 2) Q: Where did the Olympic Games first take place? A: In Greece.
→ _____
- 3) Q: Who created Hangeul, the Korean writing system? A: King Sejong.
→ _____

Inspirational Pioneers

PREPARE TO WRITE

⊕ CHECK-UP

Which of the following reasons does NOT match the opinion, “I like living in the countryside, not in the city”?

- Ⓐ Cities have problems with traffic.
- Ⓑ The country is quieter than the city.
- Ⓒ Public transportation is much more convenient in cities.

A Writing Strategy

Reasoning

The reasoning strategy is a technique used in writing to persuade readers to support an argument or position by providing logical and convincing reasons to do so. These reasons are usually presented with evidence and analysis to support them. The reasoning strategy can be used in different types of writing, including research papers and argumentative essays.

B Writing Sample

Read the following personal essay. Pay attention to how the paragraph develops and how the writer supports the main idea.

An introduction to a field of interest and one of its pioneers

The first reason and a supporting detail

The second reason and a supporting detail

The third reason and a supporting detail

A conclusion with the writer's reflection

A field that I am interested in is theater, and one of its pioneers was William Shakespeare. He was a renowned poet, playwright, and actor. I admire him because he helped shape theater into what it is today. I believe he had a significant influence on this field for the following reasons.

First, Shakespeare invented a lot of words and phrases. Many of these are still commonly used today, such as *birthplace*, *dewdrop*, and *break the ice*. Another reason is that, through experimentation, he expanded plot development and created new genres. For example, Shakespeare was the first to combine romance and tragedy in his plays, such as in *Romeo and Juliet*. His plays also deal with emotions and situations that many people can still relate to. These include love, jealousy, and ambition.

Like him, I want to have a significant influence on theater when I become a playwright in the future. I hope my plays can also speak to people and leave a lasting impression, just like Shakespeare's.

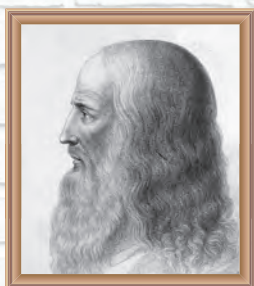


William Shakespeare
(1564–1616)

WRITE YOUR OWN

A Gathering Ideas

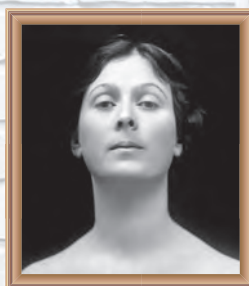
Choose one person who was a pioneer in a field that you are interested in. Think of reasons why that person is regarded as a pioneer.



☐ Leonardo da Vinci



☐ Wolfgang Amadeus Mozart



☐ Angela Isadora Duncan



☐ _____
(Your own)

B Outlining

Research the person you chose in **A** and complete an essay outline about him or her.

	Example	Your own
Name	William Shakespeare	
Reason 1	invented a lot of words and phrases	
Supporting detail 1	<i>birthplace, dewdrop, break the ice</i>	
Reason 2	expanded plot development and created new genres	
Supporting detail 2	the first to combine romance and tragedy in his plays	
Reason 3	deal with emotions and situations that many people can still relate to	
Supporting detail 3	love, jealousy, and ambition	

C Building Sentences

Write sentences using the essay outline in **B**.

LANGUAGE TIPS

- A field that I am interested in is ...
- The field of ... has always captivated me.

LANGUAGE TIPS

- created a masterpiece
- made a great discovery
- a remarkable piece of research

⊕ STRUCTURE GUIDE

- A well-structured essay is usually divided into an introduction, a body, and a conclusion.
- Add a supporting detail sentence after each of your reasons.

1. Introduce a field that you are interested in and one of its pioneers.

2. Explain three reasons why this person is/was a pioneer in your chosen field.

- 1) _____

- 2) _____

- 3) _____

D Drafting

Write a personal essay about the inspirational pioneer you have chosen based on **B** and **C**.

E Revising and Editing

Revising Tip Unity

In writing, the unity of a passage refers to how well the sentences support one main idea. You can revise your draft by removing sentences that do not directly support the main idea.

Check-up 1 Find and underline a sentence that doesn't support the main idea.

Do you want to break a bad habit? Then follow these tips. First, you have to figure out what is causing it. Once you find the cause, think of a realistic way to change the bad habit. Everyone has their own unique habits. Second, try replacing it with a healthier habit. For example, you could replace a sugar craving after dinner with a walk or some fruit.

Editing Tip Subject-Verb Agreement

Subject-verb agreement refers to the matching of a subject and its verb in their forms. When the subject of a sentence is singular, the verb that follows it should also be in the singular form. Similarly, when the subject is plural, the verb should be in the plural form.

+ EXAMPLES

- The Han River flows through Seoul.
S V
- These books were written by Jane Austen.
S V
- It has been three weeks since Independence Day.
S V

Check-up 2 Find the incorrect verbs in the sentences below and correct them.

- 1) A lot of students in our school brings their own food for lunch.
- 2) One of the most famous towers in the world are the Eiffel Tower.

F Finalizing

Go back to **D Drafting** and modify your draft.

SHARE & REVIEW

A Check your own draft according to the criteria below. Then share it with your partner and get their feedback.

	You	Partner
1. Does it include reasons why the selected person is regarded as a pioneer?	<input type="checkbox"/>	<input type="checkbox"/>
2. Does each reason have a supporting detail?	<input type="checkbox"/>	<input type="checkbox"/>
3. Do the supporting details support the reasons well?	<input type="checkbox"/>	<input type="checkbox"/>
4. Do all the verb forms in the sentences match their subjects?	<input type="checkbox"/>	<input type="checkbox"/>

B Is your partner's draft well-organized? Write your opinion here.


I think _____.
ex) all of the sentences clearly explain why he is a pioneer in his field

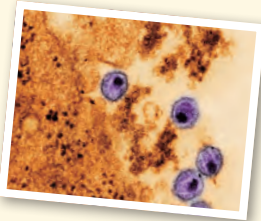



Creating Your Own Booklet



Dive deeper into the areas covered in Reading 1 and 2, where pioneers pushed the boundaries. Then create your own booklet with illustrations and information.

STEP 1

Choose one area of study and write down what you and your group members want to learn more about. 

<input type="checkbox"/> microorganisms  <ul style="list-style-type: none"> • cell structure • viruses like Ebola • microorganisms in soil • _____ 	<input type="checkbox"/> stars and planets  <ul style="list-style-type: none"> • the Pink Moon • the solar system • planet alignment • _____
<input type="checkbox"/> seafloor map  <ul style="list-style-type: none"> • ridges • the ocean floor • continental slope • _____ 	<input type="checkbox"/> _____ (Your own)  <ul style="list-style-type: none"> • _____ • _____ • _____ • _____

STEP 2

In your group, assign each member a task to help create your booklet and complete the table below.

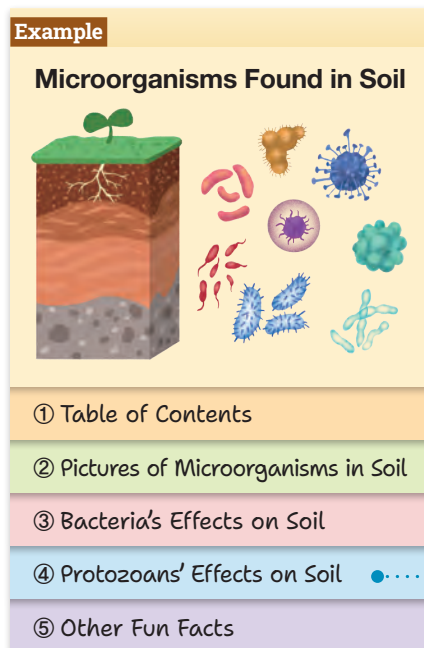
+ EXAMPLES OF TASKS

- find some pictures
- search for information
- organize the contents of the booklet
- write down information in the booklet

Name	Task
ex) Taeho	ex) draw microorganisms found in soil

STEP 3

Search for information on your group's topic and create your booklet.



Did you know?
 Protozoans play a crucial role in maintaining the fertility of soil.

- Protozoans are tiny living things. They are neither plants nor animals.
- Amoebas are a kind of protozoan.
- They are found all over the body. Some of them can cause diseases.

④ Protozoans' Effects on Soil

STEP 4

Display your group's booklet and present it to your classmates.

+ LANGUAGE TIPS

- Our group researched / looked into ...
- We learned / found out that ...

Our group looked into microorganisms found in soil. Here are some pictures. While researching the topic, we found out that one teaspoon of soil contains more microorganisms than there are people on the planet!



CHECK YOUR PROGRESS

1. Did you find useful information about the topic you chose?
2. Did you use pictures to help explain the information?
3. Were the contents organized well in the booklet?
4. Did all the group members carry out their roles?

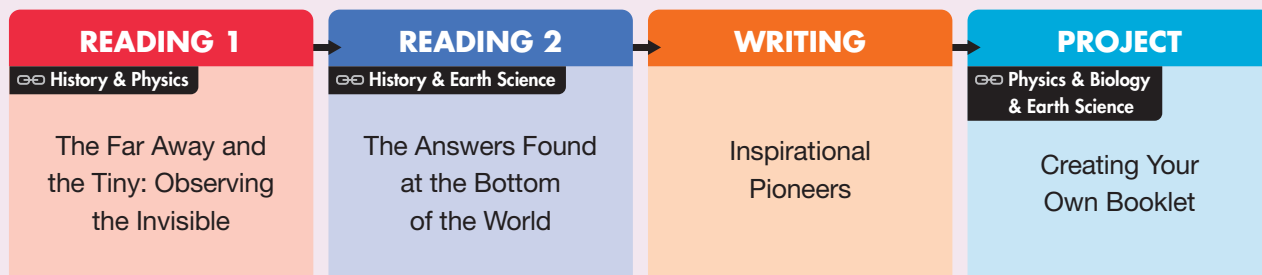
Yes	No
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

WRAP UP

Reflect on what you learned in this lesson.

Q BIG QUESTION

What field do you want to pioneer or influence?



A Reading

We read about some historical figures who were pioneers in various fields. Do you know any other pioneers? Search the internet for information about the person and fill in the table below. Then share the information with your partner.

Name	Field of expertise	His/Her achievements
ex) Elizabeth Garrett Anderson	ex) medicine	ex) She broke barriers for women in medicine and was committed to public health.

Who did you choose? What did you learn?

I chose **Elizabeth Garrett Anderson**, who is a pioneer in the field of **medicine**. **She broke barriers for women in medicine and was committed to public health.**



B Writing

Find out more about the person you researched in A. Then write an essay about the person.

Supporting details for his/her achievements		

Final Answer to the BIG QUESTION

Did your answer to the big question change during the lesson? Check the appropriate box below. If your answer changed, explain why.

☐ Yes. My final answer is “_____.”
ex) I want to have an influence on the field of space exploration, where there is a lot still to be explored

I changed my answer because _____.
ex) I was impressed by William Herschel's efforts and achievements in astronomy

☐ No, my first answer hasn't changed.

FINAL CHECK

Core Competence	I can ...
Reading Strategy 1	<input type="checkbox"/> identify the 5Ws and 1H while reading a text.
Reading Strategy 2	<input type="checkbox"/> infer the meaning of a word or phrase by using context.
Grammar	<input type="checkbox"/> use the 「it is/was ~ that ...」 structure to emphasize a part of a sentence.
Writing Strategy	<input type="checkbox"/> write about an inspirational pioneer and provide reasons for my thoughts and opinions.



MAPPING THE DEPTHS BELOW

BEFORE READING

Do you know of anyone who had a great influence on modern cartography*?

*cartography 지도 제작

1 Marie Tharp was a brilliant cartographer whose work triggered a wave of great progress in geology in the mid-twentieth century. She was born in 1920, and she was exposed to the field of cartography through her father, who drafted soil maps for the United States government. However, she was not immediately passionate about mapmaking. In fact, she studied English literature at Ohio University. It was after World War II that she switched fields and began her career in cartography.

2 Before World War II, only men could specialize in scientific fields, and university degrees were reserved for male students. However, when the war broke out, men started to be drafted into the army, and the number of scientists decreased. Therefore, it became more common for universities to admit women into their scientific programs, and Tharp got the chance to acquire a degree in geology from the University of Michigan and a degree in mathematics from the University of Tulsa. In 1948, she was employed as a research assistant at the Lamont Geological Observatory at Columbia University. There, she used the data collected from sonar technology on sea vessels to map the ocean floor.



Marie Tharp (1920–2006)

3 Tharp conducted her work under the supervision of Bruce Heezen, who had the crews of the vessels implement strict standards in their collection of data when they set out in the Atlantic Ocean. Tharp could not participate in these expeditions herself, because women were forbidden from boarding ships at that time. However, with the data that was collected and brought back to her, she was able to make detailed diagrams of the seafloor. As she received more data, she started noticing a weird pattern in the center of her drawings. At that time, continental drift theory had started to develop, and Tharp's findings seemed to support it. Nevertheless, the theory seemed so outrageous that even Heezen dismissed her conclusions.

4 In 1953, however, Heezen was forced to take Tharp's findings seriously, as his own investigations of earthquakes in the Atlantic conformed with her theories. Tharp and Heezen then collaborated to create the first physical geographic map of the North Atlantic Ocean's floor in 1957. By this time, their findings were very reliable, since they used upgraded technology to review their work and make it more exact. The accuracy of their unprecedented work was later confirmed with satellite imaging.

5 Tharp and Heezen did not stop after completing this first map. Next, they undertook the mapping of the rest of the world's oceans, starting with the Indian Ocean. By 1977, they had accumulated enough data to finish a map of the entire planet's ocean floor.

6 Tharp's work was an undeniable factor in the development of modern cartography. Her outstanding maps offered people a highly accurate visualization of the seafloor for the first time. Tharp remarked, "I think our maps contributed to a

revolution in geological thinking." Besides her maps, she also co-authored numerous articles and books that contributed to the development of the theories of continental drift and plate tectonics. Through persistence, she was able to overcome prejudices against women and make a lasting impact on her field.

Source <https://www.lib.uchicago.edu/> 외 (p.180 참조)



Marie Tharp in 2001

AFTER READING

- 1)** Choose the correct words to complete the summary of the passage.

Marie Tharp revolutionized geology in the mid-twentieth century by mapping the previously (well-known / unknown) ocean floor and making a discovery that would (support / contradict) the theory of plate tectonics.

- 2)** What is NOT true according to the passage?

- Ⓐ Tharp was not interested in mapmaking at an early age.
- Ⓑ It was not easy for women to get university degrees in the sciences before World War II.
- Ⓒ Tharp sailed on many expeditions.
- Ⓓ Heezen eventually accepted Tharp's findings.

LESSON

2

Sustainability

단원 설정 취지

지속 가능한 도시 및 경제 정책에 대해 알아보고, 자신이 사는 곳이 지속 되기 위해 필요한 요소를 이야기할 수 있다.

LESSON GOALS

READING

1. 덴마크의 코펜하겐을 설계한 도시 설계 전문가이자 건축가인 Jan Gehl과의 인터뷰를 읽고, 지속 가능한 도시 설계가 무엇인지 이해할 수 있다.
[Reading Strategy] Identifying cause & effect / problem & solution
2. 지속 가능한 새로운 경제 모델인 '도넛 경제학'에 대한 글을 읽고, 그 내용을 이해할 수 있다.
[Reading Strategy] Recognizing the repetition of ideas

WRITING

환경 파괴 및 지속 가능성과 관련된 그래프를 작성하고, 이를 설명하는 글을 쓸 수 있다.
[Writing Type] Analytical
[Writing Strategy] Describing a graph

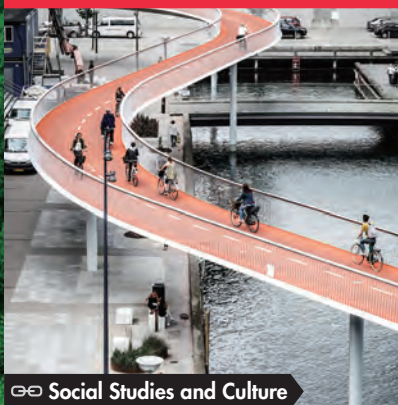
GRAMMAR


Brian ran down the street **with his dog following** behind him.

BIG QUESTION

What policies are needed to make your country more sustainable?

READING 1




 Social Studies and Culture

Giving the City Back to the People

READING 2



 Economics

Doughnut Economics:
A Sustainable Approach
to Economics

WRITING



How Green Is It?

**Your Answer to the
BIG QUESTION**

BEFORE READING 1

A Topic Preview

What problems do cities face, and what do sustainable cities look like? Share your opinions with your partner.



The city where I live has a lot of traffic problems.



I think sustainable cities use alternative energy sources.

B Vocabulary Preview

Choose the correct words to complete the sentences.

No.	Sentence
1)	Investing in _____ is vital for the city's development.
2)	The _____ province has established its own systems of governance.
3)	The _____ walked leisurely along the avenue, enjoying the gentle breeze.
4)	The hotel is equipped with a large, elegant hall that can _____ up to 500 people.
5)	The school will _____ a new curriculum that is significantly different from the current one.
6)	The residents of the _____ worked together to make rules for maintaining lawns and common areas.

implement pedestrian autonomous accommodate subdivision infrastructure

C Advanced Reading Strategy

● Identifying cause & effect / problem & solution

This strategy involves analyzing a text to identify cause-and-effect or problem-and-solution structures. Begin by skimming the text to **get a general idea of its topic**. Then **look for signal words** that indicate the text's structure, like *lead to, cause, reason, origin, source, effect, impact, consequence, result, outcome, issue, challenge, difficulty, problem, solution, answer, or remedy*.



Practice

Obesity is an increasingly common condition, and it can lead to serious health problems, such as diabetes and heart disease. Its causes vary, but may include a poor diet, an inactive lifestyle, and genetics. Various health organizations are making an effort to fight obesity by encouraging regular exercise and healthy eating habits. Some governments have also taken action by raising taxes on sugary drinks and restricting the marketing of unhealthy foods to children. However, some have argued that a more comprehensive solution that would address underlying social and economic factors is needed. While there is still some debate over the best methods of handling obesity, it is clear that a more proactive approach is necessary for dealing with this growing issue.



Answer the following questions based on the passage above.

**Getting
a general idea
of the topic**



**Looking for
signal words**



**Identifying
cause & effect /
problem &
solution**

What is the main idea of the passage?

- Ⓐ A poor diet, an inactive lifestyle, and genetics contribute to obesity.
- Ⓑ Obesity is a complex problem without a clear and simple solution.
- Ⓒ The health consequences of obesity are less serious than everyone believes.
- Ⓓ Awareness campaigns can be an effective way to address the issue of obesity.

Find and write the words in the passage that signal *cause & effect* and *problem & solution* listed above.

Find and write the answers to the questions below.

- 1) What are some health problems caused by obesity?

- 2) What actions have some governments taken to solve the problem of obesity?



SEARCHING

Jan Gehl

Jan Gehl's urban planning

Look up information about Jan Gehl and guess what the interview will be about.

Giving the City Back to the People

1 The following is an excerpt from an interview with Jan Gehl, who talks about trends and strategies in urban planning.

2 Lena (interviewer): With climate change, pollution, and high levels of stress becoming increasingly important issues, people are questioning whether we should continue to live in cities. Perhaps moving away from urban lifestyles and going back to the countryside would be healthier for us and for the planet.

5

3 Identifying cause & effect

According to Jan Gehl, what is the cause of cities growing enormously?

3 Jan (interviewee): That is not realistic. There are already more than eight billion people on the planet, and the world population is rapidly increasing. Cities are growing enormously as a result of this, swallowing suburbs and rural areas. The correct approach is to design cities strategically



Jan Gehl (1936 –) is a Danish architect and urban design consultant.

10

4 Identifying cause & effect

According to Lena, what are the effects of "huge numbers of people living in cities"?

in order to ensure that they grow in a logical and optimal way. With people scattered throughout a region, we would risk having cities evolve randomly, creating chaos rather than order. The cities we have today are the result of centuries of evolution, and as our planet's population approaches nine billion, we must improve our cities and get rid of disorder in development.

15

20

4 Lena: Should we restrict the number of people in a city? With some city populations reaching 30 million people, inhabitants are breathing polluted air, seeing very little nature, and living in stressful environments.

Vocabulary

- swallow
- optimal
- scatter

Your Dictionary

Find and write words that you need to study.

- _____
- _____
- _____

5 Jan: It's true that there can be many negative effects associated with big cities. In Asia especially, but also in other countries, such as Brazil, we are seeing cities grow at unprecedented rates in a fashion that is not always ideal for human well-being. However, there are ways to ensure that a city helps its inhabitants instead of harming them. Breaking up the layout into subdivisions and autonomous neighborhoods is one strategy. In each subdivision, we must ensure there is access to everything needed for our welfare: schools, cultural centers, health centers, proper transportation, parks, etc. If cities are arranged in a thought-out way with each subdivision comprising all the necessary elements, then there is no need to limit the population of a city.

6 Lena: Why do humans live in cities? What do we gain from it?

7 Jan: Historically, people naturally gathered in groups, and together, they built cities so they could more easily communicate with each other and share knowledge. Cities were crucial in the development of civilization. Even though we now have many digital tools that allow us to communicate without being physically together, humans still have a fundamental need to see each other face-to-face. Social media and technology will never fulfill our need to interact with one another directly.

5 Identifying problem & solution

What is suggested as a strategy "to ensure that a city helps its inhabitants"?

Vocabulary

- unprecedented
- subdivision
- autonomous
- comprise
- civilization
- fundamental
- interact

Your Dictionary

- _____
- _____
- _____



Times Square in New York



9 Identifying cause & effect

Find and underline two sentences that show what happened in the U.S. as a result of “a trend in the architectural world to arrange cities into large zones.”

8 Lena: So cities help people communicate and share, and you think they should continue to do so?

9 Jan: Yes, absolutely. The latter half of the 20th century witnessed a sudden surge in car ownership. So numerous roads and streets were built, and pedestrians were moved to sidewalks. Then there was a trend in the architectural world to arrange cities into large zones. As a result, in the United States, for example, instead of plazas and parks, cities had large residential areas with many big houses and garages. Cities were being designed around cars rather than around people. But over the last decades of the 20th century, a countermovement has sprung up to adapt cities to their inhabitants’ needs. Public spaces are now being designed for residents, not for their cars, and this transition has fundamentally changed the landscapes of urban environments.

10 Lena: What are some examples of this type of change?

11 Jan: There are lots of studies that have been conducted by the University of Copenhagen on this subject. New York City is an excellent example of this kind of change. When my firm was hired by the city of New York, we decided to cut off part of a road in Times Square near Broadway and transform it into a pedestrian zone. As soon as the cars disappeared, people started filling up the area and hanging out there. Many other pedestrian zones were added throughout the city, and there are now around 50 such squares where cars have been replaced by people.

■ Vocabulary

- witness
- surge
- residential
- countermovement
- spring up

■ Your Dictionary

- _____
- _____
- _____

12 Lena: If streets are removed, doesn't that make traffic worse?

13 Jan: Amazingly, studies have shown otherwise. It seems counterintuitive, but research shows that building more roads actually increases traffic instead of reducing it. Therefore, cities should accommodate bicycles by building more paths, providing parking, installing stair rails for easier subway access, and designating bike sections on trains. This would encourage bike riding as a mode of transportation over driving, and as you know, bicycles take up less room, are better for the environment, and allow for more pedestrian areas. So when designing a city and developing it, we must think about how we want it to grow. If we want to attract people rather than cars, then we must act accordingly and build more structures dedicated to people rather than vehicles. In this way, we can reduce traffic and foster a sense of community.

14 Lena: That makes sense. Are there any other benefits of this approach to urban planning?



13 Identifying the main idea

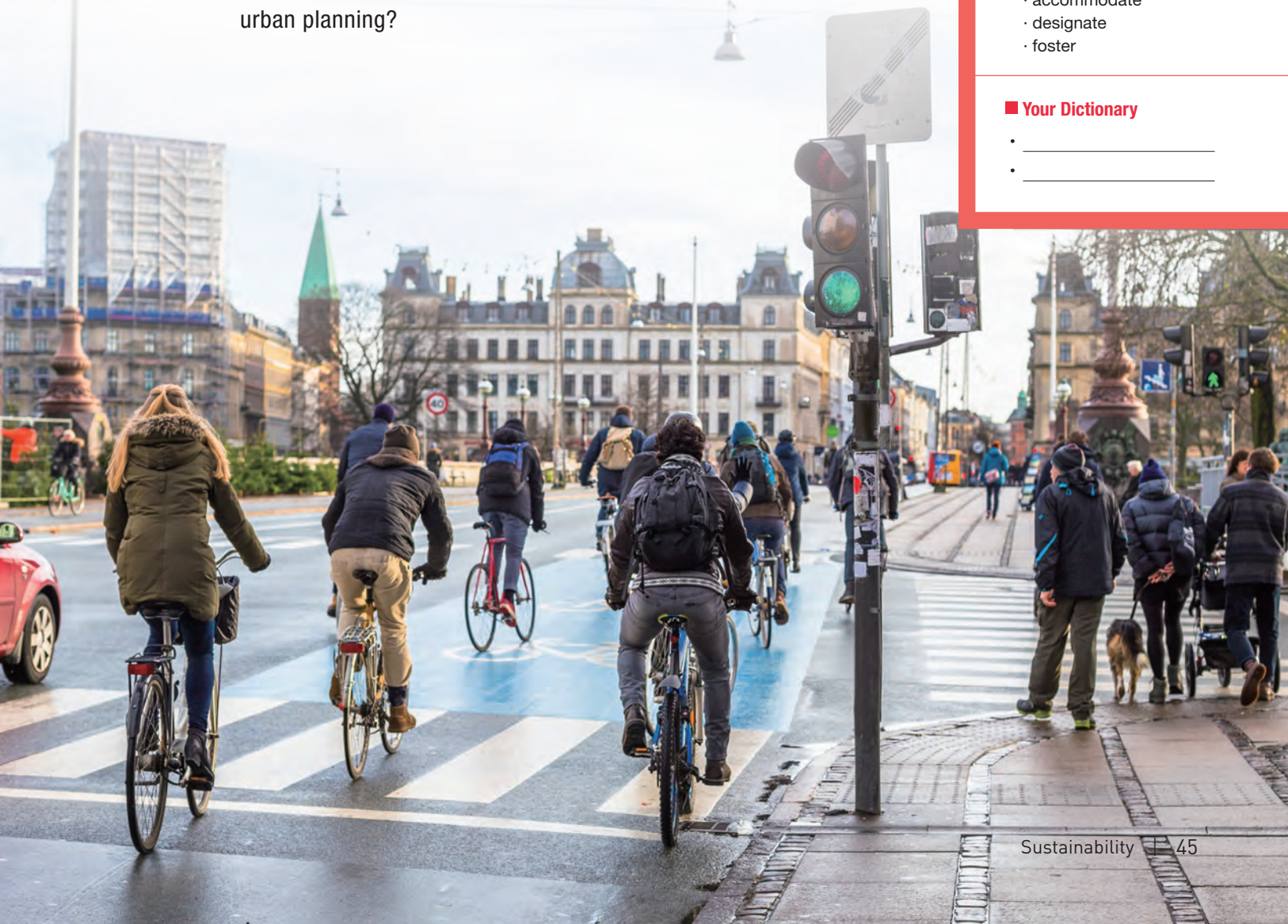
Cities should focus on bicycle and pedestrian infrastructure over building more r _____ to reduce t _____ and foster a sense of c _____.

Vocabulary

- counterintuitive
- accommodate
- designate
- foster

Your Dictionary

- _____
- _____



15 Summarizing

Bike paths and plazas are
e _____ and
c _____ to
construct than infrastructure for
vehicles. Also riding a bike is
h _____ than driving
or sitting for long hours.

Vocabulary

- infrastructure
- maintenance
- on end
- adverse
- implement
- hesitant

Your Dictionary

- _____
- _____
- _____

15 Jan: Yes, of course. Infrastructure for vehicles, and even for modes of public transportation like subways and buses, is extremely expensive to build. Bike paths and plazas are much easier and cheaper to construct. And of course, with lower budgets required for construction and maintenance, taxes can be lowered, or spent on other beneficial elements for the city. Furthermore, it is worth noting that riding a bike is much healthier than driving. In today's society, people are spending hours on end sitting. So urban planners should also consider making layouts that encourage bike riding and walking in order to reduce the adverse impact of spending many hours a day sitting. Every little bit helps!

16 Lena: Many of the strategies you've described today have been implemented in Copenhagen, your home city. How do you think this approach has impacted Copenhagen's residents?

17 Jan: I think Copenhagen is a great example that illustrates the benefits of returning cities to the people. Although people were hesitant at first, thinking it was not part of their culture to sit on terraces or go meet people outside, they very quickly saw the obvious benefits of having such areas.

18 Lena: And if you look at city rankings according to happiness, Copenhagen often comes in first. It seems that your strategy is successful.

Source Cyril Dion, *Tomorrow: All Over the Globe, Solutions Already Exist* (p.180 참조)

AFTER READING 1

A Organization

Fill in the blanks with ①–④, and then match the numbers with the correct answers.

Questions		Answers		
1)	Cities are excessively populated and this causes many problems. Is there any way for a city to help its inhabitants in terms of urban planning?	•	4)	Public spaces should _____. For example, in Times Square in New York City, part of a road was cut off to transform it into a pedestrian zone.
2)	Cities help people communicate. How can we make sure that they continue to do so?	•	5)	Cities should _____, providing parking, installing stair rails for easier subway access, and designating bike sections on trains.
3)	Traffic is a major issue in many cities. What should they do to reduce traffic?	•	6)	_____ is one strategy. Cities should be arranged in a thought-out way with each subdivision comprising all the necessary elements, _____.

① be for residents, not for their cars

② accommodate bicycles by building more paths

③ such as cultural and health centers, transportation, and parks

④ breaking up the layout into subdivisions and autonomous neighborhoods

B Details

Read the statements and check T for true or F for false.

	T	F
1) Jan Gehl agrees with the idea of transitioning from urban living to a rural lifestyle.	<input type="checkbox"/>	<input type="checkbox"/>
2) Social media provides convenient methods of communication, but humans still need face-to-face interaction.	<input type="checkbox"/>	<input type="checkbox"/>
3) One of the benefits of an urban planning approach that prioritizes people rather than vehicles is that it encourages people to walk and ride bikes.	<input type="checkbox"/>	<input type="checkbox"/>

Q Leading to the BIG QUESTION

In what ways does your city conform or not conform to the urban planning philosophy described by Jan Gehl?

BEFORE READING 2

A Topic Preview

Read the words below and choose the three things that you think are the most important for making your country more livable. Share your choices with your partner.

<input type="checkbox"/> food	<input type="checkbox"/> water	<input type="checkbox"/> energy	<input type="checkbox"/> community
<input type="checkbox"/> housing	<input type="checkbox"/> gender equality	<input type="checkbox"/> social equity	<input type="checkbox"/> political voice
<input type="checkbox"/> peace & justice	<input type="checkbox"/> income & work	<input type="checkbox"/> education	<input type="checkbox"/> health



B Vocabulary Preview

Choose the correct words to complete the sentences.

No.	Sentence	Options	
1)	The satellite's _____ orbit around the earth facilitates effective communication.	a) circular	b) upward
2)	Joe was using _____ information to run his company, and it ended up going bankrupt.	a) approved	b) outdated
3)	This transportation system is efficient because its bus routes and subway lines directly _____.	a) intersect	b) intervene
4)	Environmental _____ needs to be addressed immediately to prevent further damage to our planet.	a) degradation	b) inflation
5)	In the face of crisis, the nation displayed remarkable _____ without hesitation and regardless of their ideologies.	a) hostility	b) solidarity

C Advanced Reading Strategy

● Recognizing the repetition of ideas

This strategy involves actively looking for key words and phrases that are repeated throughout the text in order to understand the main idea better. As you read, **check for words and ideas that are mentioned more than once**. You can also try **creating an outline or summary**, as this can help you gain a better understanding of the passage.



Practice

As our world's many diverse cultures become increasingly interconnected, we must not be afraid of what is unfamiliar. Instead, we should keep an open mind when interacting with others and learn to celebrate our differences. If we can do this, we will gain a much deeper appreciation for humanity's rich diversity.

Admittedly, it is not always easy to embrace diversity, and misunderstandings will inevitably arise in these cross-cultural interactions. However, as long as we maintain respect for the perspectives of others, we can avoid unnecessary conflict and live in harmony with one another.

We must also recognize that diversity extends beyond culture to other aspects of people's lives, such as gender, religion, and ability. Once we recognize the inherent value in each individual, we can start building a truly inclusive society and foster a harmonious coexistence.

➔ Answer the following questions based on the passage above.

Checking for
ideas that are
repeated

Which idea is **NOT** mentioned more than once in the passage above?

- Ⓐ diversity
- Ⓑ avoiding conflict
- Ⓒ interacting with others
- Ⓓ living harmoniously

Creating
a summary

Complete the following summary using the words in the box below. Words can be used twice and some words are not used.

