

Lesson 6

My Promise with Mother Nature



Before You Begin

Watch how humans in the modern world are irreversibly impacting the environment.



Lesson Overview

Theme 환경 보호 / 자원 절약

- L & S** 환경 문제와 자원 절약 방법에 대해 듣고 말한다.
- R** 기업형 축산업이 환경에 끼치는 영향에 대한 글을 읽는다.
- W** '물 발자국'을 소개하고 물 절약을 독려하는 기사를 완성한다.

Self-check

Check if you know the expressions below.

유감 표현하기

☐ I'm sorry to hear that.

능력 여부 묻기

☐ Are you good at taking care of earthworms?

Compare the structural differences between the sentences on the right and those below.

- **Two thirds** of the water is used for other purposes.
- **People say that** livestock produces more manure.

• Listening & Speaking •

유감 표현하기 **That's a pity!**

능력 여부 묻기 **Do you know how to** take care of earthworms?

• Language Structures •

- About **one third** of the world's fresh water **is** used for meat production.
- Livestock **is said to** produce 130 times as much manure as humans.

Plan Ahead Skim the pages that follow and write about what you expect to learn in this lesson.

- I will learn about _____.
- The title of the part that looks most interesting is _____.

유감 표현하기 That's a pity!

Get Ready >>

What do you think is the most serious problem?

- ☐ water pollution
 ☐ global warming
☐ endangered species
 ☐ _____
 (your own)

A Listen

1 Which program did the girl most likely watch?

INTERNATIONAL GEOGRAPHIC BROADCASTER		
		
6-7 p.m.	7-8 p.m.	8-9 p.m.
a Wonders of Marine Life	b Plastic Recycling Campaign	c Plastic Waste in the Oceans

2 Why was the tortoise named “Lonesome George”?

- a He was alone when he was first found.
 b A scientist named George discovered him.
 c He was raised by a man named George.

B Speak Out

Talk with your partner about each case below.

- A Look at this article. It says **chimpanzees will soon go extinct**.
 B **That's a pity!** I guess it's because of **overhunting by humans**.
 A You're right. We should take actions now.



- people on the Marshall Islands in the Pacific can no longer live there
- rising sea levels caused by global warming



- large areas of the Amazon forests are disappearing every year
- careless clearing of forests to get resources

능력 여부 묻기 Do you know how to take care of earthworms?

Get Ready»

Do you think you live a green life? How green is your way of living? Mark below.

1	2	3	4	5
poor			→ excellent	

A Listen

- What is the main topic of the dialog?
 - changes in earthworms' diet
 - the environmental effects of earthworms
 - food waste recycling with earthworms
- Which picture best illustrates the rainwater harvesting system mentioned in the dialog?

B Speak Out

Talk with your partner about ways to go green.

- A I seem to **use too much toner when printing**. Do you know how to cut down on it?
- B How about **turning on the toner-save mode on your printer**?
- A That's a good idea. I'll give it a try.

- pay too much for electricity
- use energy-efficient products



- waste too many plastic bags
- carry your own eco-bag with you



- use too much water at home

your own _____



Talk further Talk about things you do to save resources.

A Listen

Listen and fill in the blanks.

**KBA NEWS**

The earth's climate continues to _____, and this causes global sea levels to _____. Many coastal areas such as Venice and Florida are at greater risk of _____.

B Speak Out

Complete the following with your ideas. Then take turns delivering the news to your group members.

KBA NEWS

Good evening, I'm _____ from KBA news. Air pollution is getting worse, and its impact on our health is becoming more serious. That's a real pity! Experts say we can handle the matter by starting from small things like _____ and _____. Let's hear details from our reporter, Maggie.

Help Box

- walk short distances
- take public transportation
- use less air freshener products
- plant trees in gardens
- _____
(your own)

✓ Peer-check

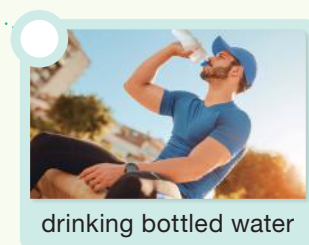
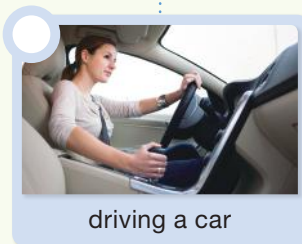
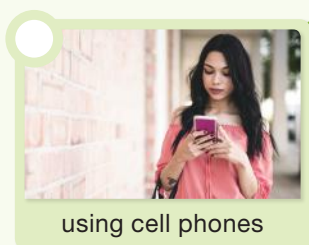
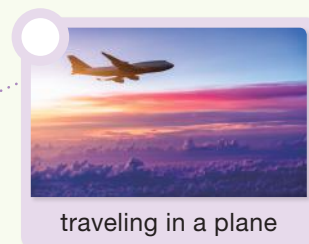
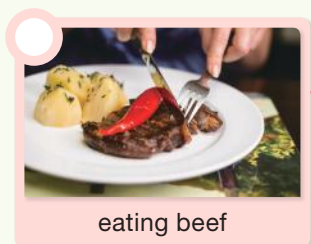
Exchange books and evaluate one of your group members' presentation.