The passage emphasizes the importance of embracing ⁽¹⁾ _____ and celebrating differences. This can be achieved by approaching challenges with a(n) ⁽²⁾ _____, having a willingness to learn, and recognizing that ⁽³⁾ _____ extends beyond ⁽⁴⁾ _____ to other aspects of people's lives.

open mind misunderstanding diversity culture appreciation



Doughnut Economics:

A Sustainable Approach to Economics

1 There is a joke about an engineer, a chemist, and an economist who were shipwrecked on a desert island. They were getting hungry, and although they had a can of beans, they didn't have any way of opening it. The engineer suggested throwing the can against a rock at a very precise angle so that it would crack open. The chemist thought they should leave the can in the sun so that the contents would expand and cause the can to burst open. The economist said that he had an even better plan—one that would be much less messy. "What is it?" the engineer and the chemist inquired. "First," replied the economist. "Let's assume that we have a can opener."

1 Identifying organization

The writer starts the article by (using a famous quote / telling a funny story / providing a definition for a concept).

2 The joke points out how impractical traditional economic models tend to be. And in addition to relying too heavily upon unrealistic assumptions, the field of economics is also outdated—most economic ideas that are currently taught have their roots in theories developed in the 19th century. In order to confront the challenges of the 21st century, we cannot simply adjust existing models. We need an entirely new economic paradigm.

3 Slowly, we are beginning to acknowledge that these antiquated theories are useless in the present. In fact, they can do more harm than good. We have seen how putting profit and economic growth above all else has destroyed the planet and left enormous portions of the human population at a disadvantage. The flawed economic system in which we have blindly put our faith has led to social injustice, climate change, and political conflict. However, a new economic model has emerged that challenges the old ways by prioritizing people's well-being and environmental sustainability. It is called "Doughnut economics."

Vocabulary

- inquire
- impractical
- outdated
- confront
- antiquated
- portion
- injustice
- prioritize

Your Dictionary

Find and write words that you need to study.

- _____
- _____
- _____

23 Recognizing the repetition of ideas

What does the writer think of traditional economic models? Read the paragraphs and find four adjectives that describe them.

4 Doughnut economics is based on the premise that our economic system should be designed to meet the needs of all people, within the limits of the planet's natural resources. It is a holistic and integrated approach to economics that takes into account the social, ecological, and economic dimensions of our world. It was first conceived by Kate Raworth, who has suggested that the whole point of our economic system should be to develop "a safe and just space for humanity to prosper." This revolutionary new model is grounded in the belief that our economic system should cater to the needs of all, not just a small slice



Kate Raworth (1970 –) is a British economist.

of the population, and that it ought to do so without exceeding the limits of the planet's natural resources or causing environmental degradation.

5 You're probably wondering why such a revolutionary economic idea is named after a high-calorie snack. The name comes from the doughnut's shape: the model can be visualized as two concentric circles*. The social foundation of human well-being is the inner circle, and the outer circle represents the ecological ceiling of our planet. Another way to put this is to say that the inner circle describes a minimum standard of living for all human beings, while the outer circle forms a boundary that has to be maintained in order to protect the planet's resources and its natural environment.

*concentric circles 동심원

5 Visualizing

Imagine how Doughnut economics can be visualized.



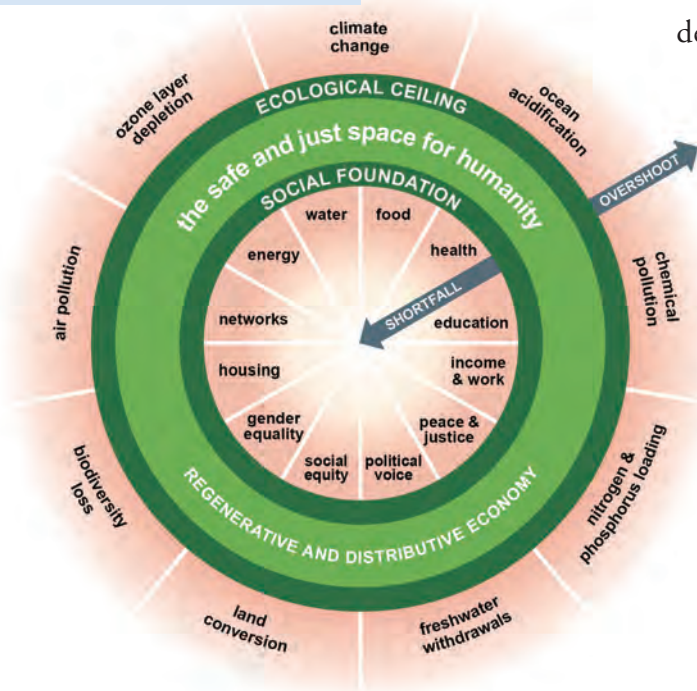
Vocabulary

- premise
- holistic
- take into account
- conceive
- ground
- cater to
- degradation

Your Dictionary

- _____
- _____
- _____

The classic image of the Doughnut model



6 This model incorporates twelve social factors that are deemed indispensable for human well-being, and these form the doughnut's inner ring: access to food, clean water, healthcare, education, energy, income and work, housing, political voice, gender equality, social equity, peace and justice, and networks. These factors do not exist in isolation; they are interconnected, and each must be met in order to guarantee that all people are able to live according to social standards.

i

생태적 한계 (ecological ceiling)

지구 생태계의 유지와 보호를 위해 인류가 넘어서면 안 되는 자원 소비 및 환경 파괴의 한계를 가리킨다.

사회적 기초 (social foundation)

모든 개인이 최소한의 생존과 안녕을 확보할 수 있는 기본적인 필요조건이다.

7 The ecological limits of our planet form the outer ring of the Doughnut model. The nine boundaries that form this ring encompass things like biodiversity loss, climate change, and ocean acidification. In order to guarantee that our planet will be sustainable for future generations, these boundaries must never be crossed. Between these inner and outer rings is the zone that economic development should have as its goal: a thriving and just society that flourishes in harmony with the planet's ecology. It is where human well-being and environmental sustainability intersect.

6 7 Skimming

Skim paragraphs **6** and **7** and determine which rings "health" and "climate change" belong to.

8 After Doughnut economics was introduced in 2012, it quickly attracted the attention of economists and policymakers. However, according to a study carried out by the University of Leeds in 2022, there is not a single country in the entire world that has reached the ideal zone that the model describes. It is evident that profound changes are needed if we are to secure humanity's social foundation and protect the environment on behalf of future generations.

Vocabulary

- indispensable
- encompass
- acidification
- flourish
- intersect
- on behalf of

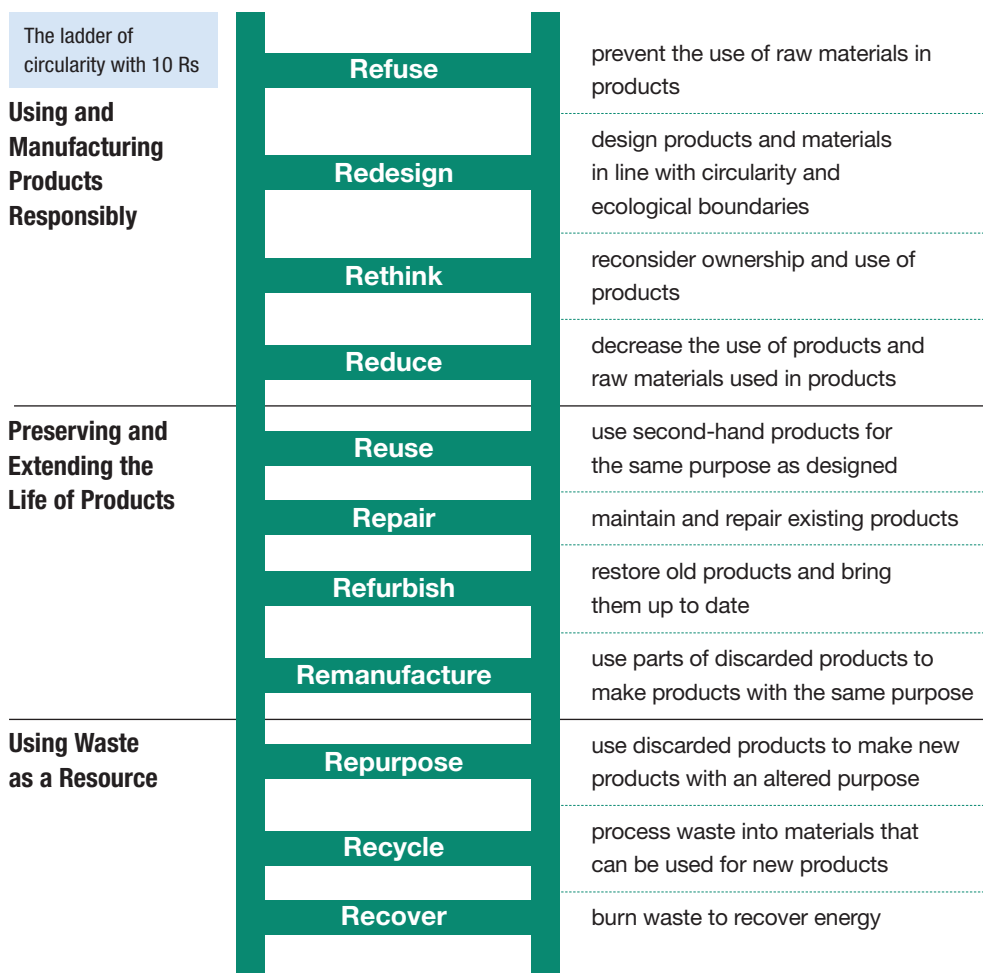
Your Dictionary

- _____
- _____
- _____

9 With national governments failing to successfully implement Doughnut economics, city governments are taking the lead by developing their own plans and policies according to the model. For example, Amsterdam, the capital city of the Netherlands, announced in 2020 that it would adopt the Doughnut model as its economic framework. Its goal is to become a “circular city,” characterized by minimal waste, the reuse of resources, and a regenerative economy. To help reduce the use of new raw materials, a ladder of circularity with 10 Rs was introduced. It shows which approaches should be prioritized in order to conserve resources and extend product life cycles. Among other things, the ladder encourages people to share with one another, as this reduces the environmental impact of production and consumption cycles while also promoting a stronger sense of solidarity among city residents. Amsterdam hopes to cut its use of new raw materials in half by 2030 and achieve full circularity by 2050.

9 Identifying details

What is a “circular city” characterized by?



Vocabulary

- circular
- solidarity
- refurbish
- up to date
- discard

Your Dictionary

- _____
- _____
- _____

Vocabulary

- aspiration
- indigenous
- retain
- relocate
- feasible
- contend
- flexible
- tangible

Your Dictionary

- _____
- _____
- _____



Source <https://doughnuteconomics.org/> 외 (p.180 참조)

10 Amsterdam is not alone, as other cities around the world are adopting and adapting Doughnut economics to pursue their aspirations for sustainable development. Copenhagen, the capital of Denmark, also decided in 2020 to develop a strategy for implementing the Doughnut as the guiding model for its economy. Other cities soon followed, including Brussels in Belgium, and Nanaimo in Canada. In New Zealand, the Doughnut has been reimagined based on indigenous Maori principles. While this version retains several elements from the original, it places the environment at the center and relocates social elements to the outer ring.

10 Identifying organization

How does the writer support the main idea of paragraph 10?

- | | |
|------------------------------|---------------------------------|
| Ⓐ by listing some examples | Ⓑ by providing statistical data |
| Ⓒ by quoting a famous figure | Ⓓ by challenging a hypothesis |

11 Doughnut economics is still relatively new, so it is hard to say how feasible it truly is as an economic model. Some economists have been critical of it, contending that its twin goals of meeting social needs and protecting the environment would require programs that would themselves need enormous amounts of funding. Still, Doughnut economics is intended to provide a bold vision for the future, not a strict set of rules to be followed. Its ideas are intended to be flexible so that they can be applied in various contexts and locations. Its real value lies in its revolutionary goals that turn traditional economics upside down. With more and more economists and policymakers taking Doughnut economics into consideration as a possible path for future development, the prospect of a world that prioritizes people and the planet over mere profits is becoming more tangible.

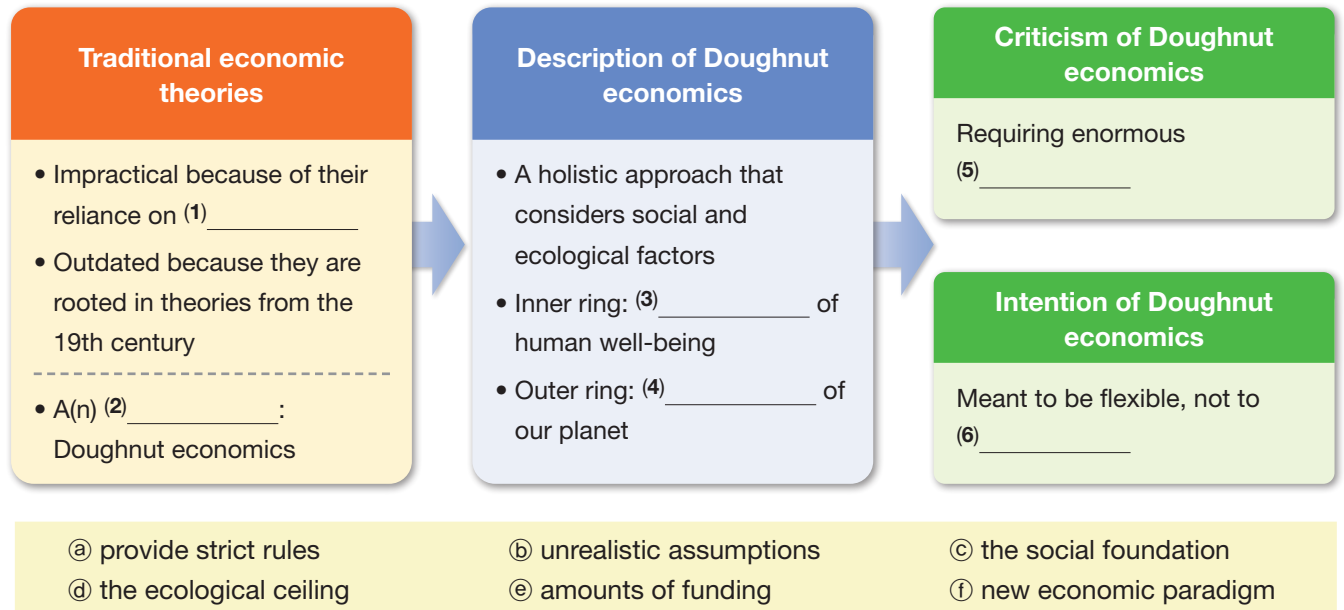
11 Identifying details

Find and underline where the real value of Doughnut economics is.

AFTER READING 2

A Organization

Fill in the blanks with ①–⑥ to complete the graphic organizer below.



B Details

Read the statements and check T for true or F for false.

	T	F
1) Kate Raworth believes that the objective of our economic system should be to create a secure and just environment in which humanity can thrive.	<input type="checkbox"/>	<input type="checkbox"/>
2) Doughnut economics is based on the belief that our economic system should exclusively cater to the needs of the most successful people.	<input type="checkbox"/>	<input type="checkbox"/>
3) According to a study carried out by the University of Leeds in 2022, no country has reached the ideal zone of development described by Doughnut economics.	<input type="checkbox"/>	<input type="checkbox"/>
4) Amsterdam hopes to reduce its use of new raw materials to almost zero by 2030.	<input type="checkbox"/>	<input type="checkbox"/>
5) Although some aspects from the original are retained, the inner and outer rings are reversed in the Maori version of Doughnut economics.	<input type="checkbox"/>	<input type="checkbox"/>

Q | Leading to the BIG QUESTION

Which section of the inner or outer ring of the Doughnut do you think is the biggest problem in Korea?

LANGUAGE SKILLS

EXPRESSIONS

Practice 1

Definitions

Choose the correct definition from the box for each underlined word.

- 1) The program works to foster leadership skills in young adults. _____
- 2) They were entitled to a portion of the profits as sponsors of the event. _____
- 3) The maintenance worker had to replace a section of the steel railing on the stairs. _____
- 4) The tribe had endured centuries of injustice and exploitation at the hands of colonizers. _____
- 5) He found it hard to conceive of a plan that would allow him to achieve all of his ambitious goals. _____
- 6) Despite the adverse weather conditions, they managed to complete the construction of the timber frame house. _____

- Ⓐ a violation of what is fair or right
- Ⓑ unfavorable, harmful, or damaging
- Ⓒ to encourage or promote the development of something
- Ⓓ to form or develop an idea, plan, or mental image in one's mind
- Ⓔ a part or share of a whole, often divided or assigned to someone
- Ⓕ the process of sustaining something in a functional and operational condition

Practice 2

Words in context

Choose the correct words to complete the sentences.

- 1) The plans for the queen's reception needed to (neglect / prioritize) her comfort.
- 2) His room was messy because trash was (gathered / scattered) all over the place.
- 3) The community center has continued to (flourish / furnish) with the help of numerous volunteers.
- 4) I realized that it was a(n) (distorted / unprecedented) opportunity to pursue my dream of becoming a concert pianist.
- 5) Understanding the (fundamental / liberal) principles of copyright is crucial for protecting intellectual property in the digital age.

Practice 3

Words in context

Choose the correct words to complete the sentences.

- 1) He can _____ with different cultures thanks to his linguistic skills.
- 2) Her _____ schedule allows her to accommodate her new job easily.
- 3) It is _____ to try to manipulate people's opinions through dishonest means.
- 4) The restaurant's new menu will _____ appetizers, main courses, and desserts.
- 5) It is essential to _____ your argument in solid evidence when presenting your case.

comprise

interact

impractical

ground

flexible

GRAMMAR

- The structure 「*with* + noun + v-ing/v-ed」 can be used to describe situations or actions that are happening at the same time, or to give an additional explanation or reason. We use “v-ing” to express active meanings, and “v-ed” to express passive meanings.
 - ☐ Brian ran down the street **with his dog following** behind him.
 - ☐ **With his hands held** high, the dancer stamped his foot.
- *Being* can be omitted, so the adjective or adverb often follows directly after the noun.
 - ☐ **With thousands of people (being)** sick, the hospital staff was overwhelmed.
 - ☐ We can't finish this project **with you (being)** away.

Go to pages 42, 46, and 54.

Find the sentences with these structures above and underline them.

Practice 1

Rewrite the sentences by changing the underlined parts to the 「*with* + noun + v-ing / v-ed」 structure.

- 1) Because the time was up, I submitted my test sheet.

→ _____

- 2) They walked down the beach as the wind blew against their backs.

→ _____

- 3) The actor went on stage as the audience gave him a round of applause.

→ _____

- 4) While tears ran down her cheeks, the old lady talked with her close friend.

→ _____

Practice 2

Correct the underlined part in each sentence if it is wrong. If there is no error, write *OK*.

- 1) My father often falls asleep with the TV on.

- 2) With the contract signing, they sealed the deal.

- 3) He sat in the old chair with his feet flat on the ground.

- 4) With the streets empty at noon, it felt like a ghost town.

- 5) With her coat button up, she braved the winter cold to go for a walk.

- 6) With her graduation ceremony approach, she felt a sense of accomplishment.

- 7) With the chilly autumn evening set in, they gathered by the fireplace to feel its warmth.

How Green Is It?

PREPARE TO WRITE

➕ CHECK-UP

Which of the following explains the information most specifically?

- Ⓐ It is a significant majority.
- Ⓑ It makes up approximately 70%.
- Ⓒ It takes up a considerable portion.

A Writing Strategy

Describing a graph

This strategy involves conveying the information of a graph in a clear and effective way. First, introduce the topic of the graph. Next, analyze the graph while referring to specific numbers and data points. Finally, wrap up your analysis with a brief summary of your key findings.

B Writing Sample

Read the following graph description and pay attention to how it explains the graphs in detail.

i

LCA (Life Cycle Assessment)

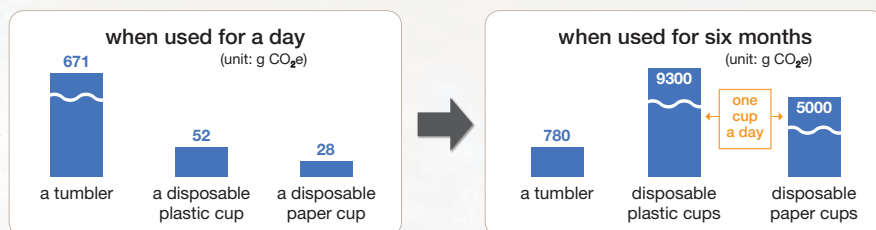
제품의 전 과정 (원료, 가공, 제조, 유통, 사용, 재활용, 폐기물 관리 등)에 소모되고 배출되는 에너지 및 물질이 환경에 미치는 영향을 총체적으로 평가하는 환경 영향 평가 방법의 한 종류이다.

An introduction to the topic of the graph(s)

A description of the graph(s) that include(s) meaningful data points and specific numbers

A conclusion

Greenhouse Gas Production in Terms of LCA



Source: <https://climateaction.re.kr/footprint/1694661>

The above graphs show the amount of greenhouse gases generated by tumblers, disposable plastic cups, and disposable paper cups in terms of LCA. According to the first graph, when used for one day, a tumbler generates 671 g CO₂e of greenhouse gases, which is the largest amount among the three options. Meanwhile, a disposable plastic cup produces 52 g CO₂e and a paper cup only produces 28 g CO₂e, which is the smallest amount among the three. However, the situation changes over time. When one disposable plastic cup is used per day for six months, the amount of greenhouse gases generated is more than eleven times the amount generated by a single tumbler over the same period. In addition, using one disposable paper cup per day for six months produces more than six times the greenhouse gases emissions of using a tumbler for six months. Therefore, using a tumbler is the most eco-friendly option in the long term.

WRITE YOUR OWN

A Gathering Ideas

Get into groups of 4–5 students and choose a topic below or think of your own. Then research the topic to find the answer.

- ☐ In terms of greenhouse gas emissions and freshwater use, which milk is greener: dairy or plant-based (soy, rice, and almond)?



- ☐ Which meat is responsible for the most greenhouse gas emissions among beef, lamb, pork, and chicken?



- ☐ Which country has been affected the most by deforestation?



- ☐ In terms of carbon output, which are the most eco-friendly modes of transportation among standard cars, hybrid electric cars, bicycles, trains, and electric scooters?

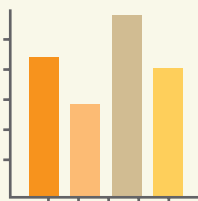


- ☐ **Your own**

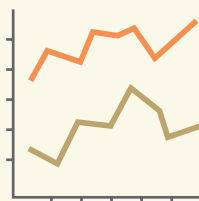
B Outlining

Make a graph or graphs about your topic with your group members.

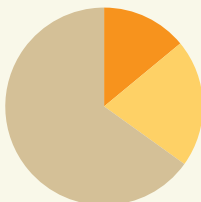
Examples of graphs and charts



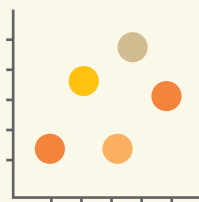
bar graph



line graph



pie chart



scatter plot chart

Your own

C Building Sentences

Write sentences using the graph(s) your group created in **B**.

+ LANGUAGE TIPS

- The graph illustrates / represents / compares ...
- These graphs provide information about / on ...

+ LANGUAGE TIPS

- two / three times
- half, one-third, two-fifths
- a tiny percentage
- a significant majority

+ LANGUAGE TIPS

- Overall, we can see ...
- To sum up, we can see ...
- In conclusion, it is clear that ...

+ STRUCTURE GUIDE

You can compare and contrast the data using the expressions below.

- whereas
- in contrast
- on the other hand

1. Introduce the topic of your graph(s).

2. Choose meaningful data points from your graph(s) and describe each of them using specific numbers.

3. Make a conclusion about your graph(s).

D Drafting

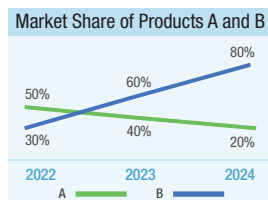
Describe your graph(s) based on **B** and **C**.

E Revising and Editing

Revising Tip Correspondence

All the sentences in a graph description should match with the facts related to the topic. You can revise your draft by using specific figures to make your writing more reliable and logical.

Check-up 1 Find and underline the sentence that doesn't match the graph.



This graph shows the market share of products A and B. In 2022, the market share of product B, at 30%, was lower than that of product A. However, there was an intersection point between 2022 and 2023. From this point, you can see a steady increase in the market share of product A and a gradual decrease in the market share of product B.

Editing Tip Comparative and superlative expressions

To express the comparative and the superlative, we usually add *-er* and *-est* to the end of a word, or *more* and *(the) most* before the word. However, there are some irregular forms that do not follow this rule.

+ IRREGULAR COMPARATIVE AND SUPERLATIVE FORMS

- good / well – better – best
- bad (ly) – worse – worst
- little – less – least
- many / much – more – most
- far – farther / further – farthest / furthest

Check-up 2 Find the mistakes in the sentences and correct them.

- 1) This machine functions more good than that one.
- 2) Since the department store is the most farthest destination, it takes the longest to get there.

F Finalizing

Go back to **D Drafting** and modify your draft.

SHARE & REVIEW

A Check your own draft according to the criteria below. Then share it with your partner and get their feedback.

	You	Partner
1. Is the topic clearly introduced at the beginning?	<input type="checkbox"/>	<input type="checkbox"/>
2. Are meaningful data points and specific numbers used to describe your graph(s)?	<input type="checkbox"/>	<input type="checkbox"/>
3. Does it include a clear analysis of the data of your graph(s)?	<input type="checkbox"/>	<input type="checkbox"/>
4. Does it have a meaningful conclusion at the end?	<input type="checkbox"/>	<input type="checkbox"/>

B Is your partner's draft well-organized? Write your opinion here.

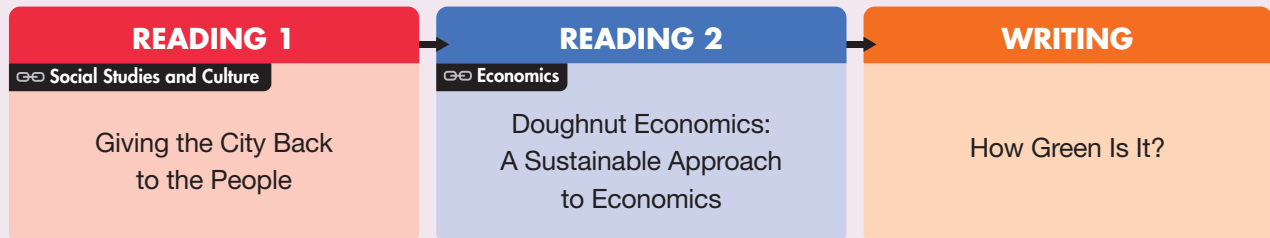
I think _____.
 ex) all the data presented in the graphs is clearly described and the key findings are summarized well

WRAP UP

Reflect on what you learned in this lesson.

Q BIG QUESTION

What policies are needed to make your country more sustainable?



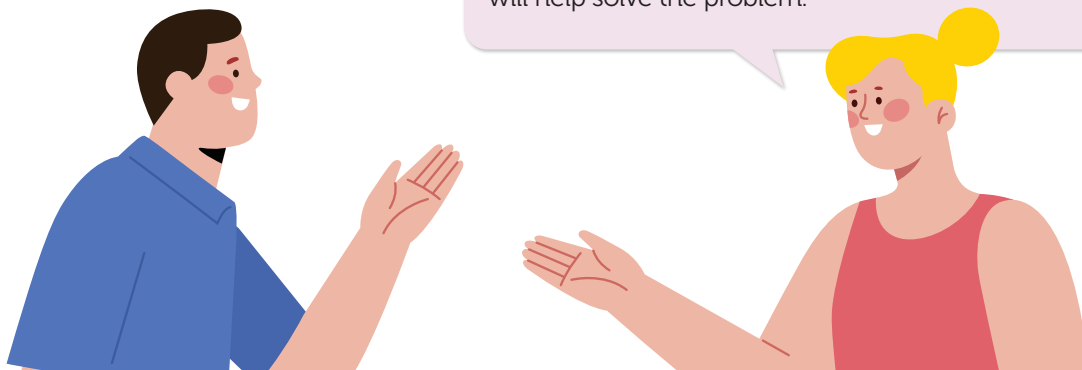
A Reading

We read about city designs and a new economic model for sustainability. Think about where you live. Are there any problems that make it difficult for people to live? Choose one problem and think about what needs to be done to solve it. Then share your thoughts with your partner.

	Solution
<input type="checkbox"/> housing <input type="checkbox"/> air pollution <input checked="" type="checkbox"/> social isolation <input type="checkbox"/> waste management <input type="checkbox"/> education inequality <input type="checkbox"/> economic discrimination <input type="checkbox"/> Your own: _____	<p>ex) encouraging community engagement and fostering affordable access to cultural opportunities for all residents</p>

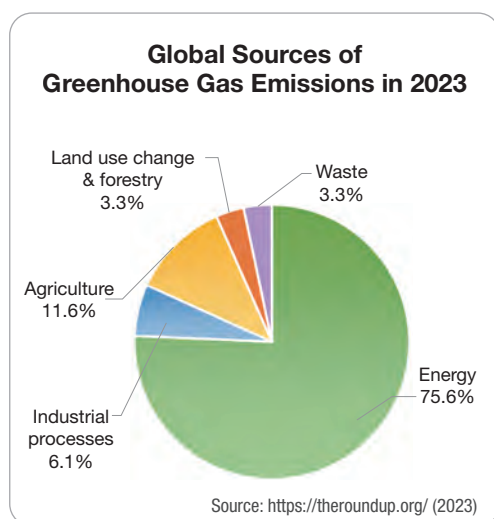
What problem did you choose?
What needs to be done to solve it?

I chose **social isolation**. In my opinion, **encouraging community engagement and fostering affordable access to cultural opportunities for all residents** will help solve the problem.



B Writing

Study the following chart and write a paragraph that describes it.



✓ Final Answer to the BIG QUESTION

Did your answer to the big question change during the lesson? Check the appropriate box below. If your answer changed, explain why.

☐ Yes. My final answer is “_____”.

ex) we need a policy to encourage the use of bicycles

I changed my answer because _____.

ex) I've learned that infrastructure for bicycles costs less, and it is more eco-friendly than expanding public transportation systems

☐ No, my first answer hasn't changed.

➔ FINAL CHECK

Core Competence	I can ...
Reading Strategy 1	<input type="checkbox"/> identify cause & effect and problem & solution structures.
Reading Strategy 2	<input type="checkbox"/> recognize the repetition of ideas.
Grammar	<input type="checkbox"/> understand the usages of the «with + noun + v-ing/v-ed» structure.
Writing Strategy	<input type="checkbox"/> describe a graph using meaningful data points and specific numbers.



TRASHCANS FOR THE OCEAN

BEFORE READING

Look at the picture below. How do you think the trashcan in the middle of the picture works?



크라우드펀딩 (crowdfunding)

많은 사람으로부터 자금을 모금하여 프로젝트나 사업에 자금을 조달하는 방법이다. 투자하는 사람들은 흔히 제품이나 서비스로 보상을 받는다.

1 Pete Ceglinski, an Australian surfer and ship builder, was disheartened by the alarming prevalence of oceanic pollutants. So in 2015, he teamed up with another surfer and ship builder named Andrew Turton to create a machine that could remove garbage from the water. Thanks to a very successful crowdfunding campaign, the duo were able to develop their idea and create the Seabin. Today, Seabins are being used to clean up water in places around the world, including the Caspian Sea and the islands of the South Pacific.

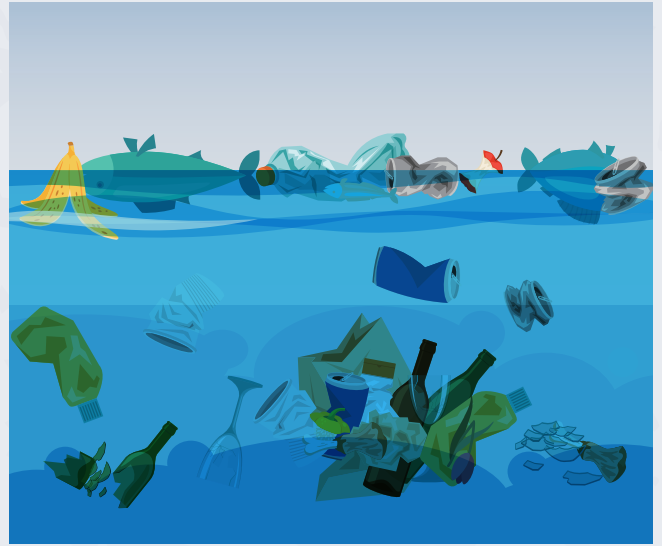
2 Pete and Andrew knew that a lot of the trash in the ocean comes from marinas. As the tide goes out, plastic and other items fall off the boats that are tied up in marinas and eventually get washed out to sea. Their idea was to create a device that would collect this trash before it reaches the ocean. After all, if there can be trashcans on the ground, why can't there be trashcans in the water, too? They set out to create a bin that would float on the water and collect garbage automatically. To achieve this, they created a bucket with a pump attached to the bottom.