Was the pronunciation clear?	/ 5
Was the news informative?	/ 5
Was the flow of the news report natural?	/ 5

Before You Read

A Get Connected

What do you think makes the earth warmer? Check all that apply.



Mini-talk

Which do you think contributes most to global warming? Talk with your partner.

B Vocabulary

Choose the best definition of the underlined word.

- 1 Manure helps trees and crops to grow well. ☐
- 2 I think it's cruel to raise pigs in confined pens. ☐
- 3 Due to the unexpected explosion, many miners suffocated. ☐
- 4 The heavy rainfall caused enormous amounts of runoff, which swept everything away. ☐

- a to be killed due to lack of air
c waste matter from animals

- b water that flows from land to streams and rivers
d narrow and surrounded by walls

Self-check Timed Reading

The more you read, the better you understand. Read the text (pp. 126-133) and record your reading time below.

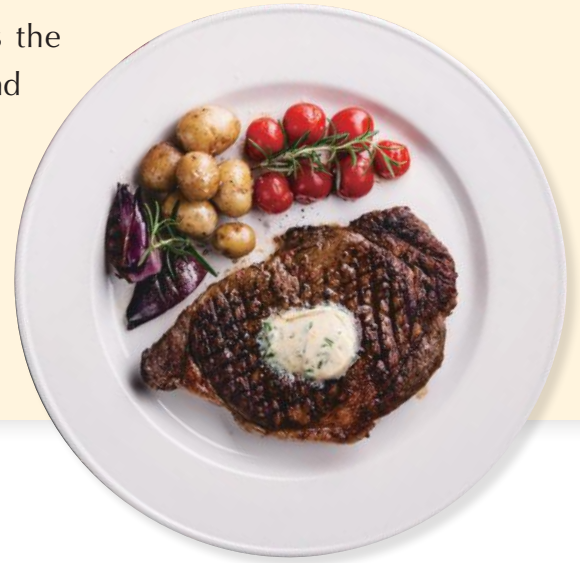
1st ____ min. ____ sec.

* While reading, check where your understanding fails.

Livestock and the Environment



Sold in stores everywhere, bacon may be a triumph of modern living, but there is a dark side to the bacon industry. Pigs are raised in confined pens and fed corn that has been grown in vast fields that stretch as far as the eye can see. To grow the corn, a huge amount of fertilizer is used, which eventually gets washed into rivers and streams. This affects the ecosystems of such bodies of water, and the fertilizer runoff ends up in fish and other marine life for kilometers around. This is the process necessary to get bacon onto our breakfast tables.



- livestock
- triumph
- confined
- fertilizer
- runoff
- turn to
- strain

Factory Farming That Dries Up Our Planet

Annual meat consumption has reached an average of over 40 kilograms per person globally, and the demand is increasing. To meet growing demand, livestock industries have turned to large-scale “manufacturing” of meat in huge “factories.” Such a move, however, puts strain on the environment, in particular on the land and water resources of the earth.

Q1 What could be the title for the first paragraph?

a The Inconvenient Truth about Your Bacon

b How to Avoid Bacon for Breakfast

Q2 What will the paragraphs in the next page deal with?

a the ways to promote meat consumption

b the environmental effects of factory farming

Every year, over one billion tons of grain is consumed by farm animals. More than two thirds of all agricultural land is used to raise grains and vegetables for livestock while merely eight percent of the agricultural land is used to grow food for direct human consumption.

- 5 Moreover, about one third of the world's fresh water is used for meat production, which cuts into the supply of water for humans. The bed of the Colorado River in the U.S. is expected to dry up soon; too much water has been drained from the river as neighboring farms need to grow feed for cows. In short, a large portion of our natural resources are used for meat production.

- consume
- supply (*n.*)
- drain

Reading Strategy

Reading Critically

When you read an argumentative text, evaluate the author's point of view before you accept it as true. While reading the text, check parts that raise questions for you. (→ Q4)

source: Food and Agriculture Organization of the United Nations (2006) *Livestock's Long Shadow: Environmental Issues and Options* / <https://woods.stanford.edu> / <https://www.ncbi.nlm.nih.gov>



Q3 Underline the sentence that summarizes the main idea of this page.

Q4 **How about you?** Do you think it is a problem that more land is used for meat production than for direct human consumption? If yes, why? If no, why not?

From Land to the Ocean

- inevitable
 - extend
 - result in
 - manure
-
- properly
 - ecosystem

As more people want more meat, it is inevitable that land for livestock be extended to meet the demand. More meat production results in increased water pollution in both rivers and oceans since cows and pigs eat a lot and at the same time produce a lot of manure.

Livestock is said to produce 130 times as much manure as humans ⁵ in the U.S. When not managed properly, the manure and water containing it cause severe harm to the ecosystems of rivers and oceans. When rain comes, manure is washed away with the runoff, polluting nearby soil, streams, and rivers all the way until it reaches the ocean.