The pump sucks water and trash into a mesh bag in the bucket and then releases the filtered water back into the ocean. The special design of the mesh bag even allows a Seabin to remove oil and other floatable contaminants from the water. After developing their product, Pete and Andrew hoped to sell it to marinas and yacht clubs. But first, they needed to prove that their product worked, which required funding.

3 It was difficult for Pete and Andrew to acquire the necessary funds for their project at first. Marinas and yacht clubs would not buy an unproven product developed by two surfers. And they weren't sure if they could crowdfund the project either, since the Seabin was not meant for individuals to use. They decided, however, that crowdfunding might be the best way to connect with others who shared their desire to clean the ocean.

4 The support for their project was overwhelming. Thanks to their campaign, the Seabin Project raised a total of \$267,000 from 8,000 investors. The first thing they did with the funding was develop a working prototype of the Seabin so that they could solve any problems that they might find with their



design. Then they tested the prototype to find out what kinds of trash it would collect. Finally, they installed Seabins in various locations around the world and collected data from them. One of the Seabins they installed was able to collect 876 kilograms of trash in just six months! This proved how effective the Seabin could be, prompting many companies to express interest in purchasing the technology. By the end of 2021, there were more than 860 Seabins in use around the world, collecting about four tons of garbage per day.

Source <https://seabin.io/> 외 (p.180 참조)

AFTER READING

1) What is NOT true according to the passage?

- a) Pete and Andrew knew that a lot of the trash in the ocean comes from marinas.
- b) Seabins can remove oil from the water with a special mesh bag.
- c) Pete and Andrew could easily get financial support from the start.
- d) By the close of 2021, more than 860 Seabins were actively in use across the globe.

2) Paragraph **4** expresses how successful the Seabin creators' crowdfunding campaign was by (concealing / generalizing / revealing) how much money they raised for their project.

LESSON

3

Making Choices

단원 설정 취지

자신의 행동이 어떤 가치관에서 비롯되는지 성찰해 보고, 보다 더 신중하게 행동하는 사람으로 성장할 수 있다.

LESSON GOALS

READING

1. 자신이 다른 누군가의 고통 위에서 행복을 누리고 있는 것이라면 그 상황에 어떻게 대처할 것인지 생각해 본다.
[Reading Strategy] Matching pronouns with their referents
2. '군집 행동'의 이유와 사례를 다룬 글을 읽고, 자신이 다른 사람의 행동을 얼마나 참조하고 있는지 생각해 볼 수 있다.
[Reading Strategy] Recognizing transition words and phrases

WRITING

선택이 필요한 일상생활 속 상황을 제시하고, 자신의 선택과 그 이유를 설명하는 글을 쓸 수 있다.
[Writing Type] Opinion
[Writing Strategy] Supporting your opinion

GRAMMAR

The orchestra scheduled a performance on *the assumption* **that the violinist would be available.**

BIG QUESTION

What values guide your actions?

READING 1



GO Literature & Ethics

Omelas: Le Guin's
Questioning of Utilitarianism

WRITING



What Would You Do?

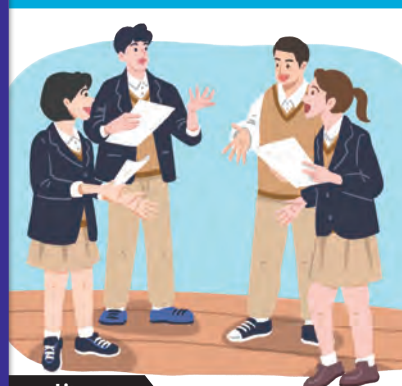
READING 2



GO Social Studies and Culture

Why Do We Join the Herd?

PROJECT



GO Literature

Different Choice,
Different Ending

**Your Answer to the
BIG QUESTION**

BEFORE READING 1

A Topic Preview

Watch the short video clip and talk with your partner about what you would do in this situation.



I would let go of the rope. Otherwise, people on the ground could be in danger.

I would keep hanging onto the rope to save the child. I think the wind would stop soon.

B Vocabulary Preview

Choose the correct words to complete the sentences.

No.	Sentence	Options	
1)	The _____ value of the old painting was apparent to the art enthusiast.	Ⓐ instant	Ⓑ intrinsic
2)	The instructions for the new software were _____, so the employees quickly learned how to use it.	Ⓐ straightforward	Ⓑ temporary
3)	The architectural plans had a critical _____ that needed to be addressed before construction could begin.	Ⓐ explosion	Ⓑ omission
4)	The deaths of her family members led to severe emotional _____ that haunted her for the rest of her life.	Ⓐ glory	Ⓑ torment
5)	She faced a(n) _____ when deciding whether to attend her best friend's wedding or her parents' anniversary celebration.	Ⓐ dilemma	Ⓑ examination
6)	The donor, who preferred to remain _____, made a generous contribution to the charity, which touched many hearts.	Ⓐ anonymous	Ⓑ anxious

C Advanced Reading Strategy

● Matching pronouns with their referents

This strategy involves correctly identifying the noun or noun phrase that a pronoun replaces. It helps resolve ambiguity by allowing the reader to fully comprehend the text. First, as you read, **identify the features of referents** in terms of number, gender, characteristics, etc. Then, when you come across a pronoun, **match it with its correct referent**. Sentence structure and context can help you to make an accurate match.



Practice

Frank was a tough boss who believed in doing everything in one's power to make a business deal happen—as long as it was done honestly. To some people, closing a deal was more important than remaining truthful, but Frank refused to use dishonest practices. One day, his ethics were put to the test. One of ① his new sales representatives, Jordan, had just finalized a very profitable deal, and ② he did so without assistance from any other team members. Frank was pleased to hear this, but then ③ he was told something that made ④ him rethink the situation. Jordan had not directly lied to the client, but ⑤ he had intentionally concealed some very important information that might have influenced the client's decision. Frank was in a tough spot, since the deal would be a great help to the company from a financial perspective. Some employees thought Jordan deserved compliments for what ⑥ he accomplished, and Frank was torn between wanting to congratulate Jordan on the financial success of the deal and maintaining his commitment to honesty.



Answer the following questions based on the passage above.

Identifying
the features of
the referents

Write ①–④ beneath the person they describe.



1) Frank: _____

- ① boss
- ② new sales representative
- ③ moralistic
- ④ concealed information



2) Jordan: _____

Matching
pronouns with
their referents

Write "Frank" or "Jordan" according to who the underlined pronouns ①–⑥ refer to.

① _____

② _____

③ _____

④ _____

⑤ _____

⑥ _____



Omelas: Le Guin's Questioning of Utilitarianism



1 Can one person's suffering be weighed against the happiness of many others? In her 1973 short story "The Ones Who Walk Away from Omelas," Ursula K. Le Guin tackles this ethical question and dives deep into complex moral dilemmas.

2 Le Guin invites the reader to imagine a utopian city, Omelas, in which all the people have access to whatever they could possibly want, and none of their sins carry any negative consequences. The narrator does not give specific explanations or descriptions, but rather encourages the reader to picture anything he or she might desire, thus creating the perfect city in the reader's mind according to his or her own imagination. Unfortunately, there is, of course, one condition: the price of this utopian city is the misery of an innocent child.



Ursula K. Le Guin (1929–2018) was an American author best known for her works of science fiction.

Vocabulary

- tackle
- dilemma
- sin
- confine
- dread
- ambiguous
- explicitly
- torment

Your Dictionary

Find and write words that you need to study.

- _____
- _____
- _____

5

10

15



Part of “The Ones Who Walk Away from Omelas” map
by Andrew DeGraff (2015)

The child, referred to with the pronoun *it* throughout the story, is confined in a room under terrible living conditions. Alone, and in constant dread, it is forced to undergo infinite physical and mental suffering. The people feed it enough to keep it alive, but they do not talk to it, for fear of breaking the ambiguous contract that seems to bind the utopian conditions of Omelas to the suffering of the child. Why the child must suffer for Omelas to thrive is not explicitly said, but all inhabitants of the city know that their happiness depends on the child’s torment. Most of Omelas’s inhabitants accept this situation, but some cannot bear the burden of their guilt and thus elect to leave the city.

2 Matching pronouns with their referents

What does *it* in line 1 refer to?
Write the answer in two words.

3 Identifying details

- 1) i _____ value:
the value of something considered
in terms of its effects or what it
produces
- 2) i _____ value:
the value of something considered
in terms of what it is, regardless
of its consequences



공리주의 (utilitarianism)

19세기 중반 영국에서 나타난 윤리 이론으로, 행동의 도덕성은 그 결과에 의해 결정되며, 최대한의 행복과 최소한의 고통을 실현하는 윤리적 행위를 목표로 한다.

3 The opposition of the happiness of the many to the suffering of the few is an old philosophical subject. One answer to this tricky problem, the theory of utilitarianism, was popularized by Jeremy Bentham at the beginning of the 19th century. To understand utilitarianism, one must first grasp the notion of instrumental and intrinsic value. Instrumental value refers to how much something contributes to the achievement of a goal. Therefore, judging something instrumentally means to consider it in terms of its effects or what it produces. For example, money has instrumental value because it can be exchanged for goods and services, but it is otherwise useless. On the other hand, intrinsic value lies in an action or object itself, regardless of its consequences or what it can be used for.

4 Bentham proposed the idea that only pleasure has positive intrinsic value and only pain has negative intrinsic value. He believed that this was a fundamental principle when it comes to questions of morality. His approach to moral dilemmas focused on the calculation of pleasure and pain, and how different actions or choices would affect the overall happiness of a population. He advocated a quantitative analysis of pleasure and pain, aiming to maximize pleasure and minimize pain. According to his theory of utilitarianism, then, those who decided to stay in Omelas were right to do so, because the city's arrangement results in a higher number of happy people than unhappy people. In short, the outcome justifies the means.

"It is the greatest good to the greatest number of people which is the measure of right and wrong."

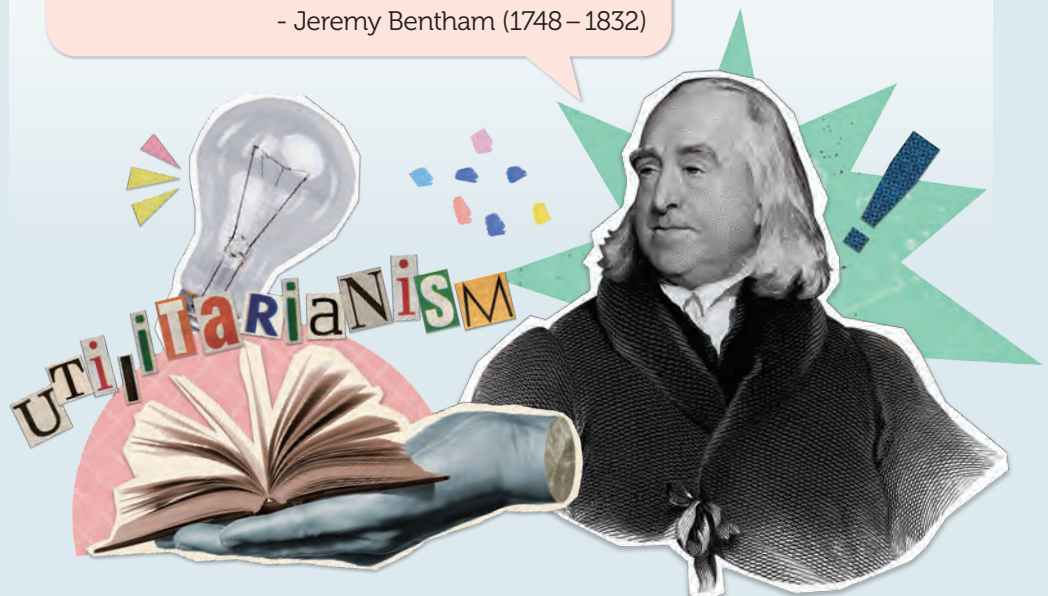
- Jeremy Bentham (1748–1832)

Vocabulary

- popularize
- grasp
- instrumental
- intrinsic
- calculation
- advocate

Your Dictionary

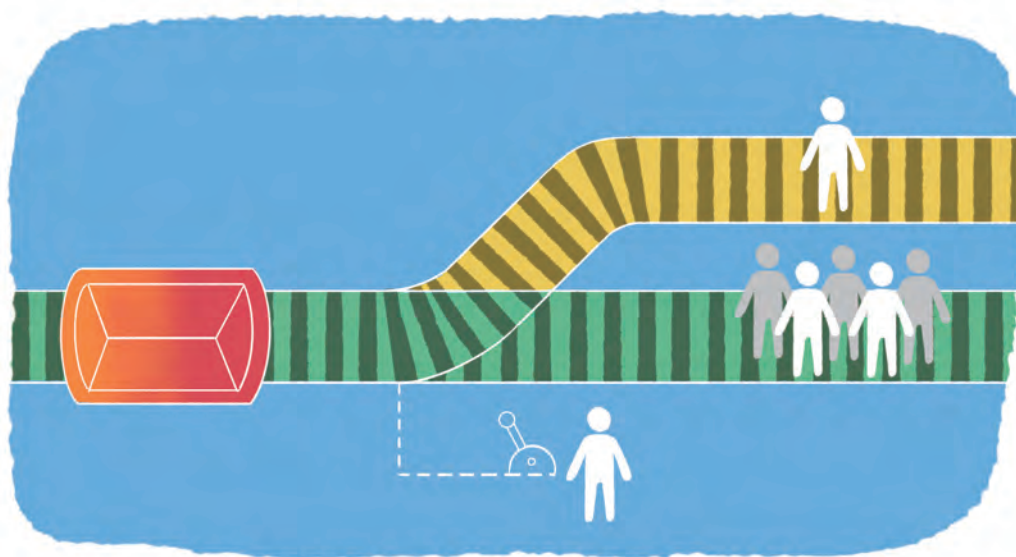
- _____
- _____
- _____



5 A classic thought experiment that is often used to model how utilitarianism deals with moral dilemmas is what is commonly known as the “trolley problem.” The situation is this: a trolley is rolling down a track, swiftly approaching a railroad switch. You are operating the lever that can make the trolley switch tracks. Five people are working on the track the trolley is currently on, and if everything is left unchanged, they will be run over by the trolley and die. If you pull the lever, the trolley will switch to another track, where only one person is working. Would you pull the lever? Most people who are asked this question say yes. After all, one person dying is clearly better than five people dying.

5 Personalizing

If you were in the “trolley problem” situation, would you pull the lever?



6 However, life’s intricacies often introduce shades of gray into the scenario. What if the one person on the second track is someone close to you? What if the five people on the first track are vicious criminals? Suddenly, it becomes hard to make a quick, definite decision about whether or not to pull the lever. It is easy to declare the equality of all lives and assert that one life is not worth more than any other; yet as soon as specificity enters, everything stops being so black and white and easy to evaluate. Decisions are never so straightforward, because no situation is as simplistic as one involving anonymous people on tracks.

7 Le Guin’s story is like a much more elaborate version of the trolley problem. The inhabitants of Omelas may have made the decision to “pull the lever,” saving the many people of Omelas at the expense of the child. But this decision cannot be accepted as unquestionable by the reader, because Le Guin frames it in a context that is much more complex than the basic trolley problem.

Vocabulary

- swiftly
- intricacy
- vicious
- assert
- specificity
- straightforward
- anonymous
- elaborate

Your Dictionary

- _____
- _____
- _____

8 Throughout the story, Le Guin insists that the people of Omelas are all aware of the child, who exists persistently in their minds. While she never specifies the gender of the child, she evokes the reader's empathy through the description of its cruel living conditions. Le Guin's exclusion of specific details of Omelas serves to moderate the reader's engagement, causing them to replicate the trolley problem in their own mind with relatable factors. The reader is not granted any escape from making a decision in this situation: Would you stay in Omelas, or would you leave?

5

9 Matching pronouns with their referents

What does "them" in line 12 indicate?

9 Perhaps the most intriguing omission on the part of Le Guin's narrator is the lack of any explanation as to where the people who choose to leave Omelas go; after all, they are the title of the story. Yet there is no mention of where they are going, what they are seeking, how they end up, or any other decision they may make. Le Guin, by centering her story around them but leaving their fate ambiguous, challenges the utilitarian approach to ethics and forces the reader to imagine alternatives. While living in Omelas represents just one option, those who leave could go anywhere and do any number of things. Perhaps Le Guin is urging us to find solutions outside the utilitarian answer.

10

15

Source Ursula K. Le Guin, "The Ones Who Walk Away from Omelas" 외 (p.180 참조)

Vocabulary

- evoke
- replicate
- relatable
- intriguing
- omission

Your Dictionary

- _____
- _____
- _____



AFTER READING 1

A Organization

Choose the appropriate words to complete the summary.

Le Guin's short story "The Ones Who Walk Away from Omelas"

In Le Guin's story, the happiness of a utopian city depends on the ⁽¹⁾ (pleasure / suffering) of an innocent child, and inhabitants who cannot ⁽²⁾ (accept / reject) this situation can choose to leave the city.

The moral theory of utilitarianism

Utilitarianism is a moral theory that judges actions based on their ⁽³⁾ (consequences / intentions) and aims to ⁽⁴⁾ (maximize / minimize) happiness for the greatest number of people.

The "trolley problem"

Le Guin's story presents a complex version of the "trolley problem," where the decision to sacrifice one for the happiness of many is not ⁽⁵⁾ (straightforward / tricky).

What Le Guin's story tells us

Le Guin's story casts ⁽⁶⁾ (certainty / doubts) upon the utilitarian approach to ethics by presenting a complex moral dilemma and leaving the fate of those who exit Omelas ⁽⁷⁾ (determined / undefined).

B Details

Read the statements and check T for true or F for false.

	T	F
1) The narrator of the story "The Ones Who Walk Away from Omelas" provides specific descriptions of places in Omelas.	<input type="checkbox"/>	<input type="checkbox"/>
2) According to the theory of utilitarianism, intrinsic value lies in an action or object itself rather than in what an action or object helps to achieve.	<input type="checkbox"/>	<input type="checkbox"/>
3) The "trolley problem" presents a situation in which five people are on each set of tracks that a trolley might travel on.	<input type="checkbox"/>	<input type="checkbox"/>

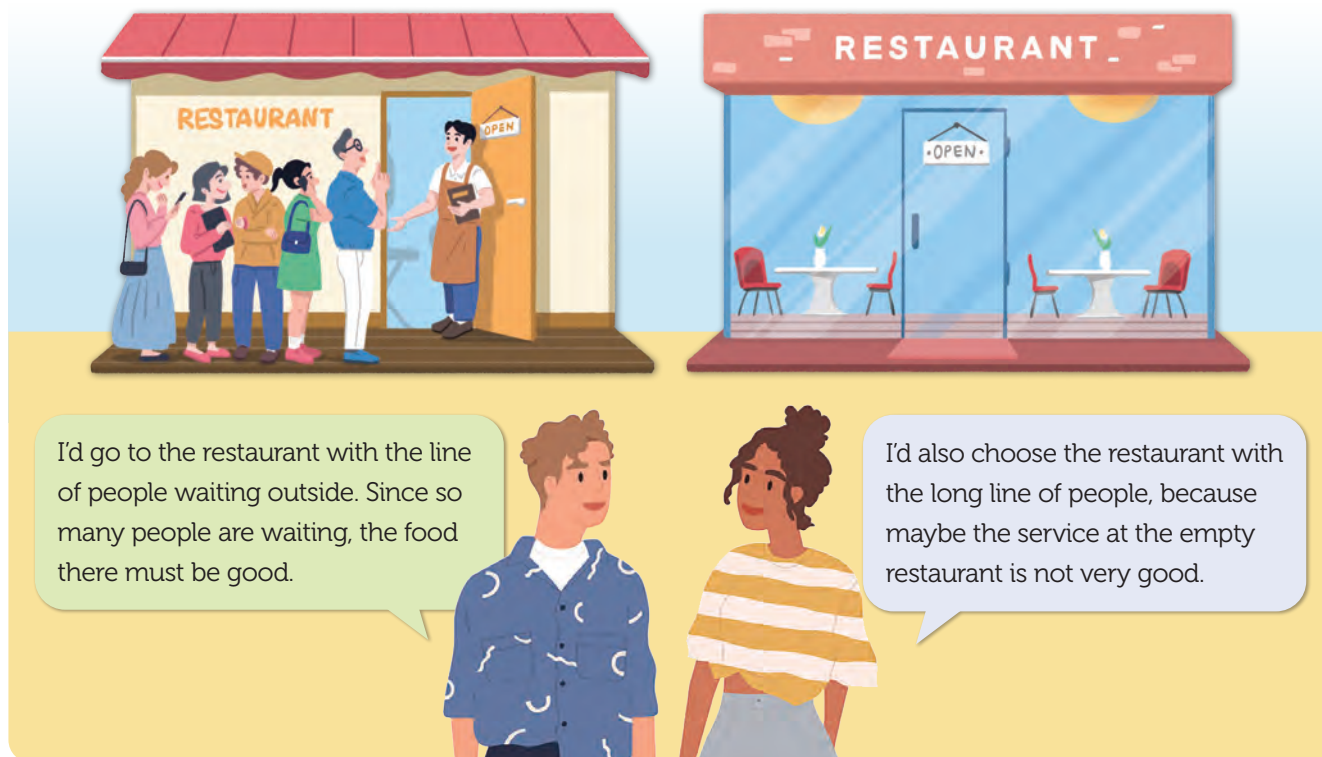
Q Leading to the BIG QUESTION

If you were an inhabitant of Omelas and found out that all the abundance you enjoy depended on the misery of a child, would you accept the conditions of life in the city or would you reject them?

BEFORE READING 2

A Topic Preview

Imagine that you are looking for a place to eat and you see the two restaurants pictured below. Which restaurant would you want to go to? Why? Share your opinions with your partner.



B Vocabulary Preview

Choose the best synonym for each of the **bold-faced** words.

- 1) The tourist came across a **herd** of sheep that was grazing in a meadow by the shore.
a branch b flock c bulk
- 2) The widespread **assumption** that all teenagers are addicted to their smartphones is not entirely accurate.
a description b presumption c administration
- 3) Since the new **norm** for the dress code was implemented, there has been a more professional atmosphere at the office.
a asset b standard c procedure
- 4) The participants at the religious retreat prayed and meditated **communally**, which gave them a sense of spiritual fellowship.
a furiously b gratefully c collectively
- 5) Despite her sensible approach to life, she couldn't help but feel a sense of shame for not **conforming** to societal expectations.
a obeying b opposing c suspending

C Advanced Reading Strategy

● Recognizing transition words and phrases

This strategy involves finding transition words and phrases in order to understand how the thoughts and ideas in the text are connected. By identifying the relationships between sentences and paragraphs, the logical flow of ideas becomes clearer.

- **example:** for example [instance], such as, to illustrate
- **sequence:** first, next, then, to begin with, after, before
- **comparison:** likewise, in the same manner [way], similarly
- **emphasis:** indeed, certainly, of course, undoubtedly, in fact, truly
- **addition:** additionally, besides, further(more), moreover, in addition
- **contrast:** nevertheless, nonetheless, in contrast, on the contrary, conversely, however, yet, on the other hand
- **conclusion / result / summary:** as a result [consequence], hence, accordingly, therefore, thus, finally, in the end, in conclusion, to sum up, in summary, all in all



Practice

Veblen goods are premium products that seem to violate the laws of economics by triggering an increase in demand as their prices rise. (Ⓐ) Luxury products, for example, are much more desired than their more affordable counterparts. (Ⓑ) There is often very little difference between the premium item and its cheaper version. (Ⓒ) Some bags, clothes, and watches, for instance, come with a high price tag primarily because they are symbols of a high social status. (Ⓓ) Similarly, many luxury cars are desired due to their reputation for being expensive. In conclusion, the unique nature of Veblen goods lies in their power to affect people's perceptions of the product's owner.



Answer the following questions based on the passage above.

**Finding
transition words
and phrases**



**Identifying the
relationships
between
sentences**

Find all the transition words or phrases and write them in the appropriate categories.

- 1) to signal example: _____
- 2) to signal comparison: _____
- 3) to signal conclusion: _____

Find the correct place among Ⓐ–Ⓓ for the sentence below.

However, the luxury product can have an effect on the way that people perceive its owner.



SEARCHING

herd behavior



herd behavior causes



Look up information about herd behavior.

- 1) herd behavior causes
- 2) herd behavior experiments

Why Do We **Join the** **Herd?**

1 When Abhijit Banerjee was teaching at Princeton University many years ago, he often took the train to work. After many days of observing others while waiting for the train to arrive, he realized that people tended to line up in particular places on the platform. Frequently, however, the person at the front of the line was not very close to a door when the train stopped. It is possible that the passengers were lining up in those places simply because they were copying what other people were doing. This would imply that their choice about where to line up depended on where other people had already lined up before they arrived.

1 Recognizing transition words

Find a transition word that signals contrast.

2 Banerjee didn't want to assume that people acted in this way just to be like everyone else, though, so he came up with an idea. Suppose that a person suspects others of having information that he or she doesn't have, such as where the door will be

when the train stops. That person would likely join the others, and this would make the crowd grow larger. Then the next person to see the crowd would be more inclined to think that they knew something, which would provoke his or her curiosity as well. As a result, the person would probably end up joining the crowd. At a glance, it may seem like the passengers are just mindlessly conforming to what others are doing. But it is also possible that they are making a rational decision that has nothing to do with conformity. Instead, the decision to join is made under the assumptions that the crowd knows something that the observer doesn't and that following along would be in his or her own best interest. Banerjee called this type of situation a "simple model of herd behavior."

2 Summarizing

According to Banerjee's simple model of herd behavior, individuals might join a(n) (acquaintance / crowd) because they believe it is in their own best (interest / response).

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Abhijit Vinayak Banerjee (1961–) is an Indian-American economist. He won the Nobel Prize in Economics in 2019.

Vocabulary

- provoke
- at a glance
- conform to
- rational

Your Dictionary

Find and write words that you need to study.

- _____
- _____
- _____

THE POWERFUL EFFECT OF A RANDOM FIRST MOVE

3 The fact that these individual
 5 decisions are based on intentional
 thought, however, does not mean that
 they help to guide the entire herd in
 a logical way. In many cases, people are
 making their decision based on what
 10 they think other people know. So the
 information that the first person based
 their decision on has a large impact on
 what the rest of the “herd” does, even if
 that information is misleading or faulty.
 15 In a recent experiment, researchers set
 out to prove how powerful a random
 first move can be. To do so, they
 worked with a website that people
 use for sharing comments and advice
 20 about various restaurants and services.
 The researchers had the website give
 a random upvote to a few new posts on
 the site to see what would happen. The
 results were quite impressive. The posts
 25 that received a random upvote from
 the website as their first vote were 32%
 more likely to receive an upvote from

the next person who rated the post.
 And months later, even after millions of
 views, those same posts were still more
 likely to receive upvotes than the others.

30

3 Identifying details

Find and underline what “a recent experiment”
 in line 15 aimed to prove.

THE VITAL ROLE OF SOCIAL NORMS AND COMMUNITIES IN DECISION MAKING

35

4 It is clear that herd behavior is often
 motivated by self-interest. But what
 about situations in which people follow
 the “herd” despite it being against their
 own immediate self-interest? In these
 40 cases, the decision might be influenced
 by social norms. If the penalty for
 breaking a social norm is considered to
 be greater than the potential benefit,
 then the rational decision is to maintain
 45 the norm. Self-interest is still a factor
 in these decisions, but the focus is on
 the long-term effects rather than the
 immediate benefits.

40

45

Vocabulary

- misleading
- faulty
- upvote
- vital
- norm

Your Dictionary

- _____
- _____
- _____





Elinor Ostrom (1933 – 2012) was an American political scientist and political economist. She was awarded the Nobel Prize in Economics in 2009.



5 The economist Elinor Ostrom spent much of her career demonstrating how this type of logic was common in small communities around the world. For example, Swiss cheese producers in the Alps have relied on communally owned land to graze their cattle for centuries. It would be easy for a cattle owner to take advantage of the land for their own benefit, but the consequences of such an action would not be worth the risk. There are clear rules about how the land can be used, and any cattle owner who breaks them loses their grazing rights. Therefore, it is in the best interest of the cattle owners to maintain the rules.

5 Recognizing transition words and phrases

Find transition words or phrases that indicate an example and a result.

6 Social norms also play a vital role in the villages of developing countries. People in these communities are often willing to help others in times of need. But this help is not necessarily a selfless act. In exchange for helping others, people also expect to receive help when they need it. In this case, the punishment for refusing to help others is to be excluded from receiving help in the future.

6 Summarizing

People in communities where social norms play a vital role are often willing to help _____ others in times of need. But doing so is not necessarily a s_____ act.

Vocabulary

- communally
- graze
- take advantage of
- in time(s) of need
- punishment
- exclude

Your Dictionary

- _____
- _____
- _____





7 Such systems of mutual help can be very beneficial for communities, but they are also quite delicate. If a person in one of these villages can easily move to and live in another community, then they will not consider exclusion to be as serious of a punishment. And once one member of the community disrupts the norms, it becomes easier for others to do so, causing the whole system to break down.

7 Identifying details

Find and underline what happens if one member of a community disrupts social norms.

8 By examining group behavior, we can gain fascinating insight into the complexities of human decision-making. Abhijit Banerjee's "simple model of herd behavior" reminds us that people often join groups not just to conform but as a way of rationally pursuing their own self-interest. In

some cases, it might seem like being a part of the herd goes against one's self-interest. But in small communities, the long-term benefits of following social norms often outweigh the short-term rewards that might come with pursuing what is best for oneself at a particular time. In the end, there are many different reasons why we join the herd. The answer might depend on the situation, but asking the question helps to enrich our understanding of human behavior in all of these diverse settings.

8 Identifying details

In small communities, the long-term benefits of following social norms often outweigh the immediate rewards of pursuing one's own self-interest.

Source Abhijit Vinayak Banerjee, *Good Economics for Hard Times* (p.180 참조)

Vocabulary

- mutual
- delicate
- insight
- outweigh
- enrich

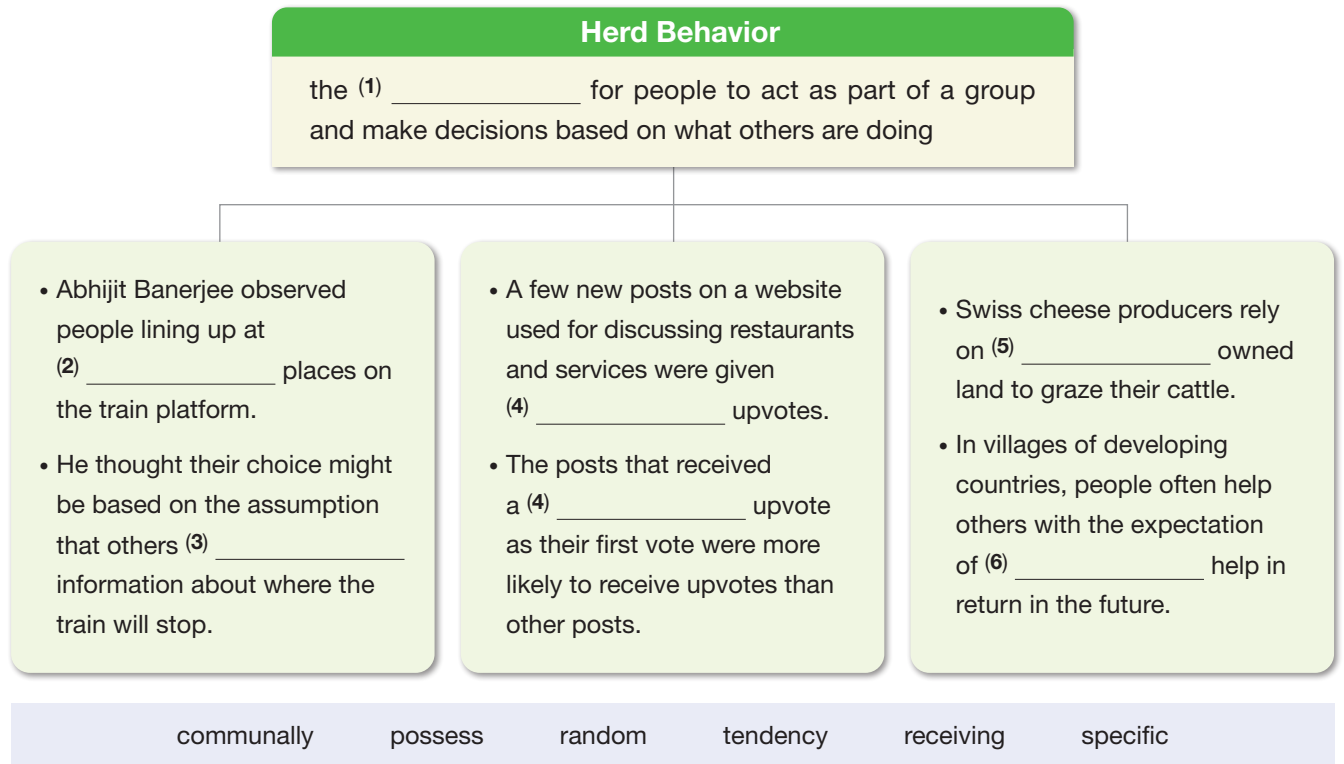
Your Dictionary

- _____
- _____
- _____

AFTER READING 2

A Organization

Choose the appropriate words to complete the graphic organizer.