The Gulf of Mexico is known as one of the biggest habitats for a variety of marine creatures.



- Q5 What can you infer from the first sentence of this page?
- The author suggests that livestock farms should extend their areas to meet the demand.
 - The author believes that the increasing meat demand is responsible for the extended areas of livestock farming.

The brightly colored waters in this satellite picture indicate the areas of the dead zone that formed in the Gulf of Mexico in 2002.

(source: Sediments in Gulf of Mexico (2002), NASA)



Once it reaches the ocean, it contributes to the formation of what is known as a “dead zone.” Dead zones occur around the world, primarily near areas where heavy farming and industrial activity spill nutrients into the water. Concentrated levels of nutrients in water result in the blooming of algae, which are simple forms of water plants. When too many plants grow in the water, they use up the ocean’s oxygen, suffocating other plants and animals. The largest known dead zone occurred in the Gulf of Mexico in 2002, when runoff from the Mississippi River caused over 20,000 square kilometers of the Gulf area to become uninhabitable for oceanic life.

- contribute to
- nutrient
- concentrated
- bloom
- oxygen
- suffocate
- uninhabitable

* alga (*pl.* algae): 해조류
[ælgə] [ældʒi:]

Q6 Complete the cause-effect relationships that lead to the formation of a dead zone.

[manure washed away with _____ → soil, streams, and rivers getting polluted on its way to the _____
→ blooming of _____ in sea water → low levels of _____ → suffocation of marine life]

The Unknown Contributor to Global Warming

- atmosphere
- methane [méθein]

- be responsible for
- emission

The increasing demand for meat and meat products brings trouble not only to the natural resources under our feet but also to those overhead in the atmosphere. Even though carbon dioxide is a major cause of global warming in the air, recent research has shown that methane can have a greater impact.

5

Methane is responsible for about 16 percent of global greenhouse gas emissions. That doesn't seem like much, but experts warn that methane is over 20 times as powerful as carbon dioxide in trapping the sun's heat in the atmosphere. Where does all the methane come from?

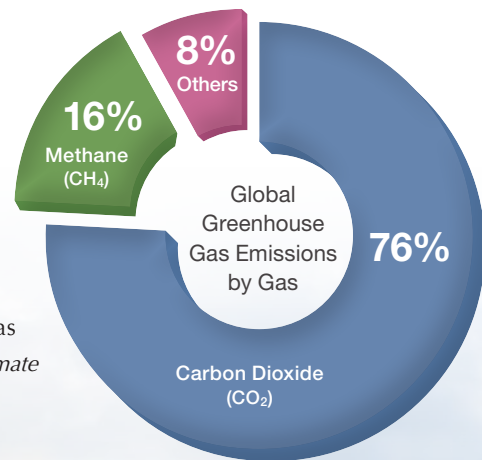


Figure 1 Global Greenhouse Gas Emissions by Gas
(source: *CLIMATE CHANGE 2014: Mitigation of Climate Change* (2014))

- Q7** (1) More methane is emitted into the atmosphere than carbon dioxide. [T / F]
(2) Methane is a greenhouse gas that is deadlier than carbon dioxide. [T / F]

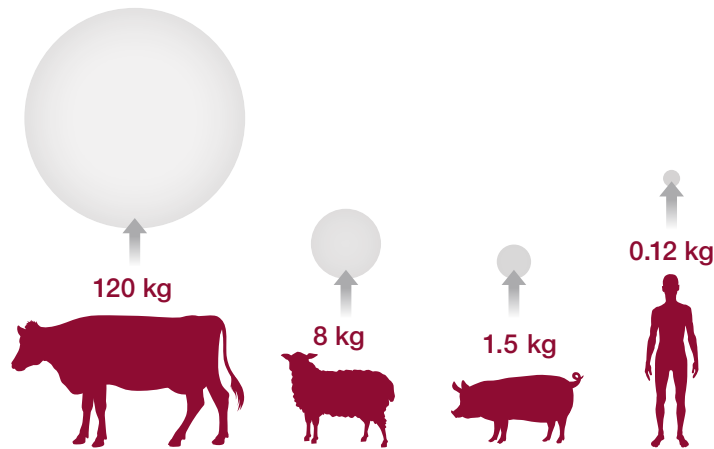


Figure 2 Methane emissions in weight per animal/human per year
(source: NASA's Goddard Institute for Space Science (2006))

- Methane Emissions in Weight -

Much of the methane in the atmosphere is released naturally in damp areas. However, about 15 percent is emitted by the growing number of cows and pigs. Statistics vary about the exact amount of methane emitted by a cow, but it is generally agreed that a single cow
 5 releases up to 120 kilograms of methane per year, more than any other domestic animal. That is about 1,000 times the amount of methane emitted by an average person.