B Details

Read the statements and check T for true or F for false.

	T	F
1) Abhijit Banerjee assumed that people tend to just follow the crowd without rational thought.	<input type="checkbox"/>	<input type="checkbox"/>
2) People often follow social norms even when they are against their immediate self-interest because they are focused on the long-term effects of their decisions.	<input type="checkbox"/>	<input type="checkbox"/>
3) If someone from a community where social norms play a vital role can easily join another community, being excluded may have less of an impact on them.	<input type="checkbox"/>	<input type="checkbox"/>

Q Leading to the BIG QUESTION

Have you ever found yourself engaging in herd behavior? What was the situation? Why do you think you decided to follow others?

EXPRESSIONS

Practice 1

Words in context

Choose the correct words to complete the sentences.

- 1) She had to draw on everything she had studied in order to (gamble / tackle) the complex problem.
- 2) The (delicate / diverse) trust between the two allies was broken when one of them chose to betray the other.
- 3) The lack of (ambiguity / specificity) in the evacuation instructions left many people unprepared for the flood.
- 4) It is important to approach criticism with a(n) (emotional / rational) perspective rather than being overly defensive.
- 5) The comic gained immense popularity by depicting situations that were both humorous and highly (relatable / tedious).

Practice 2

Words in context

Choose the correct words to complete the sentences.

- 1) The cooking show _____ many dishes that people were previously unfamiliar with.
- 2) The election poll results were based on a careful _____ of the data collected from thousands of respondents.
- 3) In the world of diplomacy, an ambassador must avoid making _____ comments that could strain international relations.
- 4) The taxi's _____ brakes caused the accident because the driver wasn't able to stop in time and crashed into a utility pole.
- 5) The public relations manager decided to _____ the use of eco-friendly materials in the company's products in order to address customer concerns.

calculation faulty advocate misleading popularized

Practice 3

Definitions

Choose the correct word for each definition.

No.	Definition	Options	
1)	in a quick, speedy, or rapid manner	Ⓐ swiftly	Ⓑ utterly
2)	to incite a reaction, often an emotional one, in someone	Ⓐ prohibit	Ⓑ provoke
3)	to restrict the movement or freedom of someone or something	Ⓐ condemn	Ⓑ confine
4)	to intentionally keep someone or something out of a group, place, or consideration	Ⓐ elude	Ⓑ exclude

GRAMMAR

- We can use a noun clause starting with the conjunction *that* after an abstract noun phrase to explain the abstract noun phrase in more detail.

examples of abstract nouns: assumption, claim, concern, danger, decision, doubt, fact, hope, idea, news, opinion, possibility, question, rumor, sign, thought, wish, etc.

- ☐ The orchestra scheduled a performance on *the assumption* **that the violinist would be available.**
- ☐ The headquarters acknowledged *the fact* **that the conflict could lead to problems in international trade.**
- In this structure, the conjunction *that* is followed by a complete clause. It is different from a relative clause, in which *that* is followed by an incomplete clause. Compare the sentences below:
 - ☐ He expressed *his concern* **that he would not recover from his injury in time to participate in the competition.** complete clause
 - ☐ I have a concern **that I'd like to raise.** incomplete clause

Go to pages 72, 79, and 80.

Find the sentences with these structures above and underline them.

Practice 1

Complete the sentences using the structure shown in the example.

Example The lawyer had quit her job. (the news)

→ The news that the lawyer had quit her job shocked her friends.

- 1) Breakfast was ready. (a sign)
→ The delicious smell of fried bacon was _____.
- 2) The new app could be stealing users' data. (some concern)
→ There is _____.
- 3) Nasty and stormy weather could restrict our travel options. (the possibility)
→ _____ bothers us.
- 4) They developed a battery that can be charged in just 20 minutes. (a rumor)
→ I heard _____.

Practice 2

Check C if the underlined part is a complete clause or I if it is an incomplete clause.

- 1) She doubted the claim that he made based solely on his experience. (C / I)
- 2) We all share the same hope that our team will win the championship this year. (C / I)
- 3) We were all excited to hear the news that our favorite band was going on tour. (C / I)
- 4) In the world of fashion, the opinion that moderation is the ultimate form of elegance has been gaining popularity. (C / I)
- 5) The question that the jury deliberated on for hours was whether the defendant's actions were intentional or not. (C / I)

Opinion

What Would You Do?

PREPARE TO WRITE

+ CHECK-UP

Which one is NOT mentioned as supporting evidence?

- Ⓐ expert opinions
- Ⓑ difficult language
- Ⓒ personal experiences

A Writing Strategy

Supporting your opinion

This strategy involves providing reasons or evidence to back up your opinions. Without supporting evidence, your opinion may be viewed as invalid or biased. The supporting evidence may include personal experiences, expert opinions, or statistics. It is also important to use clear language to address opposing ideas.

B Writing Sample

Read the situation below and look at how the writer supports their opinion about the choice that they would make.

• **Situation:** Imagine that you have found a wallet on the ground. Someone must have lost it. What would you do?

- ☐ **Choice 1:** Do nothing about it.
- ☒ **Choice 2:** Take action to find the owner.

The writer's opinion about the choice that he/she would make

Reasons or evidence that supports the writer's opinion

A conclusion that rephrases the writer's opinion

If I found a wallet on the street, I would take action to find the owner of the wallet.

First, I would be willing to help the owner because I would feel sympathy for him or her. I have been through the same situation of having lost my wallet. I would understand how worried the owner would be. Furthermore, taking action would be the most ethical choice. Doing nothing about the situation may leave the owner in a state of worry and inconvenience. And I would feel a sense of responsibility to help the owner. Also, returning the wallet could spread kindness in my community. A small act of kindness can give others hope and show that people still care.

For these reasons, I would do all I could to return the wallet to the owner. Even small choices like this can make a big difference in someone's life, and I want to be a person who does the right thing.




WRITE YOUR OWN

A Gathering Ideas

Here are some situations that you may face in your daily life. Pretend that you're in one of these situations and you need to make a choice. What would you do?


SITUATION 1



Someone asks you for directions on a bus. But you need to get off now.

- ☐ Choice 1: Say that you don't know and get off the bus.
- ☐ Choice 2: Provide detailed directions and miss your stop.


SITUATION 2



You see a friend sleeping during a class.

- ☐ Choice 1: Wake him up.
- ☐ Choice 2: Let him sleep.

SITUATION 3



You notice that you've been given too much change at a shop.

- ☐ Choice 1: Inform the clerk.
- ☐ Choice 2: Pretend not to notice and leave the shop.

B Outlining

Write reasons that support your choice.

	Example	Your own
Reason 1	I would be willing to help the owner because I would feel sympathy for him or her.	
Supporting detail 1	I have been through the same situation of having lost my wallet.	
Reason 2	Taking action would be the most ethical choice.	
Supporting detail 2	Doing nothing about the situation may leave the owner in a state of worry and inconvenience.	
Reason 3	Returning the wallet could spread kindness in my community.	
Supporting detail 3	A small act of kindness can give others hope and show that people still care.	

C Building Sentences

Write the introduction and the concluding sentences of your paragraph.

+ LANGUAGE TIPS

- I believe ...
- If I were in that situation,
I would ...
- ... is morally and ethically right.

1. State your choice.

2. Write the concluding sentence of your paragraph.

+ STRUCTURE GUIDE

When you list your supporting details, you can use the words below.

- for one thing, to begin with
- then, next, second, also, moreover, furthermore, in addition, what's more, on top of that

D Drafting

Write an opinion paragraph about your choice based on **B** and **C**.

E Revising and Editing

Revising Tip Removing unnecessary words

We sometimes use words or phrases that serve little or no purpose in writing, such as *kind of*, *certain*, *really*, *basically*, *practically*. Removing them can make your draft clearer.

Check-up 1 Find and underline unnecessary words that should be removed to make the draft clearer.

When it comes to traveling, some people like exploring certain ancient ruins, while others would rather enjoy regional dishes. Each person basically has their own preferences. So, if you're planning on taking a trip with friends, make sure your interests coincide.

Editing Tip Writing about experiences

You can write about experiences using a 「have/has + v-ed」 structure, or the present perfect, often with adverbs that express frequency. But the past tense should be used if there is an expression that refers to a specific time in the past.

PRESENT PERFECT

We use the present perfect to indicate a connection between a finished action or event and the present.

e.g. He *has gone* to New York.

We *have* already *had* dinner.

Check-up 2 Correct the underlined part in each sentence if it is wrong. If there aren't any errors, write OK.

- 1) This mountain is the highest one I have ever climbed. → _____
- 2) Last year, he has visited his friends who live in Thailand. → _____
- 3) This movie is my favorite. I have watched it more than five times. → _____

F Finalizing

Go back to **D Drafting** and modify your draft.

SHARE & REVIEW

A Check your own draft according to the criteria below. Then share it with your partner and get their feedback.

	You	Partner
1. Is your opinion sentence stated clearly?	<input type="checkbox"/>	<input type="checkbox"/>
2. Have the supporting details for your opinion been clearly presented?	<input type="checkbox"/>	<input type="checkbox"/>
3. Do your supporting details include personal experiences, expert opinions, or statistics?	<input type="checkbox"/>	<input type="checkbox"/>
4. Is your draft written without unnecessary words?	<input type="checkbox"/>	<input type="checkbox"/>

B Is your partner's draft well-organized? Write your opinion here.


I think _____.
ex) he clearly states his opinion and does not use unnecessary words

Different Choice, Different Ending




Many stories teach readers a lesson by showing the consequences of the characters' decisions. Imagine how these stories would change if they made different decisions or choices.

STEP 1

Listen to the plots of these stories and find out how they end. 



Get into a group of four and look at the cartoons below. Choose one of the stories and one of the choices for the character. 

STORY 1 The King Has Donkey Ears (Korean folk tale)



What if he chose to ...?

☐ Choice 1

tell the truth to his family

☐ Choice 2

never tell the truth to anyone

STORY 2 Ring of Gyges (Story from *The Republic*, written by Plato)



What if he chose to ...?

☐ Choice 1

use the ring

☐ Choice 2

not use the ring

STEP 2

Talk about the story and how each choice affects the ending. 

What would happen if the man told the truth to his family in STORY 1?

Well, I think one of his family members might tell someone else.

It wouldn't take long for everyone to find out about the king's ears.



STEP 3


+ LANGUAGE TIPS

- direct the play
- write a play script
- prepare costumes

In your group, assign each member a task and complete the table below. Then, write a script for a play that shows the story's new ending.

Name	Task	Name	Task

STEP 4

+ You can search the internet to find out conventions for formatting play scripts. 

Present your group's story to the class.

The man is sick in bed, and his wife and son are next to him.

WIFE: I don't understand why you aren't getting better.
What's the problem?

MAN: I think it is because of all of the stress from the dilemma I am facing.

SON: What is it? If you tell us, you will feel better.

MAN: *(thinking)* Hmm... Okay...

(...)



CHECK YOUR PROGRESS

1. Was your group able to come up with a new ending to the story?

Yes

No

☐
☐

2. Did all the group members carry out their roles?

☐
☐

3. Was the new ending of the story convincing?

☐
☐

4. Did your group's play turn out well?

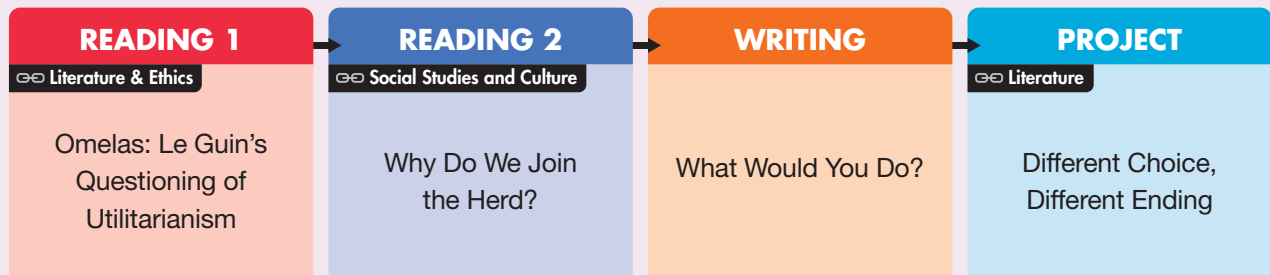
☐
☐

WRAP UP

Reflect on what you learned in this lesson.

Q BIG QUESTION

What values guide your actions?



A Reading

We learned about the values and motives that guide our actions. Below are some examples of psychological phenomena that explain our actions. Choose one and search online to learn more about it. Then share your findings with your partner.

	Findings
<input type="checkbox"/> Anchoring effect <input type="checkbox"/> Pygmalion effect <input checked="" type="checkbox"/> Confirmation bias <input type="checkbox"/> Your own: _____	ex) the tendency to seek or interpret information in a way that confirms one's preexisting beliefs or hypotheses

Which phenomenon did you choose? Can you explain it?



I chose **confirmation bias**. This is the tendency to seek or interpret information in a way that confirms one's preexisting beliefs or hypotheses.



B Writing

Write your own opinion paragraph about the choice that you would make in the situation below.

Situation

Pretend you are on your way home late at night. Suddenly, you encounter a dog that seems to have lost its owner. What would you do?

- ☐ Choice 1: Pass by and go home.
- ☐ Choice 2: Take it to the police station.

✓ Final Answer to the BIG QUESTION

Did your answer to the big question change during the lesson? Check the appropriate box below. If your answer changed, explain why.

☐ Yes. My final answer is “_____.”
ex) that morality guides my actions

I changed my answer because _____.
ex) I realized that my behavior is most strongly influenced by my moral principles

☐ No, my first answer hasn't changed.

➔ FINAL CHECK

Core Competence	I can ...
Reading Strategy 1	<input type="checkbox"/> match pronouns with their referents.
Reading Strategy 2	<input type="checkbox"/> recognize transition words and phrases.
Grammar	<input type="checkbox"/> use the 「that + complete clause」 structure to explain an abstract noun phrase.
Writing Strategy	<input type="checkbox"/> write an opinion paragraph.



INTUITIONS: ARE THEY RELIABLE?

BEFORE READING

Do you tend to rely on your intuition when you make a decision?

1 Do you trust your intuition? For most of us, it's hard not to, but that doesn't mean that it's always correct. In fact, a popular American game show proved how easy it can be for our intuition to be fooled. *Let's Make a Deal*, hosted by Monty Hall, first aired on television in the United States in 1963. It is the source of the "Monty Hall problem," a famous probability puzzle that tests people's intuition. Here's how it works:

2 Imagine that you are a contestant on a game show that presents you with three doors. Two of the doors are hiding goats, and the other one is hiding a new car. You have to pick one, hoping that the one you choose has the car behind it. Once you've made your decision, the host opens one of the other doors and reveals

a goat. Then he gives you another choice: you can stick with your original decision, or you can switch to the other unopened door. What should you do?

3 This is where your intuition will often get fooled. You will likely think that the remaining doors each have a 50% chance of hiding the car. However, this is not the case. Deciding to switch to the other door will actually double the odds that you will win the car!

4 The reason we are often fooled by this problem is that we see the game as having two separate parts, with a one in three chance of being correct in the first part and a one in two chance of being correct in the second part. However, our intuition neglects to consider the fact that the host did not randomly choose the door he opened. His choice was deliberate because he knew which door the car was behind, and he couldn't open that one.



5 Can you figure out how to solve this problem? This simple table will help you see things more clearly. This table shows the outcome of every possible scenario when you choose Door ① first. As you can see, switching to the other door doubles the odds of winning the car!

Door ①	Door ②	Door ③	The result if you stay with Door ①	The result if you switch to the other door
Goat	Goat	Car	Win a goat	Win the car
Goat	Car	Goat	Win a goat	Win the car
Car	Goat	Goat	Win the car	Win a goat

6 So how can we prevent our intuition from being fooled? One way is to try the same problem but with more doors. Imagine that you have to choose between a million doors, with 999,999 of them hiding goats and only one of them hiding a car. Then, after you pick a door, the host opens 999,998 doors that all reveal goats. The host can't open the door with the car, so that gives you a substantial amount of information about that last door, doesn't it? By switching doors, your odds go from one in a million to one in two!

7 The Monty Hall problem shows us that it's not always wise to trust our intuition regarding probabilities. Instead, it's better to check the math before we follow through with a decision, no matter how confident we feel.

Source [https://towardsdatascience.com/ \(p.180 참조\)](https://towardsdatascience.com/ (p.180 참조))



AFTER READING

1) Fill in the blanks using words from the passage.

Q: What is the "Monty Hall problem"?

A: It is a puzzle that challenges one's intuition about p_____. A contestant is shown t_____ doors. One of them is hiding a c_____ and the others are hiding g_____. The contestant will get what is behind the last door they choose.

2) Read the statements about the Monty Hall problem and check T for true or F for false.

(1) A contestant chooses a door and is later given a chance to switch his or her choice. (T / F)

(2) Switching to the other door halves one's odds of winning the car. (T / F)

3) Complete the main idea of the passage.

Don't rely on your i_____ when making important decisions. It's better to check the m_____.

LESSON

4

Blurring the Lines

단원 설정 취지

각기 다른 분야의 융합, 인간과 기술의 협력 등 경계선을 넘어 새롭게 독창적인 결과물을 내놓은 예시를 통해, 융합 또는 협력이 가져올 가능성을 이야기할 수 있다.

LESSON GOALS

READING

1. 연구하는 자세로 위대한 작품을 남긴 세 명의 화가를 알아보고, 그들이 작품을 만들어 낸 과정을 이해할 수 있다.

[Reading Strategy] Making inferences

2. 인공 지능이 탑재된 기계와 협력하는 예술가 Sougwen Chung의 작품을 통해 인간이 기술과 함께 창의적인 작품을 만드는 과정을 이해할 수 있다.

[Reading Strategy] Understanding figurative language

WRITING

인간의 여러 영역에서 사용되는 인공 지능 기술에 대해 자신의 입장을 쓸 수 있다.

[Writing Type] Persuasive

[Writing Strategy] Stating your stance clearly

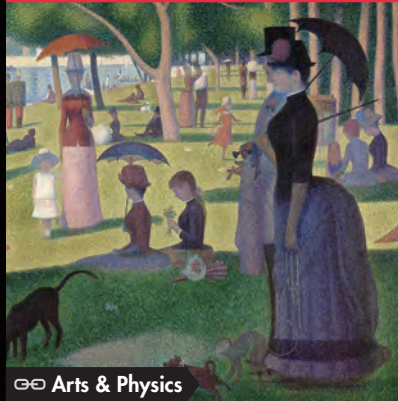
GRAMMAR

Who is *the girl* talking to Simon at the school library?

BIG QUESTION

What interests can you combine
in order to develop something
innovative?

READING 1



Arts & Physics

Bringing Light to Art

READING 2



Arts & Engineering

Pushing the Limits of
Human-Machine Collaboration

WRITING



The Increasing Use of AI
in Our Lives

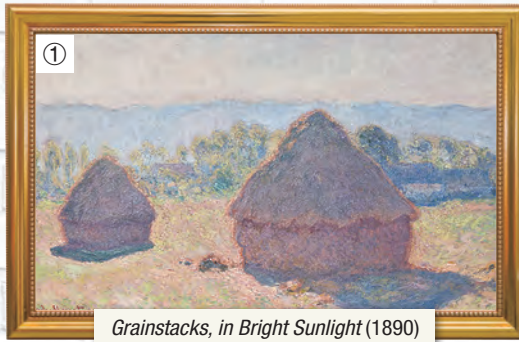
**Your Answer to the
BIG QUESTION**

BEFORE READING 1

A Topic Preview

Below are paintings of the same object. Think about how they are different from one another and share your opinions with your partner.

Paintings from the *Haystacks* series by Claude Monet



It seems that the differences in the paintings are due to the time of day at which Monet painted each of them.

I think the second painting illustrates the sunlight's effect the best.

B Vocabulary Preview

Choose the best synonym for each of the **bold-faced** words.

No.	Sentence	Options	
1)	The painting of the grand church at dawn was quite elaborate .	Ⓐ detailed	Ⓑ simple
2)	The team had to strive to be better if they expected to win a medal.	Ⓐ endeavor	Ⓑ yield
3)	The museum uses strategic lighting to illuminate the artifacts, creating a mysterious atmosphere.	Ⓐ conceal	Ⓑ highlight
4)	The main contrast between the novel's two characters is that one is optimistic and the other is cynical.	Ⓐ distinction	Ⓑ parallelism
5)	The restoration of the castle aimed to imitate the original texture of its brick walls in its corridors and chambers.	Ⓐ cultivate	Ⓑ replicate

C Advanced Reading Strategy

● Making inferences

This strategy involves drawing logical conclusions from a text's information. By **analyzing context and details**, or by relying on your own prior knowledge and personal experiences, you can come to conclusions that are not explicitly stated in the text. By **making inferences**, you can enhance your reading experience and gain a better understanding of the context.



Practice

Pompeii, a once-thriving Roman city located at the foot of Mount Vesuvius, met a tragic fate when a volcano erupted in 79 A.D., burying the city beneath layers of ash and preserving it for centuries. Researchers have excavated Pompeii, uncovering remarkable clues about the daily lives of its inhabitants. The preserved buildings, artifacts, and elaborate wall paintings have a lot to teach us about the city's culture and society. For example, the remains of bakeries and communal baths provide insight into the daily routines and social interactions of the residents. The city's central location on trade routes made it a popular place for the exchange of goods, and archaeological evidence has been found of various businesses in the area, from wine shops to textile merchants. These commercial activities were essential to the livelihood of Pompeii's inhabitants and demonstrated its role as a vital economic center in the ancient world.



➔ Answer the following questions based on the passage above.

Analyzing
context and
details



Making
inferences

Read the statements and write T for true or F for false.

- 1) Pompeii was destroyed in 79 A.D. by a volcanic eruption. _____
- 2) Most of Pompeii is still covered in layers of ash. _____
- 3) Pompeii was a city notable for its commerce. _____

If you were a tourist in Pompeii, what would you most likely think when you saw the ancient city?

- a) Pompeii was a calm and simple town with few cultural activities.
- b) The volcanic eruption of Mount Vesuvius actually allowed Pompeii to flourish.
- c) The city was important as a center of culture and commerce in the ancient Roman world.



SEARCHING

Rembrandt

Rembrandt artwork

Look up information about the following three artists and their artworks.

- 1) Rembrandt van Rijn
- 2) Claude Monet
- 3) Georges Seurat

1 Identifying organization

How does the author introduce the topic?

- a by using an analogy
- b by defining key terms
- c by introducing a related story

3 Summarizing

In Rembrandt's self-portraits, one side of the subject is exposed to _____, while the other is left in s _____.

Vocabulary

- strive
- depict
- contemporary
- illusion
- accompany
- particularity

Your Dictionary

Find and write words that you need to study.

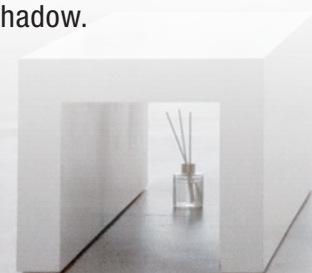
- _____
- _____
- _____

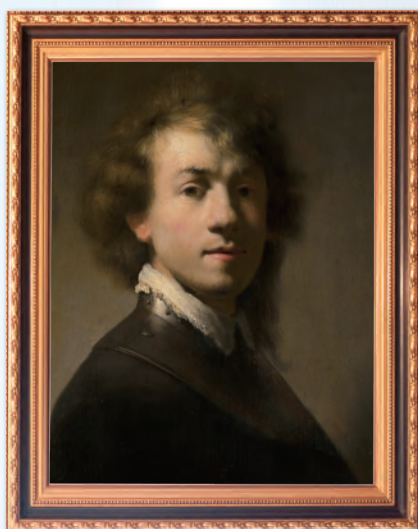
Bringing Light to Art

1 For hundreds of years, artists have been striving to depict light in their works. Some have concentrated on capturing how light reflects off people and objects, some have studied its changes throughout the days and seasons, and others have gone so far as to incorporate contemporary scientific theories of light and color into their artwork. To reach their goals, many artists work in ways similar to those of scientists. Just like scientists in their laboratories, they carefully create ideas, hypotheses, and theories, seeking to understand the whys and hows of the world with their brushes. Here are three artists who took this scientific approach to the representation of light: Rembrandt with his brightness and darkness effects, Monet with his exploration of light over time, and Seurat with optical illusions.

2 In the 17th century, Dutch painter Rembrandt van Rijn (1606–1669) kept a journal in which the entries were accompanied by self-portraits. In this way, he documented the ups and downs of his life over the course of four decades through both words and images of himself. He painted or drew himself in more than 70 works, in which he is always seen with his head turned slightly to face the viewer.

3 His painted self-portraits have an additional particularity, as they demonstrate a technique called *chiaroscuro*. This Italian term literally means “light-dark.” The technique draws attention to a subject through the use of—as its name implies—highly contrasting light and shadow. The subject of the painting, which is painted in the middle of the canvas, has a strong light shining on it. As a result, the exposed parts of the face are very bright, while the others are hidden in shadow.





Self-Portrait in a Gorget (around 1629)

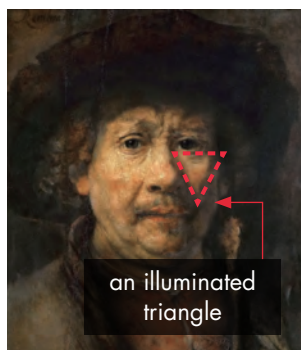
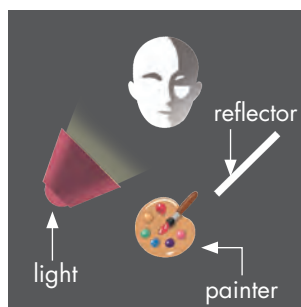


Self-Portrait at the Age of 34 (1640)



Self-Portrait (1669)

4 Also, Rembrandt employed a special method of lighting his subjects in order to achieve this contrast. He placed the subject of the work, the light source, and a reflector in a triangular arrangement. The light would shine on the subject at an angle, and, as a result, half of the face would appear very bright. The other half would be hidden in shadow except for an illuminated triangle that was produced by the reflector and which appeared under the eye. The triangle's shape and size would depend on the shape and size of the subject's nose and eyebrow. This unique lighting technique helps to emphasize details and gives the subject's features greater depth, as contrasting light with darkness is the most effective way to bring out a person's face.



*Self-Portrait
by Rembrandt van Rijn (1655)*

4 Making inferences

Which of the following would Rembrandt have considered to be the most important when painting someone's portrait?

- Ⓐ the kind of light source used to illuminate the subject
- Ⓑ the shape and size of the subject's facial features
- Ⓒ the subject's position in relation to the light source and reflector

Vocabulary

- illuminate
- eyebrow

Your Dictionary

- _____
- _____
- _____

5 Another artist who was well-aware of the role that light angles and brightness play in our perception of subjects was French painter Claude Monet (1840 – 1926). Although two centuries had passed since the time of Rembrandt, Monet proved that there was still a lot to be discovered and studied about light’s influence on our visual interpretation of the world. Just as Rembrandt had created painting after painting of the same subject, so too did Monet produce his own series of same-subject paintings.

Identifying details

Find and underline all the elements that make haystacks a challenging subject to paint.

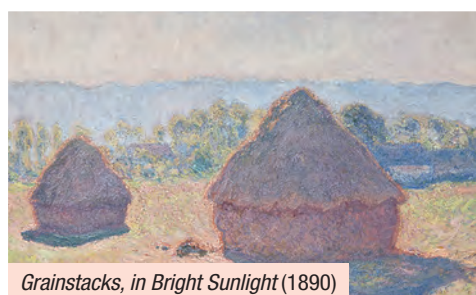
6 One such series has for its subject haystacks in an empty field. Haystacks may sound plain and simple compared to a person’s face, yet Monet noticed that they took on different color schemes depending on the season and time of day. Moreover, the bits of hay sticking out in various directions, the large, rough surface area, and the effects of rain or dryness on the hay make them a challenging subject to paint. Every single one of these tiny elements causes light to reflect in a different way, leading to a complex array of colors being cast in all directions. And as the light changes, so do these reflections. So Monet painstakingly captured the haystacks as they appeared in the morning, throughout the day, and toward the evening. He painted the haystacks bathing in the soft glow of summer sunlight and blanketed in powdery winter snow. In just over a year, Monet had produced around 30 paintings of the same haystacks.

Vocabulary

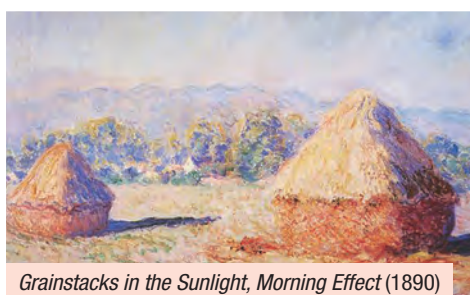
- perception
- haystack
- scheme
- stick out
- cast
- painstakingly

Your Dictionary

- _____
- _____
- _____



Grainstacks, in Bright Sunlight (1890)



Grainstacks in the Sunlight, Morning Effect (1890)



Grainstack, White Frost Effect (1890–1891)



Haystacks, End of Summer (1891)

7 But *Haystacks* is not the only series that Monet produced. Another famous series is that of the Rouen Cathedral, which has elaborate details that are comparable in complexity to a haystack. Monet leased a room directly across from the Rouen Cathedral in Normandy, and over a period of several months, he painted more than 30 representations of the magnificent building, all from the same angle, but all in different lighting. The wide variety of ways that light interacts with objects to produce different colors is a recurrent theme in this series.



8 While it might seem exhausting to paint the same subject month after month, Georges Seurat (1859 – 1891), another French painter born in the 19th century, had perhaps an even more elaborate approach to working with light than Rembrandt or Monet. Around the late 18th century or the early 19th century, artists and physicists alike had turned their attention to light and color. Principles of color mixing and visual effects were developed, and books on these topics, such as *Color Theory: A Guide to Information Sources* and *The Principles of Harmony and Contrast of Colors*, were published. Seurat had a deep understanding of these new ideas, and he utilized some of them in his own works of art.

9 In order to create his masterpiece *A Sunday Afternoon on the Island of La Grande Jatte*, Seurat developed his technique through experimentation, spending two years making more than 60 sketches and drawings of the scene. He would go to the island at different times of the day to examine the light's reflection on the Seine river's water, the trees' leaves, and the grass. Different characters also appear in Seurat's sketches and drawings. He used these drafts to test out various elements before choosing which would be best to include in the final painting and how to arrange them.

7 Identifying details

Leasing a room across from the Rouen Cathedral enabled Monet to depict it in different lighting conditions in his paintings. (T / F)

Vocabulary

- lease
- recurrent
- experimentation

Your Dictionary

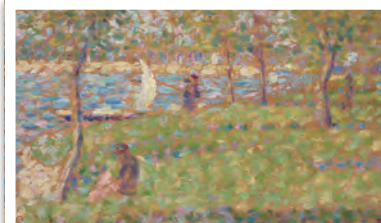
- _____
- _____
- _____

8-10 Making inferences

Why might Seurat be considered to have taken a more elaborate approach to working with light than Rembrandt or Monet?

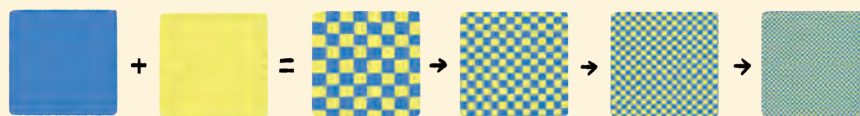
- Ⓐ Seurat painted the same subject repeatedly.
- Ⓑ Seurat applied some scientific principles of color in his art.

10 A closer look at the final result reveals an interesting surprise. The painting, which is one of the most well-known examples of the technique called pointillism*, is made up of countless brushstrokes that resemble tiny dots. The closer one stands to the painting, the less recognizable the subjects become, as the outlines blur into multiple dots rather than distinct lines. On the other hand, as one backs away from the painting, the dots blend with one another, creating new colors and shapes, thanks to a clever application of color mixing principles. Instead of using green paint, for example, Seurat painted blue and yellow dots in juxtaposition**. These gradually fuse into a green area as the eye gets farther away.

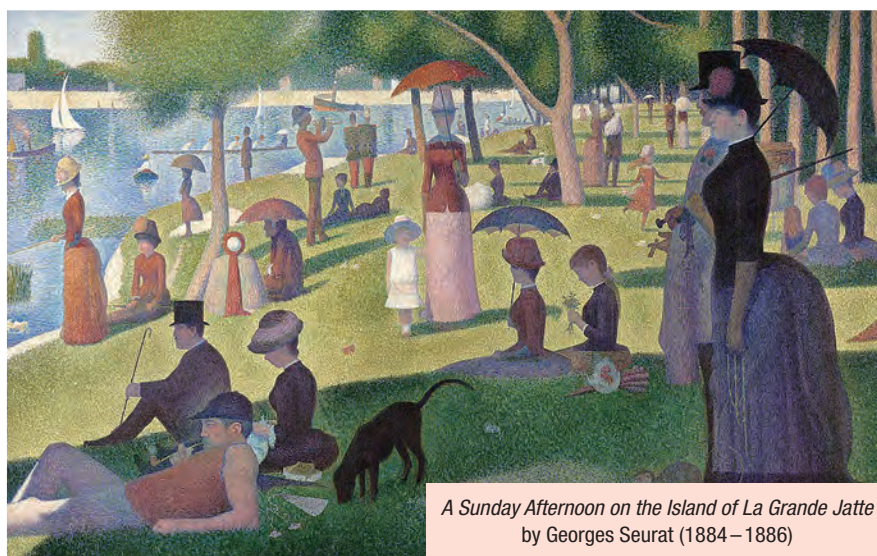


Study for "La Grande Jatte"
by Georges Seurat (1884–1885)

*pointillism 점묘법 **juxtaposition 병치



Juxtapositional mixture of blue and yellow colors



A Sunday Afternoon on the Island of La Grande Jatte
by Georges Seurat (1884–1886)

11 Often, the best art is not just the product of genius or natural talent; a tremendous amount of hard work goes into creating a true masterpiece. As we can see through the work of Rembrandt, Monet, and Seurat, this is especially true when trying to imitate the intriguing beauty of light.

Source <https://www.rembrandtonline.org/> 외 (p.180 참조)

Vocabulary

- blur
- multiple
- fuse





Your Dictionary

- _____
- _____
- _____

AFTER READING 1

A Organization

Match each painting to the artist who painted it. Then fill in the blanks (1)–(5) with the words in the box below.

Artist	1) Rembrandt van Rijn	2) Claude Monet	3) Georges Seurat
Painting(s)			
The way they expressed light	<p>He made use of a technique that draws attention to a subject through the use of contrasting light and (1) _____.</p>	<p>He painted the (2) _____ subjects over and over again to show how light reflected off of the various elements of his subjects at (3) _____ times of the day, as well as in (3) _____ seasons and weather conditions.</p>	<p>Cleverly using the principles of color (4) _____, he painted many (5) _____ dots that blend together to create colors and shapes when viewed from a distance.</p>

different mixing shadow same tiny

B Details

Read the statements and check T for true or F for false.

	T	F
1) Rembrandt documented the ups and downs of his life through both words and self-portraits.	<input type="checkbox"/>	<input type="checkbox"/>
2) Monet owned an apartment near the Rouen Cathedral in Normandy.	<input type="checkbox"/>	<input type="checkbox"/>
3) Seurat used many connected lines to create new colors and shapes in his paintings.	<input type="checkbox"/>	<input type="checkbox"/>

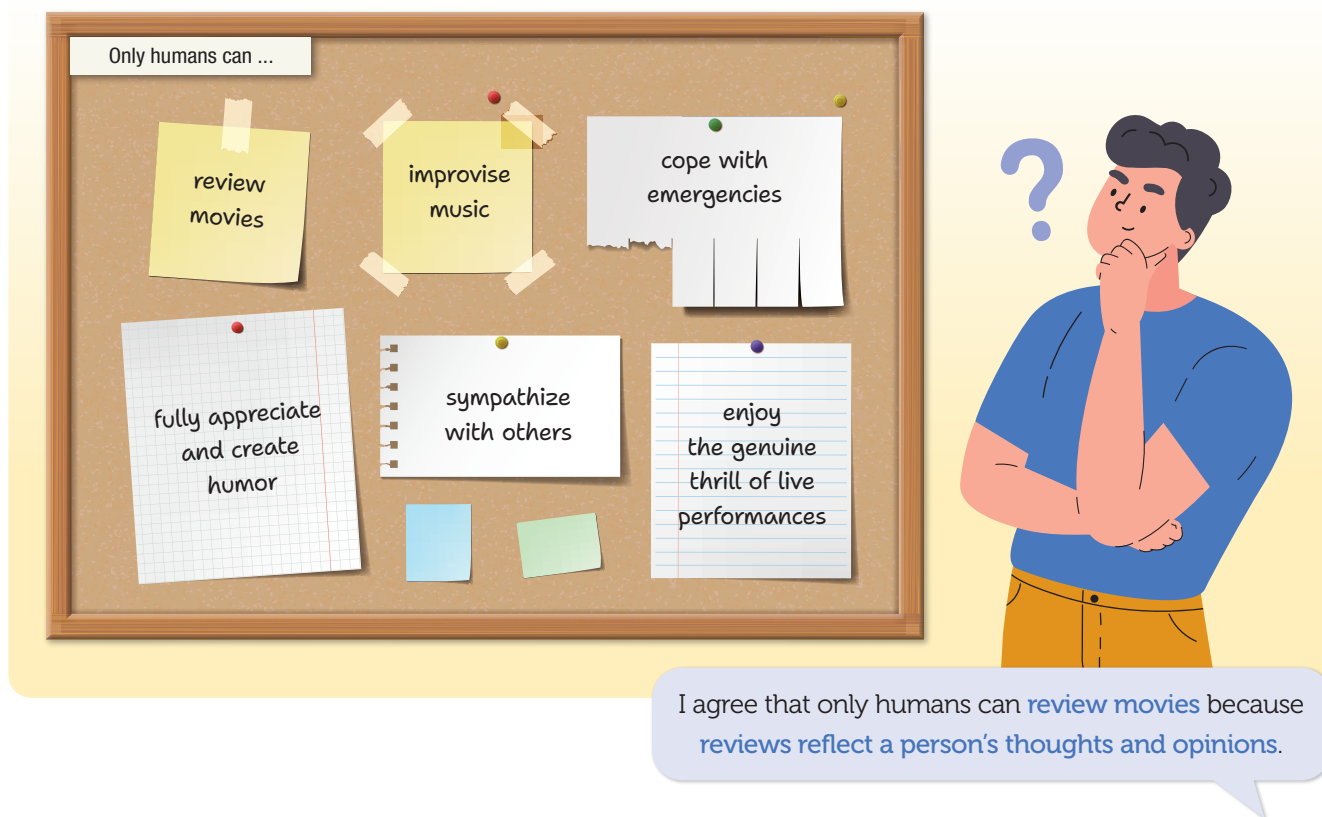
Q Leading to the BIG QUESTION

What do you believe were the outcomes of the artists' efforts to depict light in their works?

BEFORE READING 2

A Topic Preview

Here is a list of things that the man thinks humans can do but AI cannot. Do you agree with him? Share your ideas with your partner.



Only humans can ...

- review movies
- improvise music
- cope with emergencies
- fully appreciate and create humor
- sympathize with others
- enjoy the genuine thrill of live performances

I agree that only humans can **review movies** because **reviews reflect a person's thoughts and opinions**.

B Vocabulary Preview

Choose the correct words to complete the sentences.

No.	Sentence
1)	The author said her husband was a(n) _____ in writing the script for her new drama.
2)	Despite the _____ of the space available, he managed to exhibit the massive statue in the gallery.
3)	Some marine animals _____ the appearance of stone to avoid detection when predators are near.
4)	The basketball players showed remarkable _____ by passing the ball until one of them had an open shot.
5)	The two firms decided to _____ on a new project so that they could share resources and maximize their efficiency.
6)	Being on the road for extended periods means drivers have to _____ to various weather conditions, traffic situations, and terrain.

collaborator

teamwork

limits

adapt

mimic

cooperate

C Advanced Reading Strategy

● Understanding figurative language

This strategy involves figuring out the meanings of any literary devices, such as similes, metaphors, or analogies, that the writer uses to describe something important. To understand the meaning of figurative language, pay attention to the context in which it appears, as surrounding details often provide clues to the intended meaning. By understanding figurative language, you can enhance your comprehension of a text and better understand the ideas that the writer is trying to express.



Practice

AUTHENTICITY

Authenticity is one of the most valuable things in life. It cannot be replaced by anything else. Some people think that authenticity is the same thing as truth. However, there is an important difference. Truth is often identified as something related to a concrete concept and is generally seen as a thing or phenomenon to be discovered. In other words, it has the characteristics of a noun. However, authenticity is like a verb. It is not something that exists out there waiting to be found. Authenticity must be performed, and it demands active engagement. Only through authentic actions does it come into existence. It cannot be discovered. One must continuously create it. It is always an active process.

truth



Answer the following questions based on the passage above.

Paying attention to the context

Write A if the sentence is about “authenticity” or T if it is about “truth.”

- 1) It cannot be discovered. _____
- 2) It has the characteristics of a noun. _____
- 3) It is generally seen as a thing or phenomenon to be discovered. _____

Understanding figurative language

What does the underlined clause mean?

- a) Authenticity is a meaning that needs to be discovered.
- b) Authenticity is an active process that must be performed.
- c) Authenticity is an activity that can be enjoyed with others.
- d) “Authenticity” is a word that has a similar meaning to “truth.”



Pushing the Limits of Human-Machine Collaboration

Sougwen Chung (1985–) is an artist who uses AI to explore communication between people and machines.

1 The art studio of Sougwen Chung in Brooklyn, New York, is bathed in the gentle glow of sunlight streaming through its windows. Some truly remarkable paintings can be seen hanging on the walls. One seems to show swirling white clouds against a clear blue sky. Some of the paintings have thick, bold brushstrokes that remind one of calligraphy.

5

2 Chung looks closely at the new painting she has been working on with her artistic collaborator. As she examines the lines and colors on the canvas, something just doesn't seem right. "Hmm..." she thinks. She turns to her metallic collaborator and says, "You aren't cooperating with me today. I think I need to reprogram you, D.O.U.G."

10

3 It turns out that Chung's collaborator is no ordinary artist. In fact, the name D.O.U.G. stands for Drawing Operations Unit, Generation X. It is a robotic arm powered by artificial intelligence, and it paints together with Chung in a team effort, producing truly unique performance-based artworks.

Vocabulary

- remarkable
- swirling
- calligraphy
- collaborator
- stand for

Your Dictionary

Find and write words that you need to study.

- _____
- _____
- _____

23 Identifying referents

Find the name of "her artistic collaborator" in line 7 and what it stands for in paragraph **3**.



Drawing Operations
Unit: Generation 1
MIMICRY (2015)

4 Prior to building D.O.U.G., Chung knew very little about robot technology. However, she was able to use some basic designs to create a robotic arm and develop a system by which it would copy her movements in real time. The idea was that the robot would follow Chung's lead, mimicking each and every gesture that she made as she drew or painted on a canvas.

5 Chung's first performance with D.O.U.G._1 took place in front of a small audience in New York City in 2015. Overwhelmed with nervousness and her palms moist with sweat, she turned on the robotic arm, hoping it would faithfully copy her movements. Then, something remarkable and unexpected happened. This early

version of D.O.U.G. was not able to follow Chung's lines perfectly. It made many small mistakes while trying to copy Chung, and this forced her to respond by attempting to address these errors in real time. While it sounds like this might have ended up being a disastrous performance, the back-and-forth process, full of mistakes and adjustments, actually made the artwork more interesting. Chung and D.O.U.G., human and machine, were adapting to each other in an entirely new kind of collaborative artistic effort.

4|5 Identifying details

- 1) D.O.U.G._1 was designed to copy movements, not to move on its own. (T / F)
- 2) Chung's initial performance with D.O.U.G._1 went as planned. (T / F)

■ Vocabulary

- mimic
- address
- adjustment

■ Your Dictionary

- _____
- _____
- _____

Drawing Operations Unit: Generation 2
MEMORY (2017)



6 This impressive teamwork between artist and robot revealed how mistakes can actually enhance a work of art rather than detract from it. D.O.U.G. could not perfectly mimic Chung as it was designed to do, but the imperfection of the interaction turned out to be what made the painting so beautiful and unique. This led Chung to realize that this imperfection was a source of beauty worth exploring further. She decided to develop a second generation of D.O.U.G. This time, rather than creating a system that would try to copy her, Chung developed one that would respond to her in ways that she would not be able to anticipate.

7 Chung used information from her collection of her own drawings and paintings to program the new AI

system powering D.O.U.G._2. She gathered not only completed artworks but also unfinished ones, and even simple sketches. And she used all of them to train the new system. In total, she was able to gather more than 20 years of her artwork, from which the new system was able to detect various repeated patterns. This was a lot of hard work for Chung, but through the process of training the new system, she learned a great deal about how artificial intelligence works.

67 Identifying details

- 1) D.O.U.G. could perfectly mimic Chung's movements. (T / F)
- 2) Chung wanted to anticipate all of D.O.U.G.'s responses. (T / F)
- 3) D.O.U.G._2's new system detected repeated patterns from more than 20 years of Chung's artwork. (T / F)

Vocabulary

- detract
- imperfection
- anticipate
- detect

Your Dictionary

- _____
- _____
- _____

8 The end result of this AI training process was that D.O.U.G. was transformed into an interactive, real-time reflection of the work that Chung had produced throughout her life. Chung was excited about this development because it helped her to realize the potential for machines to act not only as tools but also as collaborators in creative processes. She also started to think that perhaps the importance of human creativity itself lies not in what it produces but in how it develops new ways of producing things.

and D.O.U.G._2 functioned like a brain, D.O.U.G._3 functioned like a family, as Chung worked with others to develop 20 robots that could work together with her as a collective unit. D.O.U.G._4 was designed to have an especially close connection with Chung. In fact, its behavior was directly influenced by her brainwaves. Chung wore an electroencephalogram* headset, which turned the electrical activity of her brain into data that D.O.U.G. could read and transform into paintings. She would meditate, and D.O.U.G. would express her mental state during meditation in the form of physical works of art.

8 Matching pronouns with their referents

- 1) What does "it" in line 7 indicate?
- 2) What does "it" in line 13 indicate?

*electroencephalogram 뇌전도 (EEG)

9 Understanding figurative language

What do you think the writer means by "a muscle" in line 20, "a brain" in lines 21–22, and "a family" in lines 22–23?

9 D.O.U.G._3 was later developed when Chung decided to explore this idea of human-nonhuman collaboration on a larger scale. While D.O.U.G._1 functioned like a muscle

Vocabulary

- collective
- meditate

Your Dictionary

- _____
- _____
- _____

Drawing Operations Unit: Generation 4
MUTATIONS OF PRESENCE (2021)



Isolation Study 6 by
Sougwen Chung (2020)



■ Vocabulary

- expressiveness
- embrace

■ Your Dictionary

- _____
- _____
- _____

10 Chung has described her work with D.O.U.G. as a kind of “call and response.” The art that they produce is not about making a robot do something; it is about the interaction between Chung and D.O.U.G. and the creativity of their collaborative feedback loop. All of the programming that Chung does to prepare D.O.U.G. comes together with her own skill and expressiveness as an artist in their performances, and no two performances that Chung has done with D.O.U.G. have ever been the same. By collaborating, she and her AI robot partner are able to produce artwork that neither could create on their own. In this way, Chung and D.O.U.G. have been able to push the limits of creativity and show what can be achieved when humans and machines work together.

10 Inferring the meaning of a phrase

What does the phrase “feedback loop” in line 6 probably mean?

11 Chung believes that by developing AI systems capable of performing tasks traditionally done by humans, we can expand our vision of what is possible. A part of this developmental process, though, is the acceptance of imperfection. By acknowledging and embracing the limits of both humans and machines, we can expand the potential of both. Chung is still on a journey of pursuing beauty through human and nonhuman creative collaboration. While nobody can be certain what that will look like in the future, aren’t you curious to find out what lies ahead?

11 Identifying referents

Find and underline what “the acceptance of imperfection” in lines 20–21 refers to.

Source <https://sougwen.com/> 외 (p.180 참조)

AFTER READING 2

A Organization

Choose the appropriate words to complete the graphic organizer.

The creation of D.O.U.G.	Chung was able to use some basic designs to create a (1) _____ arm.
D.O.U.G._1	The unit was able to (2) _____ Chung's movements while she painted on a canvas.
D.O.U.G._2	The unit was (3) _____ with data from more than 20 years of Chung's artwork and was transformed into an interactive, real-time (4) _____ of her artwork.
D.O.U.G._3	The unit was made up of 20 robots that worked (5) _____ as a team.
D.O.U.G._4	The unit could read Chung's (6) _____ data and transform it into (7) _____.

mimic robotic trained paintings collectively brainwave reflection

B Details

Read the statements and check T for true or F for false.

	T	F
1) Chung's first performance with D.O.U.G. proceeded smoothly without errors or mistakes.	<input type="checkbox"/>	<input type="checkbox"/>
2) Chung used only her finished works to train D.O.U.G._2 to recognize her drawing patterns.	<input type="checkbox"/>	<input type="checkbox"/>
3) Working together, Chung and D.O.U.G. can produce artwork neither of them could create alone.	<input type="checkbox"/>	<input type="checkbox"/>
4) Chung believes that the importance of human creativity may be in how it develops new ways to produce things.	<input type="checkbox"/>	<input type="checkbox"/>

Q Leading to the BIG QUESTION

List some fields in which humans and AI can work together to improve productivity. Do you see this as AI taking human jobs or as humans and AI collaborating for the better?

EXPRESSIONS

Practice 1

Choose the correct word for each definition.

Definitions

No.	Definition	Options	
1)	to be combined together	Ⓐ fuse	Ⓑ split
2)	involving all members of a group	Ⓐ collective	Ⓑ primitive
3)	a plan or system for achieving something	Ⓐ scheme	Ⓑ scope
4)	to happen or appear with something else	Ⓐ accompany	Ⓑ detach
5)	to project or throw something in a specific direction	Ⓐ cast	Ⓑ retain
6)	to accept or adopt an idea, belief, or concept willingly	Ⓐ distract	Ⓑ embrace

Practice 2

Choose the correct words to complete the sentences.

Words in context

- 1) The woman's sharp observation skills enabled her to (anticipate / overlook) what her friends were about to do.
- 2) Santa Claus is usually (clarified / depicted) as a man with a bushy white beard who wears a red and white suit.
- 3) The musician's soulful (exaggeration / expressiveness) captivated the audience, tightly gripping the heart of every fan.
- 4) The doll, with its missing button eye and dirty clothes, was sentimentally treasured for its (flawlessness / imperfection).
- 5) After receiving input from the executives, she made a quick (adjustment / admission) to her presentation, aligning it with their agenda.

Practice 3

Choose the best synonym for each of the **bold-faced** words.

Synonyms

- 1) We're curious about how the mayor plans to **address** the wage gap issue. _____
- 2) His use of bright colors is the most notable **particularity** of his artistic style. _____
- 3) She could **detect** a faint smell of chocolate in the air as she entered the bakery. _____
- 4) The couple wanted to **lease** a gorgeous house with a big backyard and a white fence. _____
- 5) The athlete's performance in the marathon was **remarkable**, breaking multiple records. _____

Ⓐ manage Ⓑ identify Ⓒ feature Ⓓ rent Ⓔ astonishing

GRAMMAR

- A noun can be modified by a participle (phrase) or an adjective (phrase) that comes after it.
 - ☐ Who is *the girl talking to Simon at the school library*? (active)
 - ☐ There will be a speech by *a professor known to be an expert on the topic*. (passive)
 - ☐ I'm looking for *people good at coding* to enhance our online banking security measures.
- This structure can also be seen as the omission of 「a relative pronoun (*who, which, that*) + *be*」.
 - ☐ I have *a cousin (who is) pursuing a degree in psychology*.
 - ☐ She painted *a picture (which was) full of vivid colors*.
 - ☐ *The books (that are) stacked on the shelf* are new ones.
- Be careful that the verb agrees with its subject, not with a noun that is part of the modifying phrase.
 - ☐ *The boys playing soccer* are my classmates. (O)
 - ☐ *The boys playing soccer* is my classmates. (X)

Go to pages 100, 110, and 112. Find the sentences with these structures above and underline them.

Practice 1 Circle the modified nouns and underline the modifying phrases in the sentences.

- 1) His favorite place is the café famous for its sandwiches.
- 2) The woman wearing the white uniform is the chef at this restaurant.
- 3) The management is searching for a person recognized as a skilled negotiator.

Practice 2 Combine the sentences like in the given example below.

Example The cat purred contentedly. It was curled up on my lap.

→ The cat curled up on my lap purred contentedly.

- 1) The author released a book. It is full of family recipes.
→ _____
- 2) The biscuit had a rich, buttery flavor. It was baked by my aunt.
→ _____
- 3) The children laughed with delight. They were skating on the frozen lake.
→ _____

Practice 3 Put parentheses () around the parts that can be omitted from the sentences.

- 1) I asked a man who was wearing a military uniform for directions.
- 2) The lemon juice which was spilled on the floor created a slippery surface.
- 3) The seats in the back row of the theater are the only ones that are available.

Persuasive

The Increasing Use of AI in Our Lives

PREPARE TO WRITE

+ CHECK-UP

Are the following statements for or against the use of social media?

- 1) Social media helps us express ourselves effectively. (for / against)
- 2) Misinformation and rumors can easily spread through social media. (for / against)

A Writing Strategy

Stating your stance clearly

This strategy involves clearly expressing your stance on the issue and supporting it with details. First, begin with a clear topic sentence that introduces the specific issue and your chosen stance on it. Then, present key points supporting your stance, providing relevant evidence, examples, or statistics. Lastly, conclude the passage by summarizing your stance on the issue.

B Writing Sample

Read the following persuasive paragraph and pay attention to how the writer's stance on the chosen topic is presented.

AI in the Healthcare Sector

An introduction to the topic and the writer's stance

The first supporting detail

The second supporting detail

The third supporting detail

A conclusion that restates the writer's stance

The integration of artificial intelligence (AI) into healthcare has the potential to revolutionize medical practice. However, there are also potential dangers associated with it, and I am against the integration of AI into healthcare.


First, the integration of AI into healthcare will require giving AI systems access to vast amounts of patient data, which raises concerns about privacy violations. Also, it will result in the loss of the human touch: AI's reliance on automation will lead to reduced interaction between doctors and patients, potentially compromising the empathic aspects of healthcare services. Another problem is the possibility of technical errors. If an AI system makes a mistake in diagnosis or treatment, the consequences could be very serious.

For these reasons, AI should not be allowed to take over the roles of humans in healthcare. While technology can be helpful, we must be careful about letting machines make important decisions in areas that affect human lives.

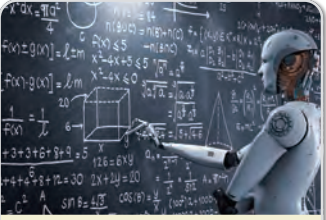
WRITE YOUR OWN

A Gathering Ideas


Choose one of the following topics to discuss with your partner.




☐ AI pets




☐ AI teachers



☐ AI judges



☐ AI authors



☐ AI in farming

B Outlining

Discuss the topic you chose and write down some pros and cons related to the topic. Then choose your stance and put check marks beside the points you agree with.

	Example	Your own
Topic	AI in the healthcare sector	
For / Pros	<input type="checkbox"/> efficient healthcare operations <input type="checkbox"/> better diagnosis and treatment <input type="checkbox"/> provision of remote monitoring and clinical services	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Against / Cons	<input checked="" type="checkbox"/> privacy violations <input checked="" type="checkbox"/> loss of the human touch <input checked="" type="checkbox"/> the possibility of technical errors	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Write sentences using the paragraph outline in **B**.

LANGUAGE TIPS

achievement, development, progress, innovation, growth, improvement, evolution, leap forward, move forward, make positive changes, etc.

LANGUAGE TIPS

hazard, risk, threat, crisis,
warning, caution, vulnerability,
unsafe, etc.

⊕ STRUCTURE GUIDE

in summary, to conclude, all in all, in short, accordingly, hence, etc.

D Drafting

Write your persuasive paragraph about AI based on **B** and **C**.

E Revising and Editing

Revising Tip Using persuasive language

Persuasive language refers to all the linguistic devices used to influence or convince someone to adopt a particular point of view, take a specific action, or change their behavior. It aims to appeal to the emotions, reasoning, or values of the readers in order to persuade them effectively.

+ CALL TO ACTION

Clearly stating what action you want your readers to take, whether it's donating to a cause or buying a product, can effectively influence or convince your readers.

Check-up 1 Choose the sentence that does NOT include persuasive language.

- a) The team has been working hard to deliver exceptional results.
- b) Come and see the wide range of products we offer at amazing prices.
- c) This method of production should be avoided because it can lead to more accidents.

Editing Tip Avoiding sentence fragments

A fragment is an incomplete sentence that lacks essential elements like a subject, verb, or object. It doesn't convey a complete idea and can confuse readers. To ensure clarity, identify and revise fragments by adding the missing elements to form complete sentences.

Check-up 2 Find and write the words that are left out in the sentences.

- 1) After you finish your homework, should go to bed.
- 2) She was lying on the grass in the park a sunny day.
- 3) She cooking dinner, and then the smoke alarm went off.

F Finalizing

Go back to **D Drafting** and modify your draft.

SHARE & REVIEW

A Check your own draft according to the criteria below. Then share it with your partner and get their feedback.

	You	Partner
1. Does it clearly state your stance on the topic?	<input type="checkbox"/>	<input type="checkbox"/>
2. Does each detail support your stance?	<input type="checkbox"/>	<input type="checkbox"/>
3. Does it include persuasive language to support your ideas?	<input type="checkbox"/>	<input type="checkbox"/>
4. Do all of the sentences have the essential elements?	<input type="checkbox"/>	<input type="checkbox"/>

B Is your partner's draft well-organized? Write your opinion here.

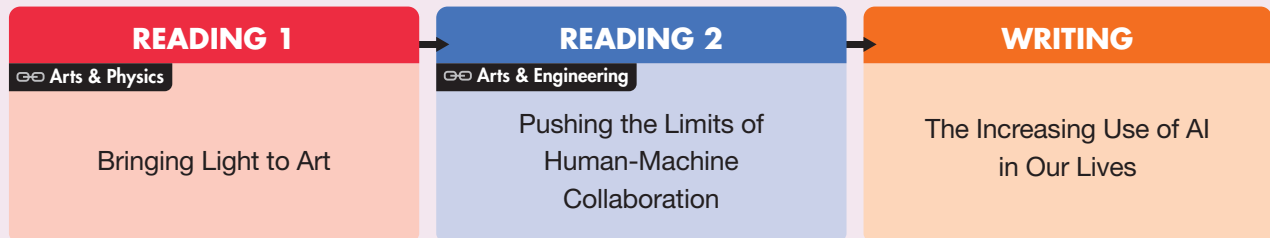
I think _____.
ex) all of the sentences clearly support her stance and they don't contain any sentence fragments

WRAP UP

Reflect on what you learned in this lesson.

Q BIG QUESTION

What interests can you combine in order to develop something innovative?



A Reading

We read about artists who fused art with science or technology to create unique works. Here are some other examples of how knowledge and skills from different areas can be combined for the better. Choose one and search online to learn more about it. Then share your findings with your partner.

	What you learned
<input type="checkbox"/> Cross-cultural cuisine <input type="checkbox"/> Gothic Revival architecture <input checked="" type="checkbox"/> Leonardo da Vinci's <i>Mona Lisa</i> <input type="checkbox"/> Steve Jobs' integration of technology and design <input type="checkbox"/> Your own: _____	<p>ex) Leonardo da Vinci's <i>Mona Lisa</i> combines his expertise in art and his scientific knowledge of visual perception.</p>

What did you search for information about?

What did you learn?



I searched for information about **Leonardo da Vinci's *Mona Lisa***.

I learned that **it combines his expertise in art and his scientific knowledge of visual perception.**



B Writing

Write a persuasive paragraph about AI producing artworks.

Topic	AI producing artworks
Stance	<input type="checkbox"/> For <input type="checkbox"/> Against
Supporting detail 1	
Supporting detail 2	

✓ Final Answer to the BIG QUESTION

Did your answer to the big question change during the lesson? Check the appropriate box below. If your answer changed, explain why.

☐ Yes. My final answer is “_____.”
ex) I can combine my interests in AI and the environment to create something innovative

I changed my answer because _____.
ex) AI has the potential to create new possibilities when combined with other areas

☐ No, my first answer hasn't changed.

➔ FINAL CHECK

Core Competence	I can ...
Reading Strategy 1	<input type="checkbox"/> make inferences.
Reading Strategy 2	<input type="checkbox"/> understand figurative language.
Grammar	<input type="checkbox"/> use a participle (phrase) or an adjective (phrase) after a noun to modify it.
Writing Strategy	<input type="checkbox"/> state my stance clearly and support it with details.



GEOMUNGO: PRESENTING TRADITION, CRAFTING INNOVATION



BEFORE READING

Have you heard a geomungo being played? Did you like it? How did it make you feel?

1 Black String is a musical quartet led by a Korean traditional musician named Heo Yoonjeong. The group uses percussion instruments, traditional flutes, stringed instruments, electric guitar, and other electronic instruments to masterfully blend the traditional and the contemporary in a unique mix of Korean folk and jazz. The quartet strives to preserve

the centuries-old beauty of traditional Korean music while simultaneously transforming it into something new and fascinating. Heo hopes that the group, which derives its name from the traditional Korean instrument called the *geomungo*, can honor traditional Korean music while also developing and updating it for global, modern-day audiences. She even plays an electronic geomungo whose sound can be changed with various effects pedals and digital modification. This seems to sum up the idea behind Black String in a single instrument.



2 The geomungo was created around the 5th or 6th century, when Wang Sanak, a prime minister of the Goguryeo Dynasty, modified an ancient Chinese instrument called *the gogeu*m. Wang is said to have composed and performed 100 pieces of geomungo music, and, according to a folktale, a black crane* flew down from the sky and danced around him as he played. This folktale highlights the important place held by the geomungo in traditional Korean culture. For a long time, the geomungo was even referred to as the “black crane zither**,” although it is now believed that the name “geomungo” actually means, “zither of Goguryeo.”

*crane 학, 두루미 (동물) **zither 치터 (거문고와 비슷한 현악기)

3 During the era of the Unified Silla Dynasty, geomungo performance techniques were passed down through several important historical figures. In the Goryeo Dynasty, the instrument was played

by scholars, and performances were also held for the royal court. Scholars continued to play the geomungo throughout the Joseon Dynasty, and in the late Joseon period, it became one of the most important instruments in the kingdom.

4 While the geomungo played an important role in traditional Korean music, what is most remarkable is how it continues to delight audiences in the 21st century. In some ways, the instrument has changed: its volume has been increased and its structure has been modified in order to optimize sound quality, while various electronic versions have also been developed. Despite these changes, though, the instrument’s ability to capture listeners remains the same today as it was hundreds of years ago. Now, the geomungo connects the past to the present, and Korea to the world.

Source <https://www.igbf.kr/> 외 (p.180 참조)

AFTER READING

1) What is NOT true according to the passage?

- Ⓐ Black String tries not only to preserve traditional music but also to make it global.
- Ⓑ It was Wang Sanak that created the geomungo during the Goguryeo Dynasty.
- Ⓒ The geomungo was played for the royal court during the Goryeo Dynasty.
- Ⓓ The geomungo wasn’t considered to be an important instrument during the Joseon Dynasty.

2) Choose the correct words to complete the summary of the passage.

The geomungo, a traditional Korean (percussion / stringed) instrument, has (blocked / undergone) changes in structure, but it still (fascinates / declines) today’s listeners.

LESSON

5

More than Meets the Eye



단원 설정 취지

존재감이 잘 느껴지지 않는 직업 또는 매우 작아 눈에 띄지 않는 생물 등이 지닌 영향력과 그들의 가능성을 이해할 수 있다.

LESSON GOALS


READING	<p>1. '인비저블'의 사회적 역할과 특징에 대한 글을 읽고, 이를 이해할 수 있다. [Reading Strategy] Identifying similarities and differences</p> <p>2. 눈에 잘 보이지 않는 균류의 영향력에 대한 글을 읽고, 이를 이해할 수 있다. [Reading Strategy] Recognizing text coherence</p>
WRITING	<p>교내에서 환경 정화와 안전 유지 등에 큰 역할을 하는 다양한 사람들을 인터뷰하고, 이를 활용하여 학교 뉴스 기사를 쓸 수 있다. [Writing Type] Journalistic [Writing Strategy] Using interviews in news articles</p>
GRAMMAR	<p>Without leadership, there would be no direction in the organization.</p>

BIG QUESTION

**Does noticeability or visibility
correspond to importance in life?
Why or why not?**

READING 1




 **Social Studies and Culture**

**Invisibles: Society's
Hidden Contributors**

READING 2



 **Biological Science**

**The Wondrous Power
of the Fungi Kingdom**

WRITING



**Meet the Unsung Hero
of Our School**

PROJECT



 **Engineering**



**The Tiny Parts
in Almost Everything**

**Your Answer to the
BIG QUESTION**

BEFORE READING 1

A Topic Preview

Look at the pictures below and write jobs that come to mind in the box. Then talk about them with your partner.

			
Examples	<ul style="list-style-type: none"> • Pilot • Airplane mechanic 	<ul style="list-style-type: none"> • Author • Proofreader 	<ul style="list-style-type: none"> • Singer • Lighting technician
Your own	<ul style="list-style-type: none"> • _____ • _____ 	<ul style="list-style-type: none"> • _____ • _____ 	<ul style="list-style-type: none"> • _____ • _____

What jobs did you come up with when you looked at the picture of the airplane?

I came up with pilot and airplane mechanic.

B Vocabulary Preview

Choose the best synonym for each of the **bold-faced** words.