- release
- damp
- emit
- statistics

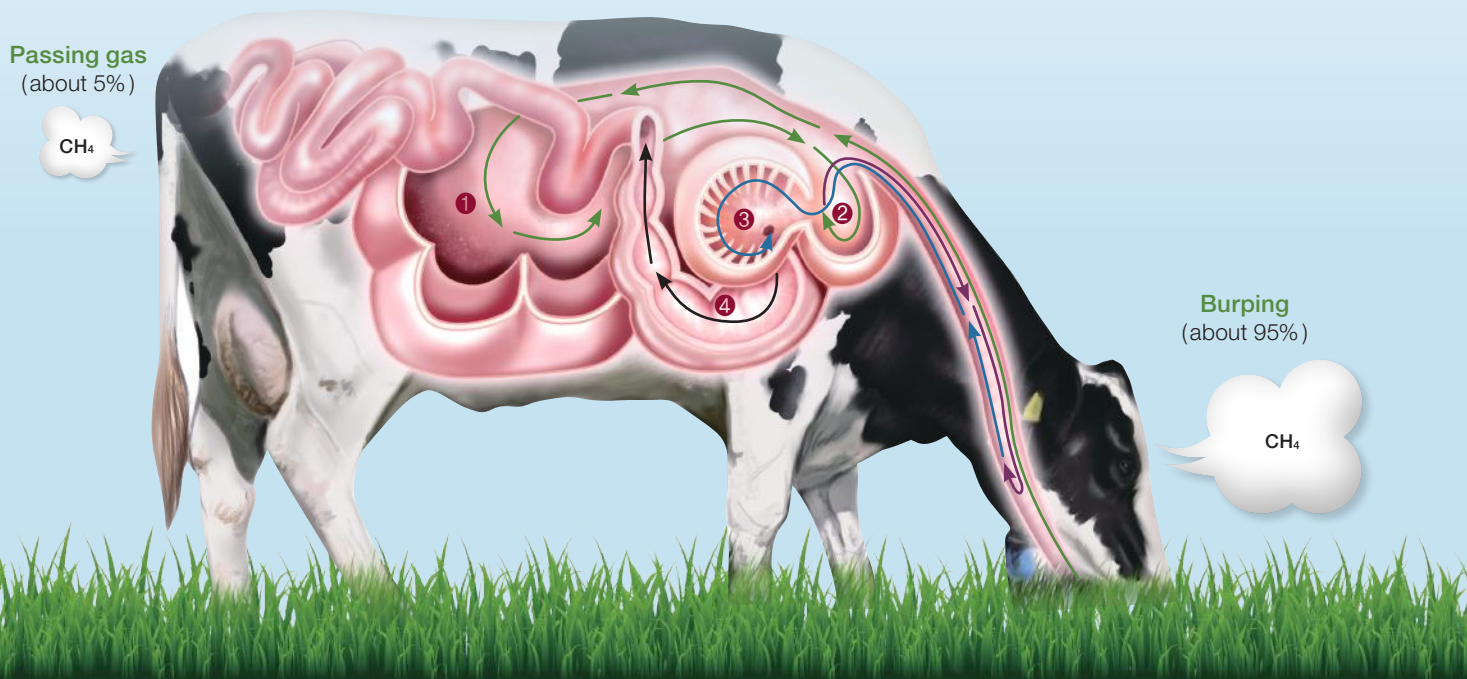


Q8 **How about you?** Do you think cows are responsible for global warming? If yes, why? If no, why not?

- digestive
- break down
- burp
- pass gas
- give off

Methane is produced in a cow's special digestive system. A cow has a stomach with four rooms to break down the food it eats. The food digested in the first two rooms is sent to the mouth to be chewed again, and then sent to the third and the fourth rooms. A cow does this for about eight hours on average every day during which it keeps burping and passing gas, giving off methane into the atmosphere. Imagine the enormous amount of methane emitted from the burping mouths of 1.5 billion cows on six continents.

Figure 3 This picture shows how the food travels within a cow's digestive system. About 95 percent of methane emitted by a cow comes out from its mouth as burp.



Q9 What does *this* in line 4 refer to?

- a the digestion process b burping and passing gas

Q10 What does the author try to stress through the last sentence of this page?

- a the complexity of cows' digestive mechanism b the seriousness of methane emissions by cows



The world's livestock industries are growing at an unprecedented rate due to population growth and rising incomes. The world's population is predicted to reach around nine billion by 2050. Koreans ate an average of 11 kilograms of meat per person in 1980, but the average increased to 51 kilograms in 2014. As people prefer increased animal protein in their meals, our land, rivers, and oceans are bound to suffer with no solution in sight. Maybe it is time we give our diets a second thought.

- unprecedented
- protein [próuti:n]
- be bound to
- give a second thought



✓ Self-check

- | | |
|--|-----|
| I understand the author's point of view. | / 5 |
| I kept a balanced view of the subject. | / 5 |

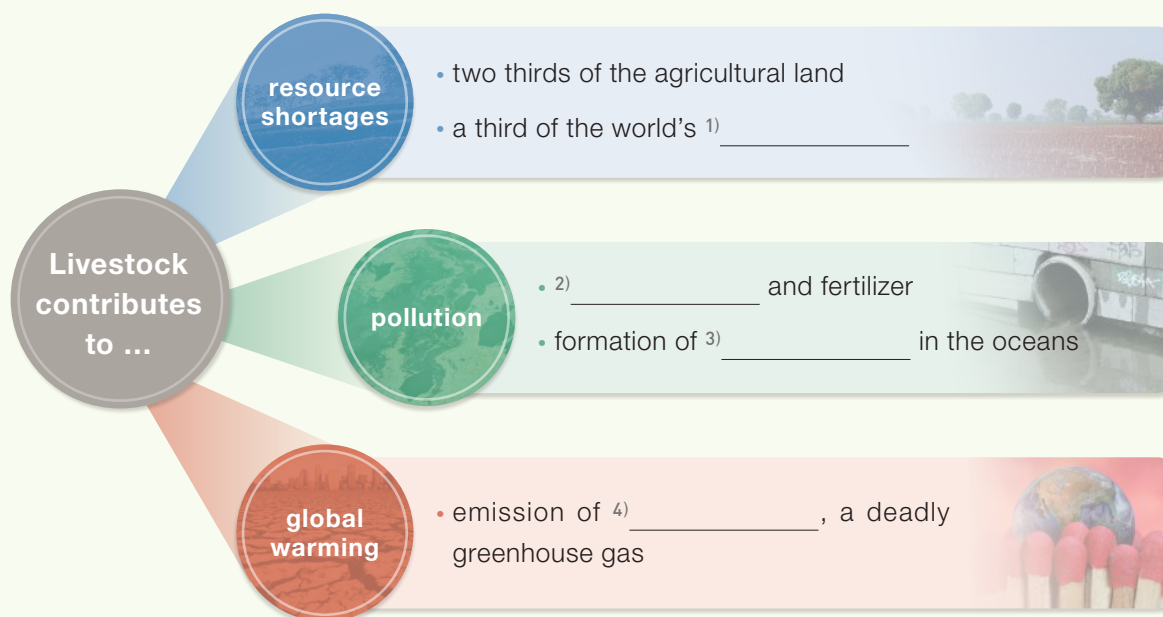
- Read the text again and record your reading time.
2nd ____ min. ____ sec.
- **Read More!** Go to page 151.

Q11 What is the author's attitude toward the livestock industry?

- a defensive b critical c positive d sympathetic

After You Read

- A** Factory farming of livestock has negative impacts on the environment. Complete the following.



WORDS

manure

fresh water

methane

dead zones

- B** Check T for true and F for false.

- The growing global demand for meat leads the livestock industry to depend on large-scale farming. T ☐ F ☐
- Less agricultural land is used to grow food for livestock than for humans. T ☐ F ☐
- Dead zones occur when there are too many small plants living in the water and the oxygen level is too low. T ☐ F ☐
- Carbon dioxide is as strong as methane in trapping the heat from the sun. T ☐ F ☐



C Growing demand for meat creates many problems. What is your opinion on the following statement? State your position and write your ideas.



We Should Stop Eating Meat

Agree

- Eating meat eventually contributes to pollution and global warming.
- There are many sources of protein other than meat.

• _____
your own

Disagree

- Meat is the main source of protein in people's diet.
- Meat tastes better than vegetables.

• _____
your own



D Find a partner with a different opinion from you. Then talk with your partner about whether we should stop eating meat or not.

Example

A I strongly believe that we should stop eating meat. Eating meat eventually contributes to polluting the environment.

B That's a good point, but meat is the main source of protein, especially for children.

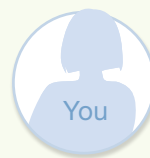
A You may be right. However, there are many other sources of protein such as fish.

⋮

I believe that we ~



I see your point, but ~



Speaking Tips showing disagreement

That's a good point, but ~ / You may be right, but ~ / I see your point, but ~ / I think it'd be better to consider ~

Language Focus

A Word Forms



Complete each sentence with a word from above. Change the form if necessary.

- 1 The light and heat that the Sun _____ make the Earth a suitable place for life.
- 2 Drinking too many soft drinks hurts your health because they _____ a lot of sugar.
- 3 The control signals from a separate machine are _____ to the satellite orbiting overhead.
- 4 Reading books is the most efficient way to _____ information and increase vocabulary.

B Expressions in Use

- **be responsible for** to be blamed for something or to cause something to happen
- **give off** to release something such as smoke, a noise, a fragrance, etc.
- **be bound to** to be certain to do something or to be likely to happen

Complete each sentence with an expression from above. Change the form if necessary.

- 1 When some food goes bad, it _____ an awful smell.
- 2 He _____ acknowledge his guilt because there is abundant evidence.
- 3 Smoking _____ several diseases such as lung cancer and heart disease.

✓ **Self-check** Make your own sentence, using one of the expressions above.