No.	Sentence	Options	
1)	The strict teacher did not have any tolerance for badly behaved students.	Ⓐ hastiness	Ⓑ patience
2)	Karl Landsteiner coined the term “blood type” when he classified blood into different groups.	Ⓐ created	Ⓑ erased
3)	His meticulous work on the scratched wood of the grandfather clock left it looking as though the damage had never existed.	Ⓐ thorough	Ⓑ unskilled
4)	When she awoke from her vivid nightmare, she immediately tried to write about it, but the details had already started to blur .	Ⓐ clear	Ⓑ fade
5)	Nearing victory, the football coach emphasized the importance of humility , reminding the players that there were more challenges yet to be faced.	Ⓐ confidence	Ⓑ modesty

C Advanced Reading Strategy

● Identifying similarities and differences

This strategy involves looking at things to determine how they are similar and how they are different. As you read, **identify expressions that show similarities and differences**. For example, *similarly* and *both* imply similarities, whereas *differ* and *in contrast* imply differences. You can also try to **categorize the traits of characters, items, and other things that appear in the text**.



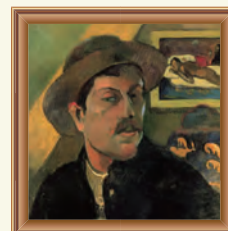
Practice

Vincent van Gogh (1853–1890) and Paul Gauguin (1848–1903) are well-known for the impact they had on the art world. These two masters had a lot in common, yet they had a few significant differences. (A) artists @ taught themselves and (B) became artists fairly late in life. Furthermore, both of them (C) became famous after death.

Despite being colleagues, companions, and even roommates, however, they approached art in very different ways. Van Gogh @ had a deep fondness for working in natural settings and tried to capture light in his paintings. (B) , Gauguin @ preferred his studio and often relied on his memory when painting. Their personalities also greatly (C) , which often led to heated arguments between them. Still, in spite of their differences, each benefited from the other's influence, and we can be thankful for the magnificent works of art that they each created.



Self-Portrait by Vincent van Gogh (1887)



Self-Portrait in a Hat by Paul Gauguin (1893)

➔ Answer the following questions based on the passage above.

Identifying expressions for similarities and differences

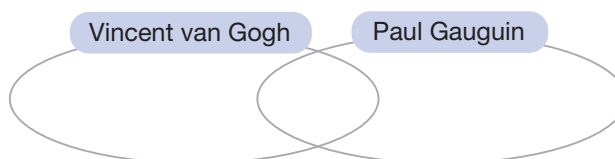
Choose the appropriate words for (A)–(C).

in contrast similarly both differed

(A) _____ (B) _____ (C) _____

Categorizing traits

Categorize traits @–@ in the diagram below.





Invisibles: Society's Hidden Contributors



1 Understanding key terms

Find and underline what “an invisible job” is.

1 When there are mistakes or unclear directions on the signs at an airport, passengers are likely to complain. On the other hand, if the signs are flawless, it is unlikely anyone will say anything. In fact, they will most likely not even think about how the signs are made or who makes them. Making those signs is an example of an invisible job, a job that is important but rarely appreciated, and often even unknown. In his book *Invisibles: The Power of Anonymous Work in an Age of Relentless Self-Promotion*, the writer David Zweig coined the term “invisibles” to refer to people with this type of occupation. Zweig shines a light on the significant roles that invisibles play in society and recommends taking inspiration from their dedication and work ethic.



David Zweig (1950–) is a Canadian author and social scientist.

Key Idea #1: Society is getting faster and louder, and it is becoming more difficult to be heard.

2 The world around us is becoming noisier and noisier. Social media is more popular than ever before, and people are constantly sharing their ideas and opinions online via various platforms. To be visible and to be heard, one must broadcast oneself, and to stand out, one must have a new and entertaining idea or a unique or controversial opinion. With everyone competing for the attention of others in order to confirm their self-worth, the border between public and private is blurring.

Vocabulary

- flawless
- via
- broadcast

Your Dictionary

Find and write words that you need to study.

- _____
- _____
- _____

5

10

15

20

3 A healthy society traditionally values the quiet yet determined workers who do the basic jobs needed for the society to function. At the same time, such societies also value the people on the other side of the spectrum who thrive in the spotlight. While both groups are equally important, modern societies

5 seem to be losing the proper balance between the two groups, as the latter is becoming more valued than the former. People who do not seek fame and public praise are becoming few and far between, while celebrities are being worshipped more and more each day. The implications of this evolution on society may be grave.

3 Identifying referents

Find and underline what “the latter” in lines 5–6 and “the former” in line 6 indicate.

10 Key Idea #2: The work of invisibles often remains hidden.

4 According to Zweig, invisibles are highly skilled individuals whose jobs may be so specialized that few people even know they exist. In fact, the complexity of their tasks makes their jobs difficult to explain to those outside their fields, which perhaps contributes to their work remaining hidden in the shadows.

15 For example, passengers aboard an airplane may see the pilot and the crew operating the plane and clearly understand their roles. On the other hand, traffic controllers and airplane mechanics remain unseen despite the importance of their positions. While the author of a book or article may be famous, the people who edit and proofread their work rarely are. But invisibles do not complain;

20 they are rather satisfied with being unnoticed because it means that they didn’t make mistakes that could have negative consequences for others.

4 Identifying similarities and differences

Classify the jobs mentioned in paragraph **4** in the correct category.

1) Visible: _____

2) Invisible: _____

Vocabulary

- determined
- worship
- implication
- grave
- proofread

Your Dictionary

- _____
- _____
- _____





Key Idea #3: Culture affects the way invisibles are perceived.

5 Identifying similarities and differences

Write W if the statement is about Western cultures and A if it is about Asian cultures.

- 1) encouraging individuals to speak up _____
- 2) valuing the sense of community more _____

5 Different cultures have different values, and thus, the way invisibles are perceived varies from culture to culture. Zweig points out that Western and Asian cultures tend to contrast in their appreciation of individuality. According to Zweig, Western cultures often encourage citizens to speak up and stand out as individuals. By contrast, Asian cultures value the sense of community more, and thus individualism is often less valued.

6 Zweig explains that, as a consequence, Western and Eastern perceptions of invisibles are different. European and American cultures have a tendency to place more value on competitiveness and rapid advancement, whereas Asian and African cultures are more likely to admire the typical traits of invisibles, such as humility, conscientiousness*, and perfectionism.

*conscientiousness 성실성, 근면성

Vocabulary

- appreciation
- individuality
- humility

Your Dictionary

- _____
- _____
- _____



Key Idea #4: The desire to perform well is the main motivation of invisibles.

7 It is a common custom to compliment people when they do decent work and reward those who are the best. However, it may not always be a good idea to do so. According to research led by psychologist Sam Glucksberg, reward systems can actually negatively affect performance. Through a series of experiments, Glucksberg studied the effects of the promise of rewards on participants' performance in accomplishing tasks. He assigned tasks to two groups of people and offered money rewards to one group but nothing to the other. The people who were offered money tended to have a less creative and adventurous attitude in carrying out the tasks compared to the people who weren't offered money. Naturally, invisibles are still glad to receive rewards, and like everyone else, they get compensation for their work and appreciate respect from others. However, such rewards do not constitute their main motivation, which is the desire to perform their jobs as well as they can.



Sam Glucksberg (1933–2022) was a Canadian professor in psychology.

7 Skimming

Skim the paragraph and underline the sentence that shows the result of Sam Glucksberg's experiment.

Key Idea #5: Perfectionism is a common trait in invisibles.

8 Zweig describes another common trait in invisibles: perfectionism. After all, the nature of their jobs often requires attention to detail and zero tolerance for mistakes. Invisibles are in all fields of work: computer programmers for video games, sound engineers for concerts, structural engineers for skyscrapers, inspectors for restaurants, and so on. All of these professions are only noticeable when something goes seriously wrong. We notice small flaws in games. We get confused if a singer's microphone doesn't work at a concert. A structural deficiency in a skyscraper would be a great tragedy. And we blindly trust that restaurants are maintaining clean kitchens. Because of the sorts of jobs they have, invisibles are often meticulous perfectionists with an exceptional ability to focus and patiently manage even the most minute details.

Vocabulary

- compliment
- decent
- compensation
- tolerance
- meticulous
- exceptional
- minute

Your Dictionary

- _____
- _____
- _____

9 Identifying the main idea

Find and underline what Zweig suggests that members of society should do.

Vocabulary

- collapse
- stability
- hone
- take pride in

Your Dictionary

- _____
- _____
- _____

9 Without invisibles, society would collapse. Yet the current direction of cultural trends is troubling, as invisibles are not fully recognized for their worth, and fame has become the most desirable prize. The more people compete with each other for attention, the more unbalanced and unhealthy society gets. Change is needed. Taking inspiration from invisibles rather than trying to stand out and shine brighter than our neighbor can help reestablish stability. Instead of aiming for fame and fortune, Zweig suggests that members of society should focus on honing their skills and fulfilling their potential through ethical, high-quality work. He recommends taking pride in one's work and working in a way that allows us to admire ourselves, without worrying about what others think. Ultimately, one should only compare oneself to one's own potential.

5

10

Source David Zweig, *Invisibles: The Power of Anonymous Work in an Age of Relentless Self-Promotion* (p.180 참조)



AFTER READING 1

A Organization

Fill in the blanks with the correct words from the box to complete the graphic organizer.

Key Idea #1	In (1) _____ societies, people who are in the (2) _____ are often valued more than people who are quiet yet determined.
Key Idea #2	Even though invisibles are highly (3) _____ individuals, their work usually remains (4) _____ by people.
Key Idea #3	The typical traits of invisibles are more likely to be (5) _____ in Asian and African cultures than in European and American cultures.
Key Idea #4	The desire to (6) _____ well, not external rewards, serves as a principal (7) _____ for invisibles.
Key Idea #5	Invisibles want their work to be (8) _____, down to the last detail.

skilled
perfect
modern
admired

unseen
perform
spotlight
motivation

B Details

Read the statements and check T for true or F for false.

	T	F
1) Modern society keeps the balance between people who are in the spotlight and people who do not seek attention.	<input type="checkbox"/>	<input type="checkbox"/>
2) The tasks of invisibles are often complicated, which makes it hard for them to explain their jobs to others.	<input type="checkbox"/>	<input type="checkbox"/>
3) According to Zweig, Western cultures tend to place more value on individuality than Asian cultures do.	<input type="checkbox"/>	<input type="checkbox"/>
4) According to Sam Glucksberg's research, people who were offered rewards were more creative and adventurous in their performance of tasks than people who weren't.	<input type="checkbox"/>	<input type="checkbox"/>

Q | Leading to the BIG QUESTION

What are some jobs that are important in our society but are not given enough recognition?

BEFORE READING 2

A Topic Preview

There are some words related to fungi below. Choose what comes to mind when you hear the word “fungi” and talk about your choices with your partner.

life

hypha

death

decay


mycelium

network

regrowth

mushroom

spore



When I hear the word “fungi,” I think of mushrooms and decay.

So do I. How are the words “life” and “network” related to fungi, though?

B Vocabulary Preview

Choose the correct words to complete the sentences.

- The spare tires _____ with your car are not available now.
Ⓐ compatible Ⓑ competitive Ⓒ conventional
- Don't limit yourself; your _____ is far greater than you think.
Ⓐ despair Ⓑ greed Ⓒ potential
- The tree that fell in the forest was starting to show signs of _____.
Ⓐ decay Ⓑ rescue Ⓒ wealth
- The enterprise needed a strong leader to _____ its financial situation.
Ⓐ corrupt Ⓑ decline Ⓒ stabilize
- The foxes will be _____ with vaccines tomorrow to prevent them from getting diseases.
Ⓐ assured Ⓑ injected Ⓒ interfered
- The radio tower is a structure designed to _____ and receive radio frequency messages.
Ⓐ cease Ⓑ forecast Ⓒ transmit

C Advanced Reading Strategy

● Recognizing text coherence

This strategy involves seeking a deeper understanding of a text by looking for ways in which the writer connects his or her ideas. To determine these connections, you can do the following:

- Identify the main idea.
- Identify referents.
- Identify transitions (e.g. *however*, *in addition*) and conjunctions (e.g. *and*, *although*).



Practice

The Beddington Zero Energy Development, or BedZED, is an eco-village that opened in 2002 in London. ① It was designed to create zero carbon emissions, and it is the largest community of its kind in the UK. This unique housing development includes a number of features aimed at making ② it more environmentally friendly, such as an organic farm and a system for harvesting rainwater.

Despite BedZED's many advantages, (A), the residents living there have had to face some challenges. For instance, the community is quite far from the city center, which makes ③ it difficult for residents to access all that London has to offer. (B), noise pollution from nearby transportation has been reported to be an issue.

(C) BedZED has these disadvantages, ④ it is still an excellent example of an environmentally sustainable community. And ⑤ it is an inspiration to other communities looking to reduce their carbon footprint.



Answer the following questions based on the passage above.

Identifying
the main idea

What is the passage mainly about?

- Ⓐ living green outside of London
- Ⓑ designing a sustainable building
- Ⓒ a sustainable eco-village in London
- Ⓓ BedZED's struggle to achieve sustainability

Identifying
referents

Which one among ①–⑤ does NOT indicate BedZED?

Identifying
transitions
or conjunctions

Choose the appropriate words for (A)–(C).

furthermore

although

therefore

however

(A) _____

(B) _____

(C) _____



The Wondrous Power of the Fungi Kingdom

Vocabulary

- rot
- decay
- disgusted
- break down
- nourishing

Your Dictionary

Find and write words that you need to study.

- _____
- _____
- _____

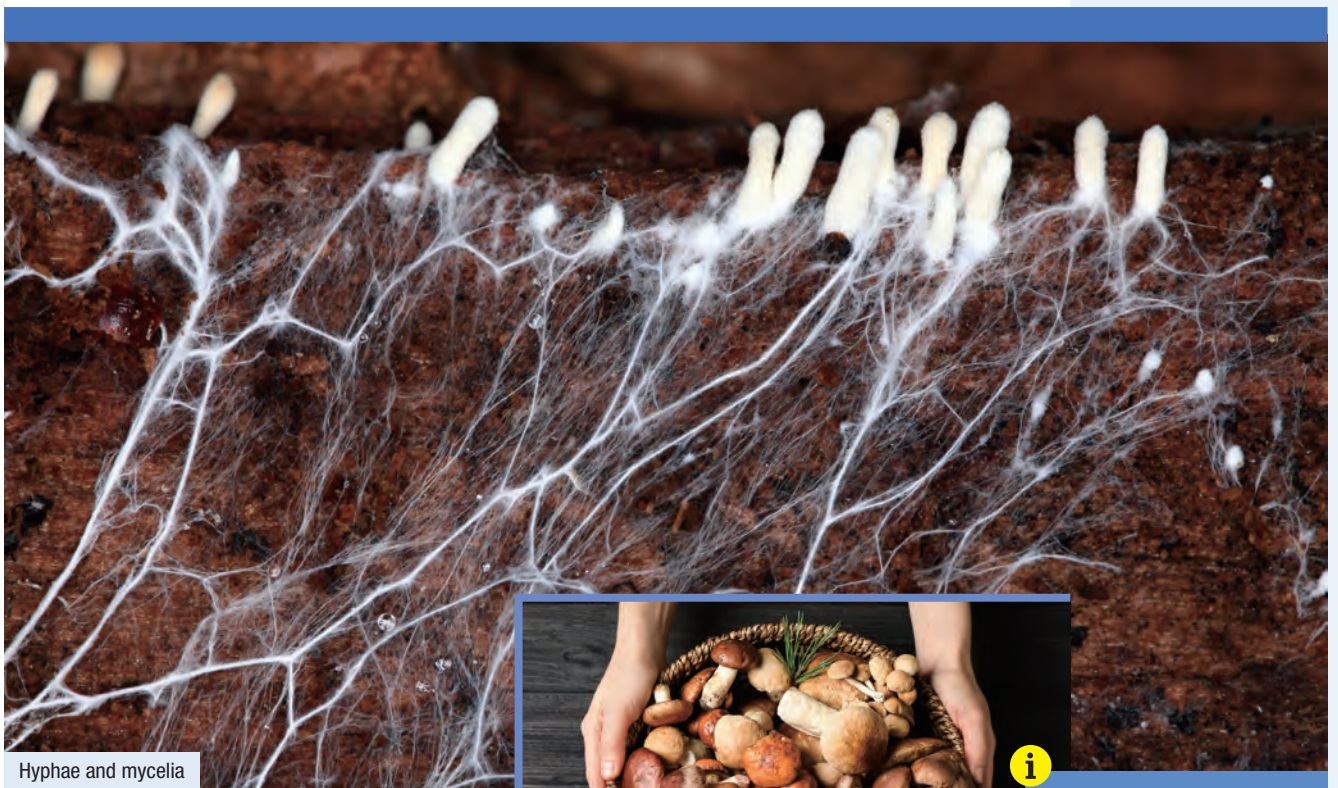
1 When people think of fungi, they tend to think of rot, decay, and even death. And many get disgusted by the unusual appearance of some fungi. Yet fungi are so much more than just an indication that food needs to be thrown out. They are neither plant nor animal: they form their own kingdom, and it is a powerful kingdom. The fungi kingdom is surprisingly large and diverse, and some biologists estimate the number of fungi species to be six times greater than the number of plant species. And while they appear when things die, they are not just there at the end of life; they are also there at the beginning. Fungi play a crucial role in the planet's cycle of life, breaking down organic matter to transform it into a nourishing resource for the growth of new plant and animal life. Without fungi, regrowth would be much more difficult. We still do not fully understand these wonderful organisms, even though they may be crucial to saving our planet.

5

10

1 Summarizing

Many people get d _____ by the appearance of fungi. However, without fungi, r _____ would be very difficult.



Hyphae and mycelia

From Spore to Mycelia

2 While we sometimes use the words “fungi” and “mushrooms” as if they had identical meanings, mushrooms are just one step in the life cycle of some fungi. Fungi produce mushrooms in a similar way to how plants produce fruit. And not all fungi produce mushrooms. With over 14,000 species of fungi that do, though, there is no shortage of sizes, shapes, and colors. Whether they produce mushrooms or not, all fungi start out as spores*. Spores are carried by animals or the wind, and if one of them ends up in a nutrient-rich environment, it will sprout and grow into long thin stems called hyphae. These hyphae spread out under the ground or in rotting dead matter—such as a dead tree trunk—to gather nutrients.

*spore 포자



균사 (hypha, *pl.* hyphae)

버섯과 곰팡이의 몸을 이루고 있는 가는 실 모양의 다세포 섬유이다.

균사체 (mycelium, *pl.* mycelia)

곰팡이나 일부 세균에서 발견되는 섬유 모양의 균사 덩어리이다.

3 Hyphae branch out and continue to grow so much that they form an extremely complex network, called a mycelium. The mycelium can even combine with other mycelia, connecting its hyphae with the others’ if they are compatible, thus creating an even larger network. If they are not compatible, two intersecting mycelia engage in fierce competition for nutrients, each striving to prevail and eliminate the other.

23 Identifying details

- 1) Mushrooms are one step in the life cycle of some fungi. (T / F)
- 2) A mycelium branches out and forms a complex network called a hypha. (T / F)

Vocabulary

- no shortage of
- branch out
- compatible
- prevail

Your Dictionary

- _____
- _____
- _____



균근(mycorrhiza, 균 mycorrhizal)

균류와 긴밀히 결합하여 공생 관계가 맺어진 식물의 뿌리이다.

4 Although mycelia are made up of tiny hyphae, they can reach impressive sizes. When walking through almost any forest in the world, you may be stepping on nearly 500 kilometers of hyphae! In fact, the Malheur National Forest in the United States is thought to have one of the largest single organisms in the world under its soil: almost 10 square kilometers of fungi.

5

The Mycorrhizal Network

5 A mycelium is an even more complex network than the human brain, with more connections. Just one mycelium can have trillions of hyphae branches. And just like our brains, mycelia use electrical pulses to transmit information throughout their network. Some scientists describe this system, the mycorrhizal network, as being comparable to the internet. While the internet connects computers to one another, mycelia connect trees and plants to one another. And studies suggest that resources can be transferred from one plant or tree to another through this wondrous network.



10

15

5 Understanding figurative language

What does the writer compare mycelia and the mycorrhizal network to?

- 1) mycelia → o _____ b _____
- 2) the mycorrhizal network → t _____ i _____

6 Despite years of study, though, the inner workings of mycorrhizal networks are still somewhat mysterious to scientists. One reason for this is that they are incredibly delicate, which makes them difficult to study. Even removing a single root from a network can disrupt it. Furthermore, fungi are not reliant on a network to survive and can continue to grow after being separated from one. Therefore, it is difficult to figure out whether an individual fungus is or was part of a particular network or not. What is clear, however, is that these networks play an important role in improving the nutrition of trees. This is because they are able to reach areas and access nutrients that tree roots can't get to on their own.

20

25

Vocabulary

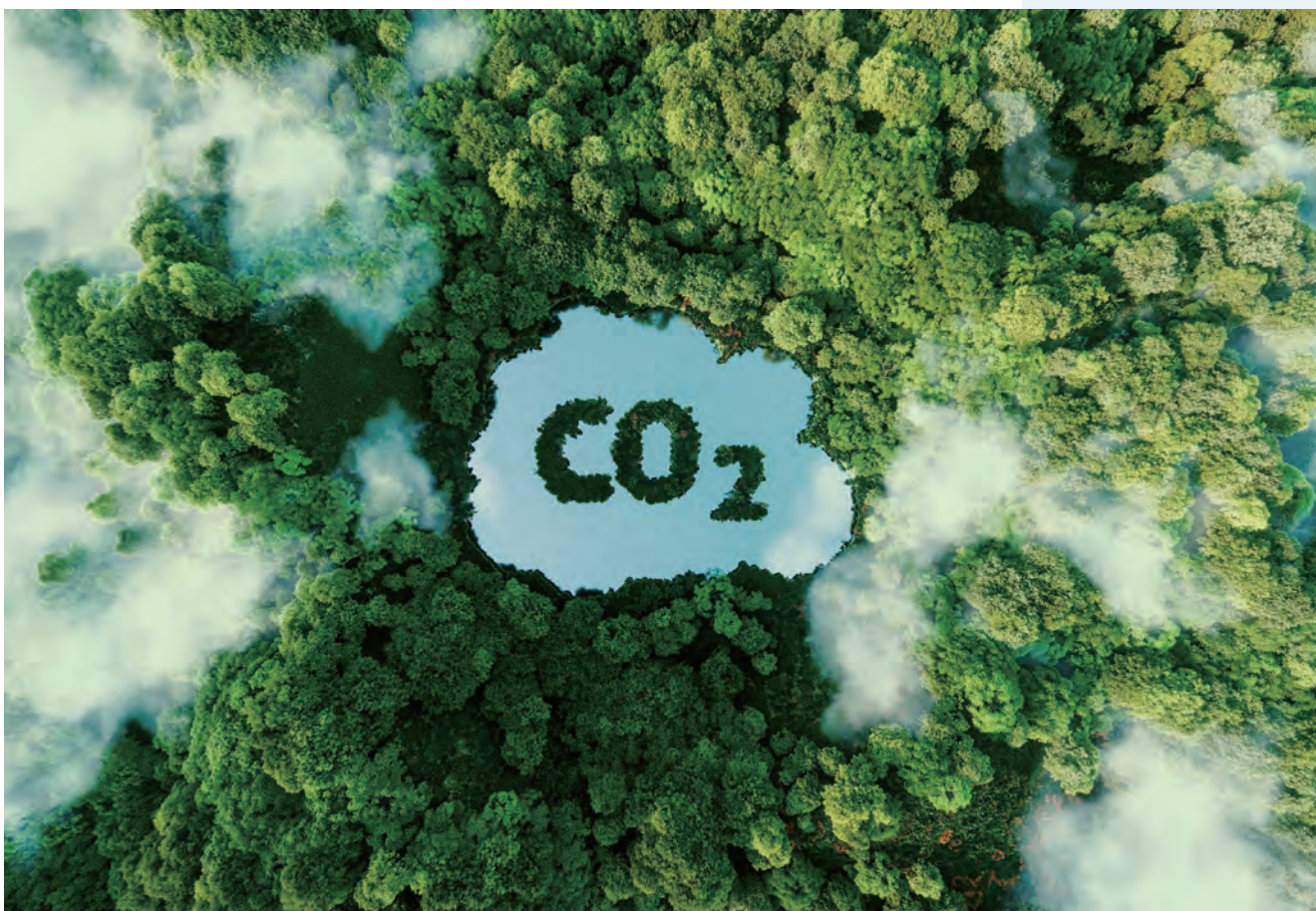
- transmit
- reliant

Your Dictionary

- _____
- _____
- _____

6 Recognizing text coherence

Find transition words that signal addition and consequence.



How Fungi Fight Climate Change

7 This incredible underground system helps more than just trees. It also combats climate change by storing CO₂, our most abundant greenhouse gas. Plants absorb CO₂ and emit oxygen through photosynthesis*. The CO₂ absorbed by a tree can be stored in its various parts, such as its leaves, branches, and trunk, but the vast majority goes to the roots and then into the mycelium. Indeed, 70 percent of the CO₂ absorbed by trees goes into the mycorrhizal network. There, it is exchanged among the trees, ensuring that the carbon stays well balanced. Weaker trees receive more carbon to help them survive. Stronger trees might exchange it for other nutrients. When the carbon is balanced, it is stored in fungal cell walls, where it can stay for thousands of years. Fungi thus play an important role in stabilizing carbon in soils. When forests are well maintained, they are able to reduce CO₂ in the air, bringing it underground and storing it safely.

*photosynthesis 광합성

5-7 Recognizing text coherence

Find what "This incredible underground system" in line 2 indicates and write it in three words.

Vocabulary

- underground
- combat
- abundant
- stabilize

Your Dictionary

- _____
- _____
- _____



Flying spores of fungi

Fungi Can Help Restore Nature

8 Yet another benefit of fungi is their potential for dealing with pollution problems such as oil spills. Fungi have evolved the amazing ability to break down any hydrocarbon-based material, including oil, so scientists decided to test this ability in a surprising experiment. They compared four piles of soil containing petroleum and other kinds of waste. Each pile was treated with a different method. One was left alone, the second was injected with bacteria, and the third was treated with enzymes*. For the fourth pile, mushroom spores were used. The fungi absorbed the oil, effectively breaking down the carbon-hydrogen bonds in the waste. After a few weeks, three of the piles were black and had a very bad smell. But in the pile treated with spores, the fungi had produced hundreds of pounds of oyster mushrooms. And many of them were quite large as a result of all the nutrition they had extracted from the

pile. Later, there was an even bigger surprise. The mushrooms released spores, which attracted insects. These insects laid eggs, which produced more insects. Then birds came to feed on the insects, bringing seeds with them. And that is how the fungi not only cleaned up the pile of waste but also played a crucial role in turning it into a new, diverse biological community.

*enzyme 효소

8 Identifying details

- 1) Scientists experimented on four piles of soil that were contaminated by petroleum and waste. (T / F)
- 2) The pile with spores became black and had a bad smell after a few weeks. (T / F)

9 It is difficult to know the full potential of the fungi kingdom. It still holds many wonders, and we continue to learn more about the intriguing behaviors and powers of fungi each day. What we do know is that protecting the forests and the amazing mycelia beneath them will protect us in return.

Source Paul Stamets, *Fantastic Fungi* 외 (p.180 참조)

Vocabulary

- bond
- extract
- in return

Your Dictionary

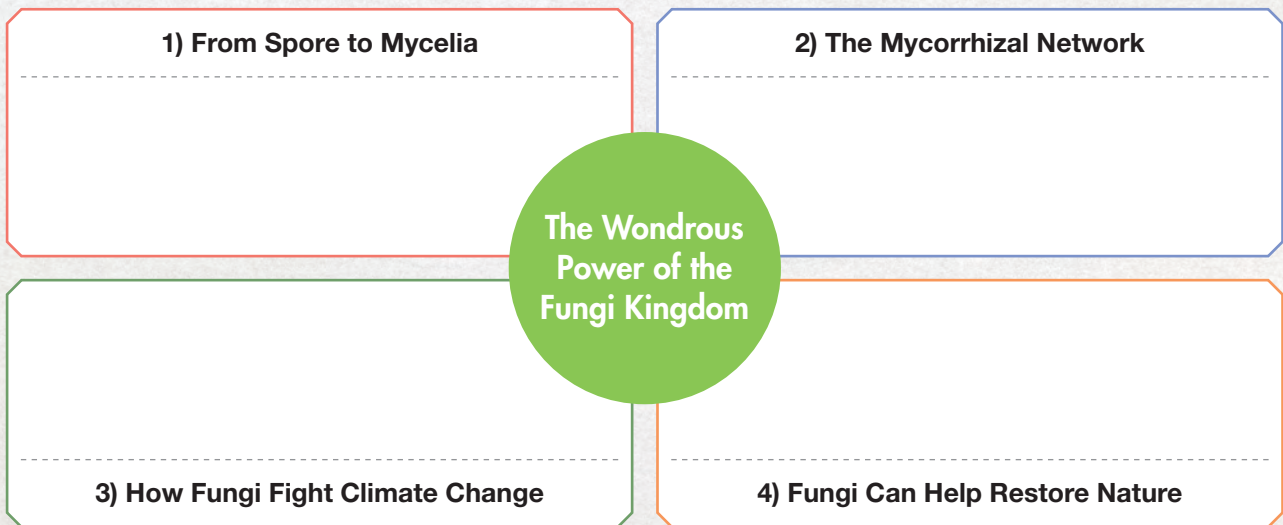
- _____
- _____
- _____

AFTER READING 2

A Organization

Put ①–⑥ in the appropriate place to complete the graphic organizer.

- ① Mycelia connect trees to one another.
- ② A spore sprouts and grows into long thin stems called hyphae.
- ③ Spores are carried by animals or the wind and find an environment with nutrients.
- ④ Fungi have the ability to break down any hydrocarbon-based material, including oil.
- ⑤ The network improves tree nutrition by accessing nutrients beyond the reach of roots.
- ⑥ The CO₂ absorbed by a tree is stored in its various parts and then moves into the mycelium.



B Details

Read the statements and check T for true or F for false.

	T	F
1) More than 14,000 fungal species can produce mushrooms in a wide array of sizes, colors, and shapes.	<input type="checkbox"/>	<input type="checkbox"/>
2) When two mycelia encounter each other, they always cooperate to find more nutrients.	<input type="checkbox"/>	<input type="checkbox"/>
3) If a root is removed from a mycorrhizal network, the network will not be affected.	<input type="checkbox"/>	<input type="checkbox"/>
4) A scientific experiment has demonstrated that enzymes can effectively break down oil.	<input type="checkbox"/>	<input type="checkbox"/>

Q Leading to the BIG QUESTION

List two amazing features of fungi that are invisible to the naked eye.

EXPRESSIONS

Practice 1

Definitions

Choose the correct definition from the box for each underlined word.

- 1) The dense forest provides an abundant variety of prey for the snakes. ()
- 2) The old apartment eventually started to collapse due to years of neglect. ()
- 3) He displayed a determined spirit while hiking the steep trail to the summit. ()
- 4) The research team is working on a new drug to combat a genetic disorder in children. ()
- 5) It was clear by the look on her face that she was disgusted by the lack of cleanliness in the public restroom. ()

- Ⓐ to fall apart, fail, or break down
 Ⓑ existing or available in large quantities
 Ⓒ to take action to reduce or prevent something bad or undesirable
 Ⓓ feeling a strong dislike for something, such as an unpleasant taste, smell, or sight
 Ⓔ wanting to do something very much and not allowing anyone or anything to stop you

Practice 2

Phrasal verbs

Choose the correct phrasal verbs to complete the sentences.

- 1) Our stomachs contain acid that can _____ the food we eat.
- 2) The company merged with one of their competitors in order to _____ into new markets and increase profit margins.
- 3) The police officers _____ their duty to protect the community, striving tirelessly to maintain safety and facilitate a sense of security for all.

break down branch out take pride in

Practice 3

Words in context

Choose the correct words to complete the sentences.

- 1) Not fixing the leak caused the wood to (revive / rot) over time.
- 2) In Buddhism, elephants are (insulted / worshipped) and considered to be sacred.
- 3) Conspiracy theories seem to (preside / prevail) despite the evidence that proves them wrong.
- 4) The miners use advanced machines to safely (bury / extract) minerals from deep within the earth.
- 5) I had an (exceptional / ordinary) hamburger at a local food truck; the flavors of its special tomato sauce and high-quality beef combined perfectly.

GRAMMAR

- We use *without* to express what would occur or be true if something did not exist or happen. We can use structures with 「*without ...*, ~ *would / could / might* + infinitive」 to indicate distance from the real situation.

- ☐ **Without** leadership, there **would be** no direction in the organization.
- ☐ **Without** your help, I **couldn't complete** the requirements of this certificate program.
- ☐ **Without** this evidence, he **might be** convicted.

- *But for* or *if it were not for* can also be used in place of *without*.

- ☐ **Without** your passion and effort, you **would have** a hard time achieving your goal.
= **But for** your passion and effort, you **would have** a hard time achieving your goal.
= **If it were not for** your passion and effort, you **would have** a hard time achieving your goal.

Go to pages 132 and 136.

Find the sentences with these structures above and underline them.

Practice 1

Rewrite the given sentences using *without* or *but for*.