C Grammar in Use

Point 1

- Merely **eight percent** of the agricultural land **is** used to grow food for direct human consumption.
- About **one third** of the world's fresh water **is** used for meat production.

cf. Two thirds of the **bread is** rotten. / Two thirds of the **apples are** rotten.

Find two grammatical errors in the conversation and correct them.

- A** Why are you wearing a hygiene mask?
B Why are you not? Half of my classmates wears one.
A Really? What for?
B To protect my throat. Haven't you heard about the micro-dust in the air?
A Yeah, I've heard that about fifty percent of the dust originate from abroad. It's time to take action.

Point 2

- Livestock **is said to** produce 130 times as much manure as humans.
(→ **It is said that** livestock produces 130 times as much manure as humans.)
- The world's population **is predicted to** reach around nine billion by 2050.
(→ **It is predicted that** the world's population will reach around nine billion by 2050.)

cf. He is said **to have done** many great things. → It is said that he **did** many great things.

✓ **Self-check** Skim through page 151 and underline the sentence with the structure above.

Reshuffle the words in parentheses to complete each conversation.

- 1 **A** Why do many Koreans hate the number 4?
B That's because the number 4 (believed / is / to / bad luck / bring) in Korea.
- 2 **A** Is it true that people in Korea consider General Yi Sunsin a national hero?
B Yes. He (known / have / to / devoted / is) his life to saving the nation.
A That's why there are many statues that honor him in Korea.

A Get Ideas

Look through the poster below and fill in the blank at the bottom.

SAVE IT BEFORE YOU NEED IT! 💧

Everything you eat or use requires water to be produced. You use much more water than you may realize. Just an apple uses up 125 liters of water!



Item	Weight/Volume	Water Footprint (Liters)
Potatoes	1 kg	287 ℓ
Coffee	125 mL	130 ℓ
Leather	1 kg	17,000 ℓ
Jeans	1 kg	11,000 ℓ
Apple	150 g	125 ℓ
Pizza	1 pizza	1,260 ℓ
Chicken	1 kg	4,300 ℓ
Beef	1 kg	15,400 ℓ

💧 The water footprint of a product is the total amount of _____ used in all stages of the production chain before it gets to you. It was introduced to help people reduce their excessive consumption of products and thus their water spending.

<source: www.waterfootprint.org>

B Organize Ideas

Answer the following questions based on the information in the poster above.

- 1 Why was the concept of the water footprint introduced?
 - The water footprint was introduced to help people realize that everything they eat or use requires _____.
- 2 Suppose you threw away your old jeans and bought a new pair. How much water is consumed?
 - For the two pairs of jeans, over _____ liters of water is consumed.
- 3 How much water is needed to produce one kilogram of beef?
 - A kilogram of beef requires more than _____.
- 4 What would excessive consumption of products lead to?
 - It could lead to _____.

C Write

Write a newspaper article to raise people's awareness of the water footprint.

No. 25,196

THE GREEN PAPER

SEOUL, Tuesday, July 7th, 2020

Help Our Thirsty Planet!

by _____]

name



SEOUL, Korea – Few know that our daily consumption of food and products involves a huge amount of water. The water footprint of products was introduced to _____]

purpose
of water
footprint

To produce just one kilogram of beef, more than _____ of water is used. If you throw away your old jeans and buy a pair of jeans that are trendy nowadays, you end up consuming _____. If you eat _____, _____]

causes &
effects

Everyone should be aware of the water footprints of products they consume and keep in mind that _____. Every drop counts!]

conclusion

Writing Tips describing causes & effects

you end up ~ / it leads to ~ / it results in ~

✓ Peer-check

STEP 1 Exchange books and evaluate your partner's article. Leave comments where necessary.

Is the article convincing overall?	/ 5
Are the figures correct?	/ 5
Does the article conclude well?	/ 5

STEP 2 Revise your article based on your partner's feedback.



A Listen and answer the questions.

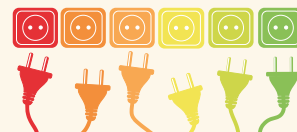
- 1 Why did the speaker choose this topic for her assignment?
 - ① Recent human efforts to protect the Galapagos Islands have failed.
 - ② The Galapagos Islands are where Darwin's theory of evolution was born.
 - ③ The unique creatures of the Galapagos Islands can be found nowhere else.
 - ④ A natural laboratory has been constructed for scientists in the Galapagos Islands.

- 2 Which of the following can be inferred from the dialog?
 - ① The city doesn't provide a battery recycling service.
 - ② The man is against the use of rechargeable batteries.
 - ③ The woman's clock currently runs on regular batteries.
 - ④ Neither speaker is aware of the danger of rechargeable batteries.



B Put the sentences in order and practice the dialog with your partner.

- 3
 - ☒ 1 I received my energy bill recently, and I almost cried.
 - ☐ I have no idea. I have to do something. Do you know how to save energy at home?
 - ☐ That's a pity! Do you have any idea why you got such a high energy bill?
 - ☐ Why don't you switch off or unplug any devices you don't need?
 - ☐ That's a good idea. I should give it a try.
 - ☐ 6 A small action can make a big difference.