- 1) If it were not for his research, we would still be at a loss.
→ _____
- 2) If it were not for this map, I would not be able to find the bus terminal.
→ _____
- 3) If it were not for their generous donations, the library would not be open now.
→ _____
- 4) If it were not for your guidance, the project might not be running so smoothly.
→ _____
- 5) If it were not for my commitment to fitness, I wouldn't spend as much time at the gym.
→ _____
- 6) If it were not for the zoo's safety measures, some animals' aggressive behaviors might harm other animals.
→ _____

Practice 2

Choose the correct words to complete the sentences.

- 1) (With / Without) better brakes, this bicycle might not be safe to ride.
- 2) But for the clever dialogue, the movie's irony (went / could go) unnoticed.
- 3) If it were not for the fertile soil, growing a variety of vegetables (would / will) be difficult.
- 4) (With / Without) the elevator, getting to the eleventh floor every day would be exhausting.
- 5) Without a reliable internet connection, we (would / would not) be able to conduct the virtual meeting.
- 6) If it were not for the various applications that are available, smartphones (would / would not) be much less useful.

Journalistic

Meet the Unsung Hero of Our School

PREPARE TO WRITE

INTERVIEW TIPS

- Gather enough information about the interviewee to make meaningful questions.
- Check if the interviewee's statements are true if necessary.

A Writing Strategy

Using interviews in news articles

This strategy involves incorporating the accounts and perspectives of interviewees into news articles. It requires identifying appropriate interviewees, making questions to ask, conducting effective interviews, selecting compelling quotes, and integrating those quotes into the article. You can paraphrase or summarize the interviewee's statements, but make sure you do not misrepresent what they mean.

B Writing Sample

Read the following school newspaper article. Look at how the writer introduces the interviewee and what the writer says about the interviewee.

An introduction to the interviewee

A description of the interviewee's role

Quotes from the interviewee about how he/she feels about his/her job

Quotes from the interviewee about his/her memorable moment

A conclusion with a suggestion or final thought

In a heartwarming encounter, our school newspaper had the privilege of interviewing Ms. Susan Holley. She is a school janitor who diligently keeps our school clean and vibrant. Ms. Holley's caring nature extends far beyond maintaining the school's cleanliness.

During the interview, she said, "My passion for maintaining cleanliness and hygiene motivates me." Ms. Holley continued, "I feel proud that I help provide the clean and supportive environment that everyone at our school deserves."

When asked if she had any memorable moments with students or staff, she shared, "Yes, one special moment was when some students gave me a handmade thank-you card on my birthday. It was a small gesture, but it meant a lot and made me feel really appreciated."

Through our academic journey, let's not forget to express our gratitude to Ms. Susan Holley, who is making our school a better place each day.

WRITE YOUR OWN

A Gathering Ideas

Choose one of the groups of people below that help to maintain your school.

<input type="checkbox"/> IT staff	<input type="checkbox"/> Maintenance technicians	<input type="checkbox"/> Teaching assistants
<input type="checkbox"/> School nurses	<input type="checkbox"/> School bus drivers	<input type="checkbox"/> Your own: _____

B Outlining

Here is a questionnaire for an interview. Ask the interviewee these questions and fill out the questionnaire with the answers. You can use a translation website or app while completing it.

Interview Questionnaire

• Interviewee's name: _____

1. Q: What is your role as a(n) _____ ?

A: I _____.

2. Q: What motivates you to continue your work?

A: _____ motivates me.

3. Q: How do you feel about the contributions you make?

A: I feel _____.

4. Q: Have you had any memorable moments with students or staff?

A: Yes, _____.

C Building Sentences

Write sentences using the interview questionnaire you wrote in **B**.

LANGUAGE TIPS

- provide support to teachers
- ensure safe transportation for students

1. Describe what your interviewee does.

LANGUAGE TIPS

- ... makes me keep working.
- I am motivated/driven by ...

2. Write the interviewee's responses to Questions 2 through 4 in B.

- 1) _____
- 2) _____
- 3) _____

⊕ STRUCTURE GUIDE

You can introduce the interviewee in the following ways.

- I had the honor of doing an interview with ...
- Our school newspaper had the pleasure of interviewing ...

D Drafting

Write your own school newspaper article based on **B** and **C**.

E Revising and Editing

Revising Tip Attributing quotes correctly

When you write an article that includes an interview, it is important to attribute quotes correctly to the interviewee for clarity and credibility. Use quotation marks (“ ”) and mention the interviewee’s name or designation correctly.

Check-up 1 Read this article and add quotation marks in the correct places.

Oliver Steeds is a journalist who studies the sea. Now he is exploring the depths of the Maldives. His team’s work takes place in the twilight zone, which can be found at 1,000 meters. Steeds said, The twilight zone is critical for oxygen production, carbon cycling, and regulating the climate.

Editing Tip Direct speech

Direct speech is used to quote or report the exact words of the speaker. Direct speech should be enclosed in quotation marks. Write the words exactly as spoken without changing the verb tense.

Check-up 2 Change indirect speech into direct speech.

1) She said she had toast with jam for breakfast.

→ _____

2) The veterinarian said my puppy needed to exercise to reduce excess fat.

→ _____

+ USING QUOTATION MARKS

- Quotation marks are usually placed around punctuation marks such as commas and periods. This is a convention commonly followed in American English.

+ INDIRECT SPEECH

In contrast to direct speech, indirect speech is used to rephrase the speaker’s words without using quotation marks.

e.g. Ted said that he had to leave early. (indirect)
→ Ted said, “I have to leave early.” (direct)

F Finalizing

Go back to **D Drafting** and modify your draft.

SHARE & REVIEW

A Check your own draft according to the criteria below. Then share it with your partner and get their feedback.

	You	Partner
1. Is your interviewee’s role described well in your draft?	<input type="checkbox"/>	<input type="checkbox"/>
2. Does your draft contain compelling quotes from the interviewee?	<input type="checkbox"/>	<input type="checkbox"/>
3. Are the quotes integrated successfully and attributed correctly in your draft?	<input type="checkbox"/>	<input type="checkbox"/>
4. Is there a suggestion or final thought in the conclusion?	<input type="checkbox"/>	<input type="checkbox"/>

B Is your partner’s draft well-organized? Write your opinion here.

I think _____.
ex) the quotes are well integrated in the draft, and it contains useful information about the interviewee

The Tiny Parts in Almost Everything



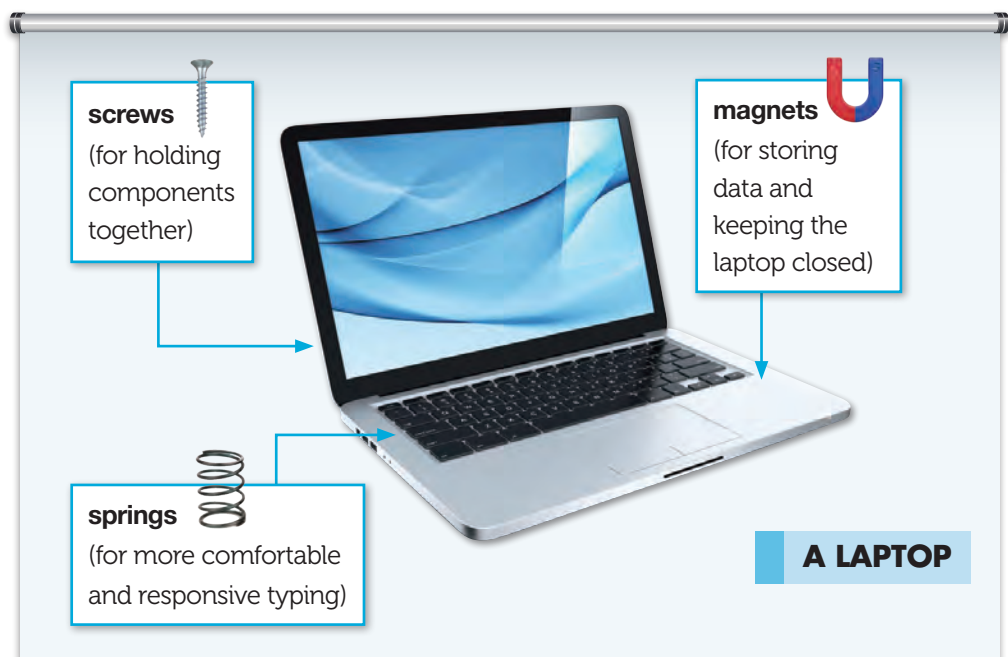
Many devices and structures are made up of basic parts that are hard to notice but very important. Let's learn about some of them.

STEP 1

THE BASIC FUNCTIONS OF SMALL PARTS

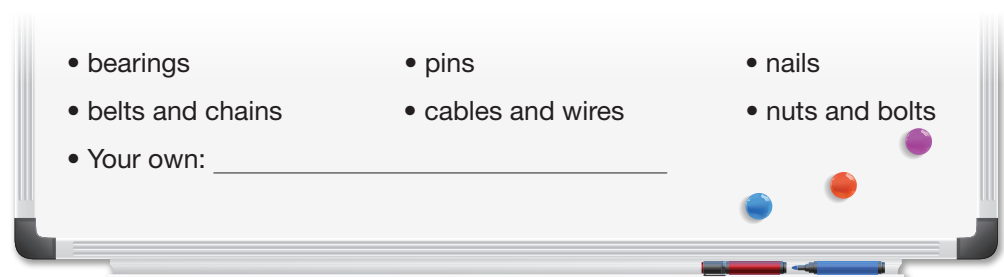
- screw: to hold objects together
- magnet: to attract materials made of metal
- spring: to store and release mechanical energy

Take a look at the small parts that are used to make a laptop.




STEP 2

Get into groups of three. What are some other basic parts that are hardly noticeable but are found almost everywhere? Discuss your ideas with your group members.





STEP 3

Choose one of the items from the following table with your group members. 

Electronics	<input type="checkbox"/> computers	<input type="checkbox"/> printers	<input type="checkbox"/> smartphones
Vehicles	<input type="checkbox"/> bicycles	<input type="checkbox"/> cars	<input type="checkbox"/> helicopters
Household appliances	<input type="checkbox"/> microwave ovens	<input type="checkbox"/> refrigerators	<input type="checkbox"/> vacuum cleaners
Furniture	<input type="checkbox"/> cabinets	<input type="checkbox"/> chairs and desks	<input type="checkbox"/> drawers

STEP 4

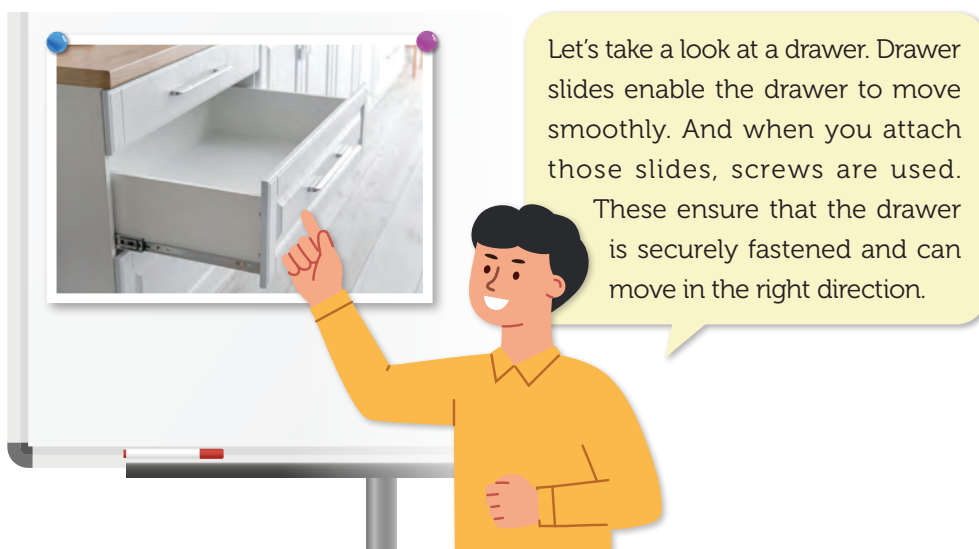
Discuss what basic parts are used to make the item you chose in **STEP 3** and what those parts are used for. If necessary, search the internet. Then make visual aids for your presentation.  

Useful expressions that describe functions

as timing mechanisms, as sensors, for speed, for fastening, for joint movement, for motion control, for enduring high temperatures, for circulating air, for cooling engines, etc.

STEP 5

Present your group's findings to your classmates with the visual aids.



CHECK YOUR PROGRESS




	Yes	No
1. Did you discuss basic parts that are hardly noticeable but are found almost everywhere?	<input type="checkbox"/>	<input type="checkbox"/>
2. Did you learn about the basic parts of the chosen item?	<input type="checkbox"/>	<input type="checkbox"/>
3. Did your visual aids show each basic part's function effectively?	<input type="checkbox"/>	<input type="checkbox"/>
4. Was your presentation delivered clearly?	<input type="checkbox"/>	<input type="checkbox"/>

WRAP UP

Reflect on what you learned in this lesson.

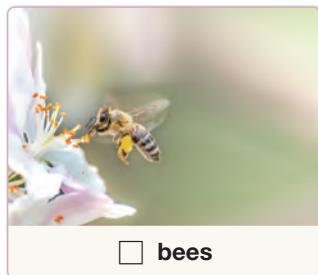
Q BIG QUESTION

Does noticeability or visibility correspond to importance in life? Why or why not?

READING 1	READING 2	WRITING	PROJECT
 Social Studies and Culture	 Biological Science		 Engineering
Invisibles: Society's Hidden Contributors	The Wondrous Power of the Fungi Kingdom	Meet the Unsung Hero of Our School	The Tiny Parts in Almost Everything

A Reading

We learned about people and things that are hardly noticeable but play important roles. Below are examples of species that are small but essential. Choose one and search online to find out why they are essential. Then share your findings with your partner.



Why they are essential

ex) They produce much of the earth's oxygen.

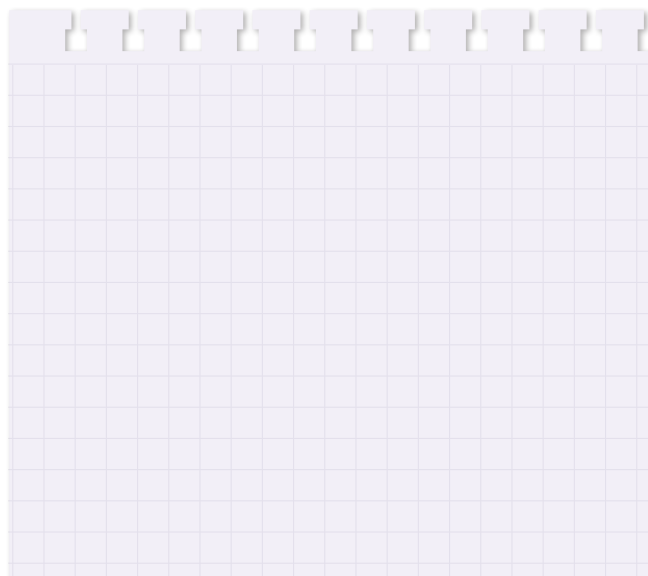


B Writing

Write a school newspaper article based on the interview below.

Interviewee's name: Olivia Thompson

- 1) **Q:** What is your role as a school nurse?
A: I provide medical care and support student health.
- 2) **Q:** What motivates you to continue your work?
A: My passion for taking care of student health motivates me.
- 3) **Q:** How do you feel about the contributions you make?
A: I feel proud to ensure that every student has access to necessary medical care.



✓ Final Answer to the BIG QUESTION

Did your answer to the big question change during the lesson? Check the appropriate box below. If your answer changed, explain why.

☐ Yes. My final answer is “_____”
ex) Visibility doesn't necessarily correspond to importance in life
I changed my answer because _____
ex) I learned the importance of people and things that aren't noticeable

☐ No, my first answer hasn't changed.

➔ FINAL CHECK

Core Competence	I can ...
Reading Strategy 1	<input type="checkbox"/> identify similarities and differences.
Reading Strategy 2	<input type="checkbox"/> recognize text coherence.
Grammar	<input type="checkbox"/> use the 「without ..., ~ would / could / might + infinitive」 structure properly in a sentence.
Writing Strategy	<input type="checkbox"/> write a school newspaper article based on an interview.



A LITTLE COMMA CAN MAKE A BIG DIFFERENCE

BEFORE READING

When do you usually use commas in your writing?
Do you know that commas can play many different roles in a sentence?

1 The importance of commas is often overlooked. These little punctuation marks may seem insignificant, but in some cases they are absolutely essential. There are also situations in which their usage is discouraged. It is particularly important to pay attention to commas when using relative clauses in your writing. Consider the following sentences:

- ① The novel that my teacher recommended was interesting.
- ② The novel, that my teacher recommended, was interesting.
- ③ *Ulysses* which was written by James Joyce is my favorite novel.
- ④ *Ulysses*, which was written by James Joyce, is my favorite novel.

2 Sentences ① and ④ are correct and crystal clear, but sentences ② and ③ don't make sense. And while ② and ④ have commas, ① and ③ do not. So what's the difference?

3 In sentences ① and ②, the relative clauses modify the noun phrase "the novel." Without context, the sentence, "The novel was interesting" is somewhat vague—it leaves us wondering, "Which novel?" The relative clause answers this question. In other words, it provides "the novel" with a more precise identity. In sentences ③ and ④, the relative clauses modify *Ulysses*, which is the title of a specific novel. We could remove "which was written by James Joyce," and we would still know exactly which book is being talked about in the sentence "*Ulysses* is my favorite novel." The relative clause merely adds extra information.

4 These two types of relative clauses go by different names, but some of the most commonly used terms are "restrictive" and "nonrestrictive." A restrictive clause either identifies what it modifies or limits its meaning to some degree. We use this kind of relative clause to provide information that is essential for understanding someone or something's identity. On the other hand, a nonrestrictive clause adds supplemental information to a sentence. We use this kind of relative clause when we want to provide information that is not necessary for understanding who or what we are referring to.

5 Here's where the importance of commas comes in. The type of relative clause that is being used dictates whether or not it should be set apart from the rest of the sentence by commas. In spoken English, a change in the speaker's tone of voice generally indicates that a relative clause is nonrestrictive. In writing, this work is performed by commas, which visually separate a nonrestrictive relative clause from the rest of a sentence. When a clause is restrictive, commas are never used. It is almost as if the clause is part of the noun or phrase that it is modifying; without it, the noun or phrase that it "restricts" would be too broad to express the writer's exact idea.

6 Finally, American English prefers to use the relative pronoun "that" in restrictive clauses, reserving "which" for use in nonrestrictive ones. Sometimes, "which" is used in place of "that," and in British English this is quite common. Just remember never to use "that" instead of "which" in a nonrestrictive relative clause! That is simply wrong.



Source Mary Norris, *Between You & Me: Confessions of a Comma Queen* 외 (p.180 참조)

AFTER READING

- 1) According to the passage, when are commas needed?
 - a) when nonrestrictive relative clauses are used
 - b) when a relative pronoun is removed from a sentence
 - c) when a writer wants to restrict an idea that is too broad
 - d) when a writer needs to provide essential information
- 2) Why does the writer mention American and British English in paragraph **6**?
 - a) to emphasize that English is a universal language
 - b) to point out a difference in relative pronoun preference
 - c) to show that American and British English use commas in the same way
 - d) to demonstrate that using commas is standard across all forms of the English language
- 3) According to the underlined sentence in paragraph **6**, which of the following sentences is grammatically incorrect?
 - a) The oak tree that has stood for centuries is regarded as divine by the villagers.
 - b) The oak tree, that has stood for centuries, is regarded as divine by the villagers.
 - c) The oak tree which has stood for centuries is regarded as divine by the villagers.
 - d) The oak tree, which has stood for centuries, is regarded as divine by the villagers.

A vibrant, stylized illustration of an open book with a blue cover, featuring a 3D origami scene. The scene includes a large orange tiger, a white goat, a blue rhinoceros, and a blue dinosaur. The background is a light green sky with floating planets and a red bird.

The Paper Menagerie

by Ken Liu

Ken Liu (1976–) is an American author of science fiction. His incredible short story “The Paper Menagerie*” is about a biracial American boy named Jack who struggles with his identity. It draws from the world of fantasy to depict Jack’s relationship with his Chinese immigrant mother and his desire to fit into American society.

The following is an adapted version of the original story from *The Paper Menagerie and Other Stories*.

*Menagerie (동물원 등) 동물 (떼)





THE PAPER MENAGERIE



* The English translation of Chinese speaking and writing is italicized in the text.

One of my earliest memories starts with me sobbing. I refused to be soothed no matter what Mom and Dad tried. Dad gave up and left the bedroom, but Mom took me to the table and sat me down.

“Jack, look, look,” she said, as she pulled a sheet of wrapping paper from on top of the refrigerator. She set the paper down, plain side facing up, and began to fold it. I stopped crying and watched her, curious. She turned the paper over and folded it again. She pressed, packed, tucked, rolled, and twisted until the paper disappeared between her cupped hands. Then she lifted the folded-up paper to her mouth and blew into it like it was a balloon.

“Look,” she said. *“This is Laohu, a tiger.”* She put her hands down on the table and let go. A little paper tiger stood on the table, the size of two fists placed together.

I reached out to Mom’s creation. Its tail twitched, and it pounced playfully at my finger. *“Rawrr-sa,”* it growled, the sound somewhere between a cat and rustling newspapers. I laughed, surprised, and tenderly stroked its back with my index finger. The paper tiger vibrated under my finger, purring.

“This is called origami,” Mom said. I didn’t know this at the time, but Mom’s breath was special. She breathed into her paper animals so that they shared her breath, and thus moved with her life. This was her magic.

■ Vocabulary

- sob
- soothe
- tuck
- cupped
- twitch
- pounce
- growl
- rustle
- stroke
- vibrate
- purr

■ Your Dictionary

Find and write words that you need to study.

- _____
- _____
- _____
- _____





1 Identifying details

Why did Mark tear Laohu in half?

- Ⓐ Because Laohu hit his toy and broke it.
- Ⓑ Because Laohu looked better than his toy.

■ Vocabulary

- light up
- swing
- stumble
- tear
- smooth out
- crease

■ Your Dictionary

- _____
- _____
- _____

When I was ten, we moved to a new house across town in Connecticut. Mark, one of the neighborhood boys, came over with his Star Wars action figures. Obi-Wan Kenobi's lightsaber lit up and he could swing his arms and say, "Use the Force!"

"Can he do anything else?" I asked. Mark was annoyed by my question. "Show me your toys," he said.

I didn't have any toys except my paper menagerie. I brought Laohu out from my bedroom.

I said, "This is a tiger." By then Laohu was very worn, patched all over with tape and glue, evidence of the years of repairs Mom and I had done on him.

"That doesn't look like a tiger at all. Your mom makes toys for you from trash?" Mark pushed Obi-Wan's head again. "Use the Force!" Laohu turned, pounced, and hit the plastic figure. Obi-Wan fell to the floor and broke, and its head rolled under the couch.

"*Rawwww*," Laohu laughed. I joined him. Mark punched me hard with rage. "This was very expensive! You can't even find it in the stores now." I stumbled and fell to the floor. Mark grabbed Laohu and tore him in half. He balled up the two pieces of paper and threw them at me. "Here's your stupid Chinese garbage."

After Mark left, I spent a long time trying, without success, to tape together the pieces, smooth out the paper, and follow the creases to refold Laohu.

My fight with Mark didn't end there. Mark was popular at school. I never want to think again about the two weeks that followed.

I came home that Friday at the end of the two weeks. "*How was school?*" Mom asked. I said nothing and went to the bathroom. I looked into the mirror and said to myself. "I look nothing like her, nothing."

At dinner I asked Dad, "Do I look Chinese?" Dad put down his chopsticks. Even though I had never told him what happened in school, he seemed to understand. He closed his eyes and rubbed the bridge of his nose. "No. You don't." I pushed the chopsticks and the bowl before me away. "We should eat American food."

Mom turned to me. "*The food doesn't taste good?*"

"English," I said, raising my voice. "Speak English."

Mom stretched her arm to touch my forehead, feeling for my temperature. "*Do you have a fever?*" I brushed her hand away. "I'm fine. Speak English!" I was shouting.

"Speak English to him," Dad said to Mom. "You knew this was going to happen someday. What did you expect?"

She sat, looking from Dad to me, and back to Dad again. She tried to speak, stopped, and tried again, and stopped again.

"You have to," Dad said. "Jack needs to fit in."

"And I want some real toys," I said.

② Making inferences

Why do you think Jack never wanted to think again about the two weeks after the fight with Mark?

③ Identifying details

Jack didn't feel good because the food didn't taste good at dinner. (T / F)

■ Vocabulary

- forehead
- brush away
- fit in

■ Your Dictionary

- _____
- _____
- _____



④ Identifying organization

How do the paragraphs reveal a change in Jack's relationship with his mom?

- Ⓐ by presenting in detail the main events that triggered the problem
- Ⓑ by explaining the types of interactions that caused them to grow further apart over time

■ Vocabulary

- attic
- embarrass
- squeeze

■ Your Dictionary

- _____
- _____
- _____

Dad bought me a full set of Star Wars action figures. I gave the Obi-Wan Kenobi to Mark. I packed the paper menagerie in a box and put it in the attic. If Mom spoke to me in Chinese, I refused to answer her. After a while, she tried to use more English. But her accent and broken sentences embarrassed me. I tried to correct her. Eventually, she stopped speaking altogether if I was around.

5

Every once in a while, I would see her at the kitchen table studying the plain side of a sheet of wrapping paper. Later, a new paper animal would appear on my night table. I caught them, squeezed until the air went out of them, and then stuffed them away in the box in the attic.

10

Mom finally stopped making the animals when I was in high school. By then her English was much better, but I was already at that age when I wasn't interested in what she had to say no matter what language she used.

Sometimes, when I came home and saw her busily moving about in the kitchen, singing a song in Chinese to herself, it was hard for me to believe that she gave birth to me. We had nothing in common. She might as well have been from the moon. I would hurry on to my room, where I could continue my all-American pursuit of happiness.

15





Dad and I stood, one on each side of Mom, as she lay on the hospital bed. She looked much older than her age. For years she had refused to go to the doctor for the pain inside her that she said was no big deal. By the time an ambulance finally carried her in, the cancer had spread far beyond the limits of surgery.

She was conscious. Dad held her hand with both of his own. Mom smiled at him. "I'm fine."

She turned to me, still smiling. "I know you have to go back to school." Her voice was very weak, and it was difficult to hear her over the buzz of the machines around her. "Go. Don't worry about me. This is not a big deal. Just do well in school." I was relieved. I was already thinking about flying back to campus in California.

She whispered something to Dad. He nodded and left the room.

"Jack, if I ... don't make it, don't be too sad and hurt your health. Focus on your life. Just keep that box you have in the attic with you, and every year, just take it out and think about me. I'll be with you always."

She began to cough. "It's okay, Mom." I stroked her arm awkwardly. Dad came back, and I said that I needed to get to the airport early because I didn't want to miss my flight.

She died when my plane was somewhere over Nevada.

⑤ Identifying details

Find and underline what Jack was thinking about when his mom was talking to him in the hospital.

■ Vocabulary

- surgery
- conscious
- whisper
- awkwardly

■ Your Dictionary

- _____
- _____
- _____

© Matching pronouns with their referents

Find and write what "it" in line 8 refers to.

■ Vocabulary

- shift
- unfold

■ Your Dictionary

- _____
- _____
- _____

It was the first weekend in April, two years after Mom's death. I was home, lazily flipping through the TV channels. I paused at a documentary about sharks. Suddenly I saw, in my mind, Mom's hands as they folded and refolded wrapping paper to make a shark for me, while Laohu and I watched. A rustle. I looked up and saw that a ball of wrapping paper was on the floor next to the bookshelf.

5

I walked over to pick it up and put it in the trash. The ball of paper shifted and unfolded itself, and I saw that it was Laohu, whom I hadn't thought about in a very long time. "Rawrr-sa." Mom must have put him back together after I had given up. He was smaller than I remembered. Or maybe it was just that back then my fists were smaller.

10

I reached out a finger. Laohu's tail twitched, and he pounced playfully. I laughed, stroking his back. Laohu purred under my hand. "How've you been?"

Laohu stopped playing. He got up, jumped into my lap, and proceeded to unfold himself.

15

In my lap was a square of creased wrapping paper, the plain side up. It was filled with dense Chinese characters. I had never learned to read Chinese, but I knew the characters for "son," and they were at the top, where you'd expect them in a letter addressed to you, written in Mom's clumsy, childish handwriting.

20



I took the letter with me downtown, where I knew the Chinese tour buses stopped. I stopped every tourist, asking, “*Can you read Chinese?*”

A young woman agreed to help. We sat down on a bench together, and she read the letter to me aloud. The language that I had tried to forget for years came back, and I felt the words sinking into me, through my skin, through my bones, until they squeezed tight around my heart.

7 Identifying referents

Find and write what “The language that I had tried to forget for years” in lines 4–5 indicates.

Son,

We haven't talked in a long time. You are so angry when I try to talk to you that I'm afraid. And I think maybe this pain I feel all the time now is something serious.

So I decided to write to you. I'm going to write in the paper animals I made for you that you used to like so much. Because I have to write with all my heart, I need to write to you in Chinese.

All this time I still haven't told you the story of my life. When you were little, I always thought I'd tell you the story when you were older, so you could understand. But somehow that chance never came up.

I was born in 1957, in Sigulu Village, Hebei Province. Sigulu is famous for its papercraft, and my mother taught me how to make paper animals and give them life. This was practical magic in the life of the village. We made paper birds to chase grasshoppers away from the fields, and paper tigers to keep away the mice.

Then came the Cultural Revolution in 1966. Someone remembered my uncle had left for Hong Kong back in 1946 and had become a merchant there. Having a relative in Hong Kong meant we were spies and enemies of the people, and we had to struggle in every aspect. It was during this time that your poor grandmother died in a tragic incident.

There I was, a ten-year-old orphan. The only family I had in the world was my uncle in Hong Kong. I snuck away one night, climbed onto a train going south, and eventually found my way to Hong Kong. Years later, I met your father there.

■ Vocabulary

- sink
- papercraft
- chase away
- sneak

■ Your Dictionary

- _____
- _____
- _____

㉔ Summarizing

Jack's mother was I _____
when she moved to Connecticut,
but she felt h _____ when
Jack was born.

In the suburbs of Connecticut, I was lonely. Your father was kind and gentle with me. But no one understood me, and I understood nothing.

But then you were born! I was so happy when I looked into your face and saw shades of my mother, my father, and myself.

Now I had someone to talk to. When you said your first words to me, in Chinese that sounded just like my own, I cried for hours. When I made the first origami animals for you, and you laughed, I felt there were no worries in the world. I was really at home.

Son, I know that you do not like your Chinese eyes, which are my eyes. I know that you do not like your Chinese hair, which is my hair. But can you understand how much joy your very existence brought to me? And can you understand how it felt when you stopped talking to me and wouldn't let me talk to you in Chinese? Why won't you talk to me, son? The pain makes it hard to write.

5

10

■ Vocabulary

- hand
- bear
- reach out

■ Your Dictionary

- _____
- _____
- _____

The young woman handed the paper back to me. I could not bear to look into her face. She reached out and put a hand on my shoulder. Then she got up and left, leaving me alone with my mother.

15

Following the creases, I refolded the paper back into Laohu. I held him gently, and as he purred, we began the walk home.



Source Ken Liu, *The Paper Menagerie and Other Stories* (p.180 참조)

AFTER READING

A Organization

Put ㉓–㉑ in order based on the story of “The Paper Menagerie.”

Mom soothed my sobbing by creating a paper tiger and bringing him to life with her breath.

- ㉓ Two years after Mom’s death, I found Laohu, and he unfolded into a letter from Mom.
- ㉔ After someone read the letter for me, I realized how lonely Mom must have been when I refused to speak to her.
- ㉕ I visited Mom in the hospital. She asked me to keep the box of paper animals with me and think about her every year.
- ㉖ I showed Laohu to Mark, one of the neighborhood boys, but Mark destroyed Laohu after he broke one of Mark’s Star Wars action figures.
- ㉗ After the fight with Mark, I had a hard time at school. A couple of weeks after the fight, I demanded that Mom speak English to me and asked for real toys.
- ㉘ I rejected Mom’s paper animals. She attempted to speak English, but I always corrected her. Eventually, she stopped speaking. She also stopped making the paper animals.

Order: _____ → _____ → _____ → _____ → _____ → _____

B Details

Read the statements and check T for true or F for false.

	T	F
1) After Mark left, Jack didn’t try to tape Laohu back together again.	<input type="checkbox"/>	<input type="checkbox"/>
2) Jack’s father refused to buy Jack a full set of Star Wars action figures, so Jack couldn’t give the Obi-Wan Kenobi to Mark.	<input type="checkbox"/>	<input type="checkbox"/>
3) When his mother’s English finally got better, Jack didn’t care about it.	<input type="checkbox"/>	<input type="checkbox"/>
4) Two years after his mother’s death, Jack saw Laohu, who was smaller than he remembered.	<input type="checkbox"/>	<input type="checkbox"/>
5) His mother’s letter was written in Chinese, so Jack couldn’t read it for himself and had to ask a tourist to read it to him.	<input type="checkbox"/>	<input type="checkbox"/>

C Think More

What do you think Jack regrets the most after reading his mother’s letter? Discuss your thoughts with your partner.