C Read the passage and answer the questions.

When rain comes, manure is washed away with the runoff, polluting nearby soil, streams, and rivers all the way until it reaches the ocean. (A) Concentrated levels of nutrients in water result in the blooming of algae, which are simple forms of water plants. (B) Once it reaches the ocean, it contributes to the formation of what is known as a “dead zone.” (C) When too many plants grow in the water, they use up the ocean’s oxygen, suffocating other plants and animals.

4 Put the sentences (A), (B) and (C) in the correct order.

5 What is the passage mainly about?

- ① how dead zones are formed
- ② the role of algae in forming dead zones
- ③ what happens when the oxygen level in water is low
- ④ the relationship between manure and rainwater



D Read the passage and write your answers.

The world’s livestock industries are growing at an unprecedented rate due to population growth and rising incomes. It is predicted that the world’s population will reach around nine billion by 2050. Koreans ate an average of 11 kilograms of meat per person in 1980, but the average increased to 51 kilograms in 2014. As people prefer increased animal protein in their meals, our land, rivers, and oceans are bound to suffer with no solution in sight. Maybe it is time we give our diets a second thought.

6 Fill in the blank to rewrite the underlined sentence.

The world’s population _____ reach around nine billion by 2050.

7 Fill in the blanks using the words in the passage.

_____ and _____ will result in the growth of the world’s livestock industries.

✓ **Self-check** Which question(s) did you miss?

Listening	Speaking	Reading	Writing
1	2	3	4
5	6	7	

What do you need to review?:

My Learning Log

Looking back at what I learned in this lesson will help me become a better learner!

Look through the Self-checks and Peer-checks, and rate your learning below.



My Learning

I have learned that livestock industry affects the environment in many ways.	☹️ ☹️ ☹️
I understand that we have to be aware of the value of limited natural resources.	☹️ ☹️ ☹️
Overall, this lesson motivates me to become more environmentally conscious.	☹️ ☹️ ☹️

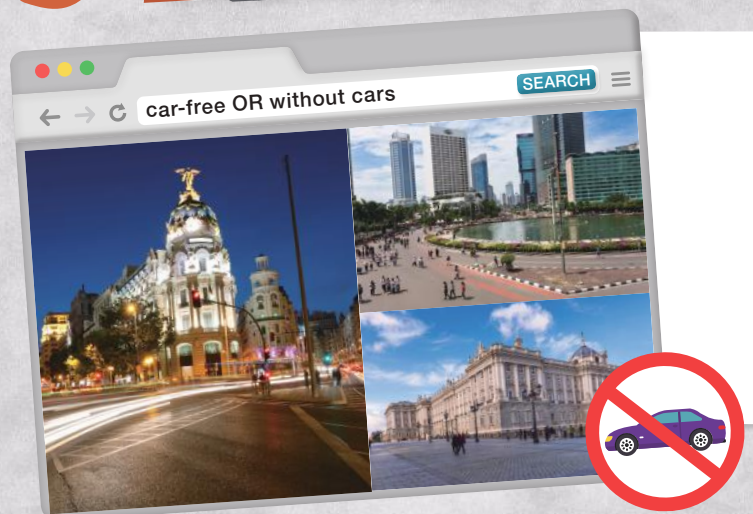
- ▶ What has changed the most in your attitude toward the environment after studying this lesson?
ex) *My own consumption patterns can have great impacts on the environment. I will make wise choices about what I eat and buy.*



My Attitude

Did I try to understand the various causes and effects in the text?	☹️ ☹️ ☹️
Did I try to keep a balanced view about the way the subject of the text is dealt with?	☹️ ☹️ ☹️
Did I listen carefully to my classmates during the activities?	☹️ ☹️ ☹️

- ▶ What will you do differently next time?
ex) *When I run into new information, I will try to get more details of the information through the Internet.*



100% energy self-sufficient



Where Samso Island, Denmark

What's special With its electricity generated by sustainable sources of energy, mostly by wind farms, the island is known as the world's first energy self-sufficient island. The wind farms are owned by the locals themselves, which makes this island truly the world's top green island.



A heaven for wildlife



Where Kangaroo Island, South Australia

What's special As the third largest island in Australia, the island has many national parks. It is internationally famous for its spectacular landscapes and amazing diversity of wildlife. Some 40,000 locals on the island live their lives in harmony with the wild animals and rare plants.