ANSWER KEY

LESSON

1 New Frontiers

BEFORE READING 1

pp. 10 – 11

B Vocabulary Preview

- 1) b 2) b 3) b 4) b 5) a 6) b

C Advanced Reading Strategy

• Identifying *who, where, and when*

- 1) experienced astronauts from different countries
- 2) Mars
- 3) in the year 2040

• Identifying *what and why*

- 1) to search for signs of life
- 2) due to its similarities to Earth and the possibility that it could support life

• Identifying *how*

by establishing a self-sustaining base that relied on advanced technology

READING 1

pp. 12 – 16

- 1 musician, fabric dealer
- 3 To maintain the mirror's properties and brightness, they had to polish it regularly.
- 4 He discovered it in 1781.
- 5 He discovered two moons of Uranus, two moons of Saturn, clusters and galaxies of stars, and more than 2,500 nebulae.
- 6 7 microbiology, lenses
- 8 He had built over 500 optical lenses.
- 10 **Sample Answer** I think they mean tiny living things that are too small to be seen with the naked eye.
- 11 1) acknowledge 2) hypotheses 3) discipline

AFTER READING 1

p. 17

A Organization

- | | | |
|---------------|-------------|-----------------|
| (1) invisible | (2) devoted | (3) organist |
| (4) mirror | (5) moons | (6) inspect |
| (7) tiny | (8) mouth | (9) acknowledge |

B Details

- 1) F 2) F 3) T

Q Leading to the BIG QUESTION

Sample Answer They both went out of their way to make their own optical instruments, resulting in advancements in their fields of study.

BEFORE READING 2

pp. 18 – 19

B Vocabulary Preview

- 1) c 2) a 3) d 4) b 5) e

C Advanced Reading Strategy

• Figuring out the overall context

d

• Considering the immediate context

- 1) historic 2) historic 3) historic 4) historical

• Inferring the meaning of the word

important, significant

READING 2

pp. 20 – 24

- 1 2 **Sample Answer** It seems to mean something similar to “be full.”
- 3 Analyzing logbooks, collecting information from whaling ship captains, and leading his own expeditions
- 5 6 d
- 7 **Sample Answer** It seems to mean something related to seafloor composition.
- 11 **Sample Answer** It seems to mean a major shift in a concept, theory, or perception.

AFTER READING 2

p. 25

A Organization

- (A) Ⓓ (B) Ⓐ (C) Ⓒ (D) Ⓑ
- Order: (D) → (B) → (C) → (A)

B Details

- 1) T 2) T 3) F 4) F

Q Leading to the BIG QUESTION

Sample Answer They discovered that life exists on the ocean floor and that the earth's surface is formed by tectonic plates.

LANGUAGE SKILLS

pp. 26 – 27

EXPRESSIONS

Practice 1

- 1) Ⓓ 2) Ⓓ 3) Ⓐ 4) Ⓓ

Practice 2

- 1) Ⓒ 2) Ⓐ 3) Ⓓ 4) Ⓔ 5) Ⓑ 6) Ⓕ

Practice 3

- 1) unconventional 2) abounds 3) controversy
4) in store

GRAMMAR

p. 12 Despite these daunting challenges, it was a musician and a fabric dealer who revealed ...

p. 16 It was in the 1670s and 1680s that Leeuwenhoek made his most significant observations, ...

p. 20 ..., it was not until the 20th century, ..., that people started to realize the great importance of understanding the ocean.

Practice 1

- 1) It was Gary or Jenny that [who] stole the phone.
2) It is your health that you have to think about.
3) It was from his uncle that Collins bought this fertile land.
4) It was at the museum that Ethan and Wendy met yesterday.
5) It was not until his daughter finished her performance that Nate left the concert hall.

Practice 2

- 1) It was in 1969 that the first moon landing occurred.
2) It was in Greece that the Olympic Games first took place.
3) It was King Sejong that [who] created Hangeul, the Korean writing system.

WRITING

pp. 28 – 31

PREPARE TO WRITE

- CHECK-UP Ⓒ

WRITE YOUR OWN

B Outlining

Sample Answer

Name	Angela Isadora Duncan
Reason 1	revolutionized the world of dance
Supporting detail 1	created her own style by focusing on natural movements
Reason 2	had a profound artistic vision
Supporting detail 2	believed that dance should be a celebration of individuality
Reason 3	expanded the meaning of dance by connecting it to deeper emotions and ideas
Supporting detail 3	This made it a form of personal and artistic freedom rather than just a performance.

C Building Sentences

Sample Answer

1. A field that I am interested in is modern dance, and one of its pioneers was Angela Isadora Duncan.
2. 1) First, Duncan revolutionized the world of dance.
2) Another reason is that she had a profound artistic vision.
3) She also expanded the meaning of dance by connecting it to deeper emotions and ideas.

D Drafting

Sample Answer

A field that I am interested in is modern dance, and one of its pioneers was Angela Isadora Duncan. I admire her because she helped shape modern dance into what it is today. I believe she had a significant influence on this field for the following reasons.

First, Duncan revolutionized the world of dance.

She broke away from traditional ballet techniques and created her own style by focusing on natural movements. Another reason is that she had a profound artistic vision. She believed that dance should be a celebration of individuality, so she put a big emphasis on improvisation instead of strict dance composition. She also expanded the meaning of dance by connecting it to deeper emotions and ideas. This made it a form of personal and artistic freedom rather than just a performance.

Like her, I want to have a significant influence on modern dance when I become a dancer in the future. I hope my dancing can also inspire others and open up new possibilities, just like Duncan's.

E Revising and Editing

- **Check-up 1.** Everyone has their own unique habits.
- **Check-up 2.** 1) brings → bring 2) are → is

WRAP UP

pp. 34 – 35

B Writing

Sample Answer

Supporting details for his/her achievements

- became the first female doctor in Britain
- campaigned for the provision of clean water and better housing conditions

Elizabeth Garrett Anderson was a pioneer in the field of medicine. I believe she had a significant influence on this field for the following reasons. First, she broke barriers for women in medicine. She became the first female doctor in Britain. Second, she was committed to public health. She campaigned for the provision of clean water and better housing conditions. Someday, I hope I can be as influential in my field as she was in hers.

FURTHER READING

pp. 36 – 37

BEFORE READING

Sample Answer I know of Marie Tharp, whose work was important to the development of modern cartography.

AFTER READING

- 1) unknown, support 2) ©

LESSON

2

Sustainability

BEFORE READING 1

pp. 40 – 41

B Vocabulary Preview

- 1) infrastructure 2) autonomous 3) pedestrian
4) accommodate 5) implement 6) subdivision

C Advanced Reading Strategy

• Getting a general idea of the topic

⑥

• Looking for signal words

lead to, problems, causes, solution, issue

• Identifying cause & effect / problem & solution

- 1) diabetes and heart disease
2) raising taxes on sugary drinks and restricting the marketing of unhealthy foods to children

READING 1

pp. 42 – 46

- ③ There are already more than eight billion people on the planet, and the world population is rapidly increasing.
④ Inhabitants are breathing polluted air, seeing very little nature, and living in stressful environments.
⑤ Breaking up the layout into subdivisions and autonomous neighborhoods is a suggested strategy.
⑨ As a result, in the United States, for example, instead of plazas and parks, cities had large residential areas with many big houses and garages. Cities were being designed around cars rather than around people.
⑬ roads, traffic, community
⑮ easier, cheaper, healthier

AFTER READING 1

p. 47

A Organization

- 4) a 5) b 6) d, c
• 1) – 6) / 2) – 4) / 3) – 5)

B Details

- 1) F 2) T 3) T

Q Leading to the BIG QUESTION

Sample Answer My city is not designed for people because there are not many pedestrian zones or bike paths. So I don't think it conforms to the urban planning philosophy described by Jan Gehl.

BEFORE READING 2

pp. 48 – 49

B Vocabulary Preview

- 1) a 2) b 3) a 4) a 5) b

C Advanced Reading Strategy• **Checking for ideas that are repeated**

b

• **Creating a summary**

- (1) diversity (2) open mind
(3) diversity (4) culture

READING 2

pp. 50 – 54

1 telling a funny story

23 impractical, outdated, antiquated, flawed

5 **Sample Answer** ○

67 “Health” belongs to the inner ring and “climate change” belongs to the outer ring.

9 It is characterized by minimal waste, the reuse of resources, and a regenerative economy.

10 a

11 Its real value lies in its revolutionary goals that turn traditional economics upside down.

AFTER READING 2

p. 55

A Organization

- (1) b (2) f (3) c (4) d (5) e (6) a

B Details

- 1) T 2) F 3) T 4) F 5) T

Q Leading to the BIG QUESTION

Sample Answer I think air pollution is the biggest problem in Korea. The air we breathe has been getting worse, but I don't think there is an effective strategy to resolve this issue yet.

LANGUAGE SKILLS

pp. 56 – 57

EXPRESSIONS**Practice 1**

- 1) c 2) e 3) f 4) a 5) d 6) b

Practice 2

- 1) prioritize 2) scattered 3) flourish
4) unprecedented 5) fundamental

Practice 3

- 1) interact 2) flexible 3) impractical
4) comprise 5) ground

GRAMMAR

p. 42 With climate change, pollution, and high levels of stress becoming increasingly important issues, ... /
With people scattered throughout a region, ... /
With some city populations reaching 30 million people, ...

p. 46 And of course, with lower budgets required for construction and maintenance, ...

p. 54 With more and more economists and policymakers taking Doughnut economics into consideration as a possible path for future development, ...

Practice 1

- 1) With the time (being) up, I submitted my test sheet.
2) They walked down the beach with the wind blowing against their backs.
3) The actor went on stage with the audience giving him a round of applause.
4) With tears running down her cheeks, the old lady talked with her close friend.

Practice 2

- 1) OK 2) signed
3) OK 4) OK
5) buttoned up 6) approaching
7) setting in

WRITING

pp. 58 – 61

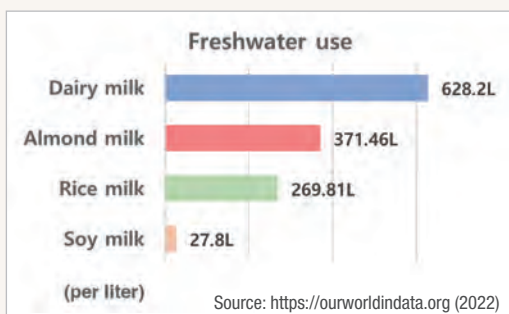
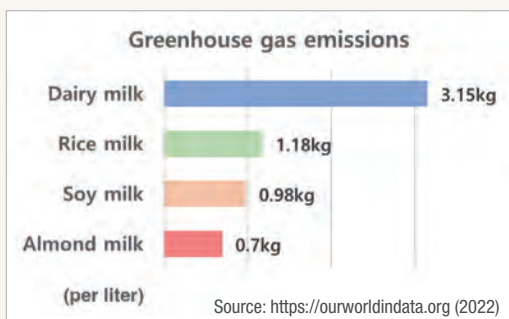
PREPARE TO WRITE

- CHECK-UP ⑥

WRITE YOUR OWN

B Outlining

Sample Answer



C Building Sentences

Sample Answer

1. These graphs show greenhouse gas emissions and freshwater use for dairy and plant-based milk production.
2. Dairy milk production generates about 3kg of greenhouse gas emissions per liter, making it the biggest contributor to air pollution.
3. Overall, drinking plant-based alternatives, including rice, soy, and almond milk, is better for the environment than drinking dairy milk.

D Drafting

Sample Answer

These graphs show greenhouse gas emissions and freshwater use for dairy and plant-based milk production. Dairy milk production generates about 3kg of greenhouse gas emissions per liter, making it the biggest contributor to air pollution. On the other hand, almond milk is the least responsible for greenhouse gas emissions, generating only 0.7kg per liter of milk. In terms of freshwater use, however, almond milk production requires approximately 371 liters of freshwater per liter of milk, which is more than the combined total needed to

produce the same amount of rice milk and soy milk. But it is still less than is needed to produce dairy milk. Overall, drinking plant-based alternatives, including rice, soy, and almond milk, is better for the environment than drinking dairy milk.

E Revising and Editing

- Check-up 1. From this point, you can see a steady increase in the market share of product A and a gradual decrease in the market share of product B.
- Check-up 2. 1) more good → better
2) most farthest → farthest

WRAP UP

pp. 62 – 63

B Writing

Sample Answer

This chart provides a visual representation of the global sources of greenhouse gas emissions in the year 2023. The largest contributor to greenhouse gas emissions was the energy sector, accounting for approximately 75% of the total. Conversely, land use change & forestry and waste generated the smallest proportions of emissions, each accounting for just 3.3%. These findings underline the pressing need for the development of greener energy production methods.

FURTHER READING

pp. 64 – 65

BEFORE READING

Sample Answer I think the trashcan works by using a pump. The pump sucks water and trash into the bucket. Then the water goes through a filter and is released back into the ocean.

AFTER READING

- 1) ©
- 2) revealing

LESSON

3

Making Choices

BEFORE READING 1

pp. 68 – 69

B Vocabulary Preview

- 1) (b) 2) (a) 3) (b) 4) (b) 5) (a) 6) (a)

C Advanced Reading Strategy

• Identifying the features of the referents

- 1) Frank: (a), (c)
2) Jordan: (b), (d)

• Matching pronouns with their referents

- ① Frank ② Jordan ③ Frank
④ Frank ⑤ Jordan ⑥ Jordan

READING 1

pp. 70 – 74

2 the child

3 1) instrumental 2) intrinsic

5 **Sample Answer** If I were in the “trolley problem” situation, I would pull the lever so that more people would be saved.

9 the people who choose to leave Omelas

AFTER READING 1

p. 75

A Organization

- (1) suffering (2) accept (3) consequences
(4) maximize (5) straightforward (6) doubts
(7) undefined

B Details

- 1) F 2) T 3) F

Q Leading to the BIG QUESTION

Sample Answer If I were an inhabitant of Omelas, I would reject the conditions of life in the city because I think the happiness of the few is as important as the happiness of the many.

BEFORE READING 2

pp. 76 – 77

B Vocabulary Preview

- 1) (b) 2) (b) 3) (b) 4) (c) 5) (a)

C Advanced Reading Strategy

• Finding transition words and phrases

- 1) for example, for instance
2) Similarly
3) In conclusion

• Identifying the relationships between sentences

(c)

READING 2

pp. 78 – 82

1 however

2 crowd, interest

3 how powerful a random first move can be

5 For example, Therefore

6 help, selfless

7 it becomes easier for others to do so, causing the whole system to break down

8 long-term, self-interest

AFTER READING 2

p. 83

A Organization

- (1) tendency (2) specific (3) possess
(4) random (5) communally (6) receiving

B Details

- 1) F 2) T 3) T

Q Leading to the BIG QUESTION

Sample Answer When I went to an amusement park, I didn't know where the ticket office was. I decided to follow a group of people, believing that they knew how to get there.

LANGUAGE SKILLS

pp. 84 – 85

EXPRESSIONS

Practice 1

- 1) tackle 2) delicate 3) specificity
4) rational 5) relatable

Practice 2

- 1) popularized 2) calculation 3) misleading
4) faulty 5) advocate

Practice 3

- 1) a 2) b 3) b 4) b

GRAMMAR

- p. 72 Bentham proposed the idea that only pleasure has positive intrinsic value and only pain has negative intrinsic value.
- p. 79 Instead, the decision to join is made under the assumptions that the crowd knows something that the observer doesn't and that following along would be in his or her own best interest.
- p. 80 The fact that these individual decisions are based on intentional thought, however, does not mean that they help to guide the entire herd in a logical way.

Practice 1

- 1) a sign that breakfast was ready
2) some concern that the new app could be stealing users' data
3) The possibility that nasty and stormy weather could restrict our travel options
4) a rumor that they developed a battery that can be charged in just 20 minutes

Practice 2

- 1) I 2) C 3) C 4) C 5) I

WRITING

pp. 86 – 89

PREPARE TO WRITE

- CHECK-UP b

WRITE YOUR OWN

A Gathering Ideas

Sample Answer

☒ SITUATION 1☒ Choice 1

B Outlining

Sample Answer

	Your own
Reason 1	I may not be able to provide accurate directions.
Supporting detail 1	If I gave the wrong information, the person might get lost.
Reason 2	I could be on my way to visit a sick family member or a close friend.
Supporting detail 2	In this case, giving directions would be less important than getting off the bus.
Reason 3	I may not have enough time to help.
Supporting detail 3	Since I need to get off the bus right away, I wouldn't be able to give proper directions or answer any follow-up questions.

C Building Sentences

Sample Answer

- I would say that I don't know and get off the bus.
- For these reasons, I would say that I don't know and get off the bus.

D Drafting

Sample Answer

If a stranger asked me for directions while I was on the bus, I would politely say that I don't know. This may sound unhelpful, but I believe it would be the right choice in some cases.

First, I may not be able to provide accurate directions. If I gave the wrong information, the person might get lost. Furthermore, I could be on my way to visit a sick family member or a close friend. In this case, giving directions would be less important than getting off the bus. Lastly, I may not have enough time to help. Since I need to get off the bus right away, I wouldn't be able to give proper directions or answer any follow-up questions. In this case, it's better to say I don't know than to rush and give incomplete information.

For these reasons, I would say that I don't know and continue on my way. It is important to be kind, but it is also important to be careful and take care of my own needs.

E Revising and Editing

- Check-up 1. certain, basically
- Check-up 2. 1) OK 2) visited 3) OK

WRAP UP

pp. 92 – 93

B Writing Sample Answer

I would take the homeless dog to the police station. First, I would feel sympathy for the owner of the dog because I have lost my dog before. I was able to find it thanks to someone who took it to the veterinarian. Furthermore, I think passing by could leave the dog in a dangerous situation. It could end up getting hurt if it kept wandering around. For these reasons, I would take the dog to a safer place.

FURTHER READING

pp. 94 – 95

BEFORE READING

Sample Answer Yes, I often tend to rely on my intuition when I make a decision.

AFTER READING

- 1) probability, three, car, goats
- 2) (1) T (2) F
- 3) intuition, math

LESSON

4

Blurring the Lines**BEFORE READING 1**

pp. 98 – 99

B Vocabulary Preview

- 1) a 2) a 3) b 4) a 5) b

C Advanced Reading Strategy• **Analyzing context and details**

- 1) T 2) F 3) T

• **Making inferences**

c

READING 1

pp. 100 – 104

1 a

3 light, shadow

4 c

6 the bits of hay sticking out in various directions, the large, rough surface area, and the effects of rain or dryness on the hay

7 T

8–10 b

AFTER READING 1

p. 105

A Organization

- 1) b / (1) shadow
- 2) a, c / (2) same (3) different
- 3) d / (4) mixing (5) tiny

B Details

- 1) T 2) F 3) F

Q Leading to the BIG QUESTION

Sample Answer Their efforts to depict light in their works made their paintings look more realistic.

BEFORE READING 2

pp. 106 – 107

B Vocabulary Preview

- 1) collaborator 2) limits 3) mimic
4) teamwork 5) cooperate 6) adapt

C Advanced Reading Strategy

• Paying attention to the context

- 1) A 2) T 3) T

• Understanding figurative language

- b

READING 2

pp. 108 – 112

23 Its name is D.O.U.G. and it stands for Drawing Operations Unit, Generation X.

45 1) T 2) F

67 1) F 2) F 3) T

8 1) this development 2) human creativity

9 **Sample Answer** “A muscle” means that D.O.U.G. just copied Chung’s movements, “a brain” means that D.O.U.G. started to notice and learn patterns in Chung’s art, and “a family” means that a number of robots controlled by D.O.U.G. all worked together in real time to create art with Chung.

10 **Sample Answer** I think it means a process in which Chung and D.O.U.G. constantly affect and react to each other.

11 acknowledging and embracing the limits of both humans and machines

AFTER READING 2

p. 113

A Organization

- (1) robotic (2) mimic (3) trained
(4) reflection (5) collectively (6) brainwave
(7) paintings

B Details

- 1) F 2) F 3) T 4) T

Q Leading to the BIG QUESTION

Sample Answer Humans and AI can work together to improve productivity in many fields such as manufacturing, healthcare, and agriculture. I see this as humans and AI collaborating for the better.

LANGUAGE SKILLS

pp. 114 – 115

EXPRESSIONS

Practice 1

- 1) a 2) a 3) a 4) a 5) a 6) b

Practice 2

- 1) anticipate 2) depicted 3) expressiveness
4) imperfection 5) adjustment

Practice 3

- 1) a 2) c 3) b 4) d 5) e

GRAMMAR

p. 100 To reach their goals, many artists work in ways similar to those of scientists.

p. 110 Chung used information ... to program the new AI system powering D.O.U.G. _2.

p. 112 Chung believes that by developing AI systems capable of performing tasks traditionally done by humans, ...

Practice 1

- 1) His favorite place is the café famous for its sandwiches.
2) The woman wearing the white uniform is the chef at this restaurant.
3) The management is searching for a person recognized as a skilled negotiator.

Practice 2

- 1) The author released a book full of family recipes.
2) The biscuit baked by my aunt had a rich, buttery flavor.
3) The children skating on the frozen lake laughed with delight.

Practice 3

- 1) I asked a man (who was) wearing a military uniform for directions.
2) The lemon juice (which was) spilled on the floor created a slippery surface.
3) The seats in the back row of the theater are the only ones (that are) available.

WRITING

pp. 116 – 119

PREPARE TO WRITE

- CHECK-UP 1) for 2) against

WRITE YOUR OWN

B Outlining Sample Answer

	Your own
Topic	AI pets
For/ Pros	<input checked="" type="checkbox"/> emotional support <input checked="" type="checkbox"/> suitable for people with allergies <input checked="" type="checkbox"/> easier to take care of than real animals
Against/ Cons	<input type="checkbox"/> ethical considerations <input type="checkbox"/> reliance on technology <input type="checkbox"/> lack of emotional connection

C Building Sentences Sample Answer

1. We may be able to have AI pets in the future, and some have expressed concerns about using AI in this way. Nevertheless, AI pets offer numerous benefits to us, so I support the development of AI pets.
2. 1) First, AI pets can provide emotional support because they are trained to imitate real pets.
 2) Also, they are suitable for people who aren't able to have real pets because of allergies.
 3) In addition, AI pets do not require food, cleaning, or trips to the vet, so they are easier to take care of than real animals.

D Drafting Sample Answer

In the future, we will be able to have AI pets instead of real animals. Some people worry about this, but I believe that AI pets can be a great help in our lives. They can be good companions for people who need comfort, and they are easy to care for.

First, AI pets can provide emotional support because they are trained to imitate real pets. Also, they are suitable for people who aren't able to have real pets because of allergies. In addition, AI pets do not require food, cleaning, or trips to the vet, so they are easier to take care of than real animals.

For these reasons, I think AI pets are a great idea. They can make our lives better by offering comfort, supporting people with pet-related allergies, and being a low-maintenance friend.

E Revising and Editing

- Check-up 1. a
- Check-up 2. 1) After you finish your homework, (you) should go to bed.
 2) She was lying on the grass in the park (on) a sunny day.
 3) She (was) cooking dinner, and then the smoke alarm went off.

WRAP UP

pp. 120 – 121

B Writing Sample Answer

Topic	AI producing artworks
Stance	<input checked="" type="checkbox"/> For <input type="checkbox"/> Against
Supporting detail 1	Through its computational power, AI can explore an extensive range of styles, techniques, and concepts.
Supporting detail 2	It can surpass human limitations by creating art at incredible speeds and developing entirely new kinds of artistic expression.

I think we should welcome AI art and view it positively. First, through its computational power, AI can explore an extensive range of styles, techniques, and concepts. Also, it can surpass human limitations by creating art at incredible speeds and developing entirely new kinds of artistic expression. For these reasons, I can't wait to see more works of art produced by AI.

FURTHER READING

pp. 122 – 123

BEFORE READING

Sample Answer Yes, I have. I was impressed because it produced very interesting sounds.

AFTER READING

- 1) a
- 2) stringed, undergone, fascinates

LESSON

5

More than Meets the Eye

BEFORE READING 1

pp. 126–127

B Vocabulary Preview

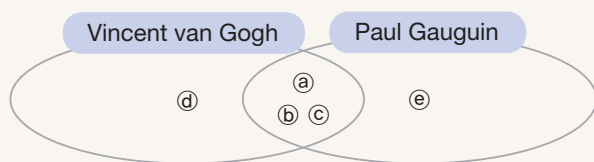
- 1) b 2) a 3) a 4) b 5) b

C Advanced Reading Strategy

- Identifying expressions for similarities and differences

(A) Both (B) In contrast (C) differed

- Categorizing traits



READING 1

pp. 128–132

- a job that is important but rarely appreciated, and often even unknown
- the latter: the people ... who thrive in the spotlight
the former: the quiet yet determined workers ... to function
- 1) visible: the pilot / the crew operating the plane / the author of a book or article
2) invisible: traffic controllers / airplane mechanics / the people who edit and proofread their work
- 1) W 2) A
- The people who were offered money tended to have ... who weren't offered money.
- focus on honing their skills and fulfilling their potential through ethical, high-quality work

AFTER READING 1

p. 133

A Organization

- | | | |
|----------------|---------------|-------------|
| (1) modern | (2) spotlight | (3) skilled |
| (4) unseen | (5) admired | (6) perform |
| (7) motivation | (8) perfect | |

B Details

- 1) F 2) T 3) T 4) F

Q Leading to the BIG QUESTION

Sample Answer Sanitation workers, security guards, and stage directors are some examples of jobs that are important in our society but are not given enough recognition.

BEFORE READING 2

pp. 134–135

B Vocabulary Preview

- 1) a 2) c 3) a 4) c 5) b 6) c

C Advanced Reading Strategy

- Identifying the main idea

c

- Identifying referents

③

- Identifying transitions or conjunctions

(A) however (B) Furthermore (C) Although

READING 2

pp. 136–140

- disgusted, regrowth
- 1) T 2) F
- 1) our brains 2) the internet
- Furthermore, Therefore
- the mycorrhizal network
- 1) T 2) F

AFTER READING 2

p. 141

A Organization

- 1) b, c 2) a, e 3) f 4) d

B Details

- 1) T 2) F 3) F 4) F

Q Leading to the BIG QUESTION

Sample Answer One feature is that fungi stabilize carbon in soils. Another feature is that they can create networks of impressive sizes.

LANGUAGE SKILLS

pp. 142–143

EXPRESSIONS

Practice 1

- 1) b 2) a 3) e 4) c 5) d

Practice 2

- 1) break down 2) branch out 3) take pride in

Practice 3

- 1) rot 2) worshipped 3) prevail
4) extract 5) exceptional

GRAMMAR

p. 132 Without invisibles, society would collapse.

p. 136 Without fungi, regrowth would be much more difficult.

Practice 1

- 1) Without [But for] his research, we would still be at a loss.
- 2) Without [But for] this map, I would not be able to find the bus terminal.
- 3) Without [But for] their generous donations, the library would not be open now.
- 4) Without [But for] your guidance, the project might not be running so smoothly.
- 5) Without [But for] my commitment to fitness, I wouldn't spend as much time at the gym.
- 6) Without [But for] the zoo's safety measures, some animals' aggressive behaviors might harm other animals.

Practice 2

- 1) Without 2) could go 3) would
4) Without 5) would not 6) would

WRITING

pp. 144–147

WRITE YOUR OWN

B Outlining

Sample Answer

• Interviewee's name: Ethan Wilson

1. Q: What is your role as an IT staff member?

A: I manage and maintain computer systems, networks, and software.

2. Q: What motivates you to continue your work?

A: My passion for technology and problem-solving motivates me.

3. Q: How do you feel about the contributions you make?

A: I feel proud that I help contribute to the technological infrastructure that students and staff at our school need.

4. Q: Have you had any memorable moments with students or staff?

A: Yes, there was a time when the network went down during an exam, and I managed to fix it quickly. The students were so relieved, and it felt great to be helpful at such a critical moment.

C Building Sentences

Sample Answer

1. He is an IT staff member who manages and maintains computer systems, networks, and software.
2. 1) During the interview, he said, "My passion for technology and problem-solving motivates me."
2) Mr. Wilson continued, "I feel proud that I help contribute to the technological infrastructure that students and staff at our school need."
3) When asked if he had any memorable moments with students or staff, he said, "Yes, there was a time when the network went down during an exam, and I managed to fix it quickly. The students were so relieved, and it felt great to be helpful at such a critical moment."

D Drafting

Sample Answer

In a heartwarming encounter, our school newspaper had the privilege of interviewing Mr. Ethan Wilson. He is an IT staff member who manages and maintains computer systems, networks, and software. Mr. Wilson's dedication goes beyond managing the school's IT systems.

During the interview, he said, "My passion for technology and problem-solving motivates me." Mr. Wilson continued, "I feel proud that I help contribute to the technological infrastructure that students and staff at our school need."

When asked if he had any memorable moments with students or staff, he said, “Yes, there was a time when the network went down during an exam, and I managed to fix it quickly. The students were so relieved, and it felt great to be helpful at such a critical moment.”

Through our academic journey, let's not forget to express our gratitude to Mr. Ethan Wilson, whose hard work allows us to use computers and digital technology in school every day.

E Revising and Editing

- **Check-up 1.** Steeds said, “The twilight zone is ..., and regulating the climate.”
- **Check-up 2.** 1) She said, “I have [had] toast with jam for breakfast.”
2) The veterinarian said, “Your puppy needs to exercise to reduce excess fat.”

WRAP UP

pp. 150–151

B Writing Sample Answer

In a heartwarming encounter, our school newspaper had the privilege of interviewing Ms. Olivia Thompson. She is a school nurse who provides medical care and supports student health. During the interview, she said, “My passion for taking care of student health motivates me.” Ms. Thompson continued, “I feel proud to ensure that every student has access to necessary medical care.” Through our academic journey, let's not forget to express our gratitude to Ms. Olivia Thompson, who is making our school a better place each day.

FURTHER READING

pp. 152–153

BEFORE READING

Sample Answer I usually use commas to separate a non-restrictive relative clause from the rest of a sentence in writing. Also, I know that a comma can play many different roles in a sentence.

AFTER READING

- 1) a 2) b 3) b

SPECIAL LESSON

The Paper Menagerie

The Paper Menagerie

pp. 156–164

- 1 a
- 2 Sample Answer Jack might have been bullied by Mark and his friends at school.
- 3 F
- 4 b
- 5 flying back to campus in California
- 6 The ball of paper or Laohu
- 7 Chinese
- 8 lonely, happy

AFTER READING

p. 165

A Organization

d → e → f → c → a → b

B Details

- 1) F 2) F 3) T 4) T 5) T

C Think More

Sample Answer What he might regret the most is that he refused to talk to his mother in Chinese or that he squeezed the life from the paper animals she made for him and put them away.

LESSON

3

Making Choices

BEFORE READING 1

p. 68

A Topic Preview

W: In a strong wind, a hot air balloon is being carried away. You know that if even one more person hangs onto the rope, the chances of everyone surviving increase. However, as the balloon gets further from the ground, the thought grows stronger that if you let go of the rope now, you can survive. In this situation, what do you think you would do?

PROJECT

p. 90

STEP 1

M: STORY 1. The King Has Donkey Ears

Once upon a time, there was a king who had a secret: His ears were big and long, and they looked just like the ears of a donkey. He wanted to keep them a secret, but there was one person who knew about them. It was the craftsman who made the king's crown. As the years passed, the craftsman found the weight of the secret increasingly difficult to bear. One day, he went into the bamboo forest and shouted, "The king's ears are donkey ears!" From that day forward, whenever the wind blew, people could hear, "The king's ears are donkey ears!" echoing from the bamboo forest. When the king found out about it, he demanded that the bamboo forest be destroyed. But it was already too late. Everyone in the country had learned the king's secret. One of the king's loyal servants said to him, "There is no reason to be ashamed. Those ears are a sign from heaven that you should listen to your people." The king took the advice to heart. He uncovered his ears and started to listen to the needs of his people. From that day on, he was praised and respected by all his subjects.

W: STORY 2. Ring of Gyges

One day, Gyges, a young shepherd in the service of the King of Lydia, was tending his flock during a violent storm. An earthquake occurred nearby, and it opened a mysterious crack in the ground. Venturing into it, Gyges discovered the body of a giant with a golden ring on its hand. Taking the ring, Gyges returned to the surface. To his astonishment, he found that twisting it on his finger rendered him invisible. At a gathering of the king's shepherds, Gyges tested his newfound power and disappeared from view. He realized that he could remain unseen even to the keenest observer. Using his ability to vanish at will, Gyges sought a place at the royal court. There, he charmed the queen, ultimately seducing her. With the power to remain undetected, they conspired to murder the king and seize control of the kingdom.

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	Reading 2	Adapted from https://sougwen.com/ https://www.washingtonpost.com/business/2020/11/05/ai-artificial-intelligence-art-sougwen-chung/
	Further Reading	Adapted from https://www.igbf.kr/DataFiles/App/PDF/Geomungo_eng.pdf https://www.earticle.net/Article/A292546?mode=pc https://www.nplug.kr/black-string
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IMAGES

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