City _____ **Nation** _____

What's special _____



Internet Search Tips [OR Search](#)

When you want to find information that deals with X or Y, you can use OR between the search words.

ex car-free OR without cars

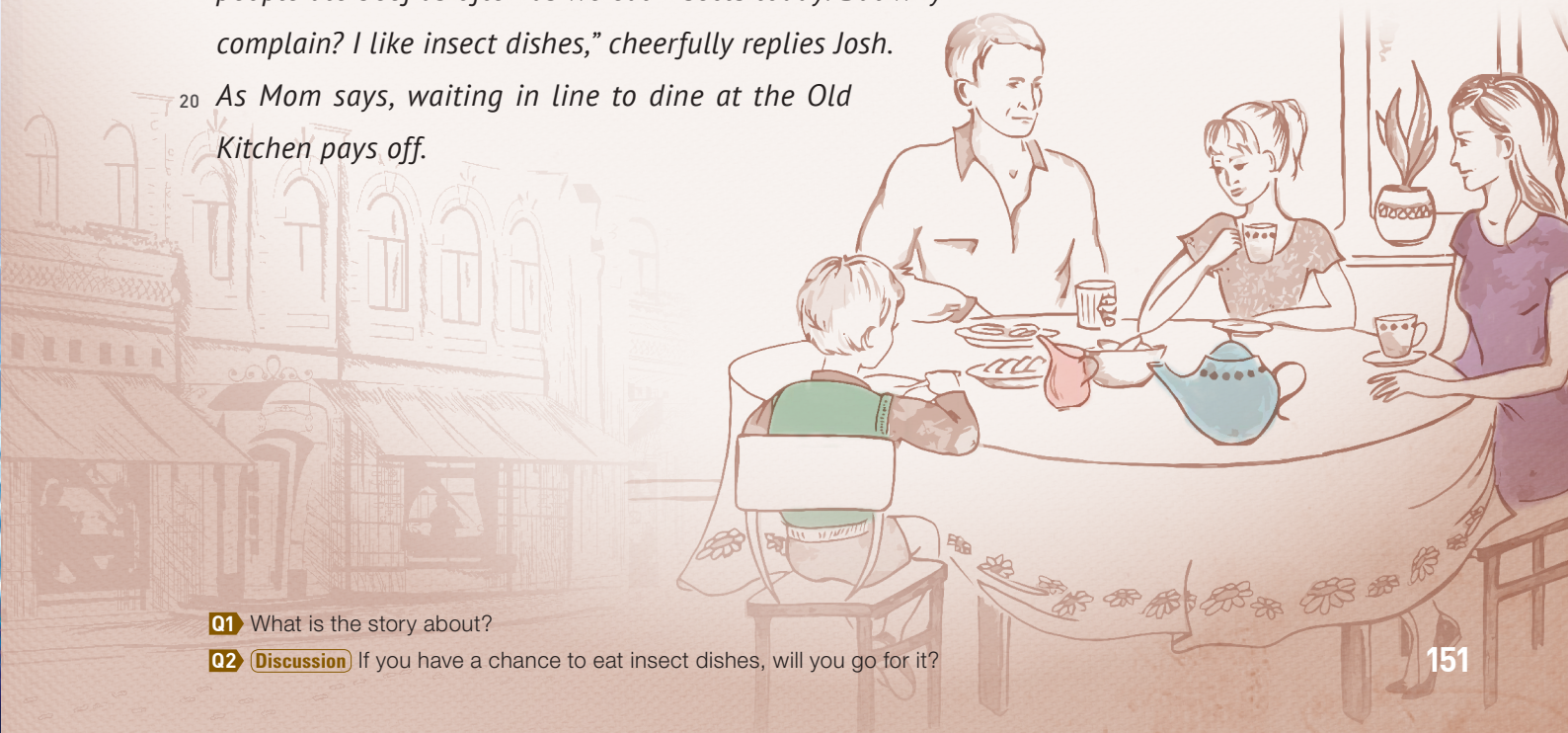
One Happy Day in 2050

On one Saturday in 2050, Amy's getting ready to go out for a family lunch to celebrate her 17th birthday. Excitedly, she gets into a self-driving car with her parents and her little brother Josh.

"I didn't think we'd have to wait in line," Josh complains. "This place is always
5 busy, but you won't regret waiting," Mom says. The line moves along smoothly, and before long, Amy's family steps through the door of the Old Kitchen. Josh immediately forgets his recent annoyance as he sees restaurant servers carrying plates that smell of delicious food. "Wow, this is nice. We're in a place where we are served by people, not robots. I feel more warmly treated when served by a human," says Amy.

10 "Hello? May I take your orders?" a waiter asks politely. "What's today's special?" asks Mom. "Well, today's special is ant fried rice. It's said to be high in protein and low in fat." "OK, we'll have two specials," says Mom. "Why don't we order some beef dishes as well?" asks Mom. "But Mom, beef is way too expensive, isn't it?" Amy says with concern in her voice. "I know, but today is special. I really miss the good old
15 days when beef was reasonably priced," says Mom. "Why is beef so expensive?" asks Josh with a puzzled look. "Raising cows is costly because global warming has resulted in a lack of natural resources," Dad explains. "I can't imagine the old days when people ate beef as often as we eat insects today. But why complain? I like insect dishes," cheerfully replies Josh.

20 As Mom says, waiting in line to dine at the Old Kitchen pays off.



Q1 What is the story about?

Q2 Discussion If you have a chance to eat insect dishes, will you go for it?