

英 語

問題冊子 2

注 意

「問題冊子 2」に印刷されている問題は、**2** から **4** までで、2 ページから 15 ページまであります。

2

次の対話の文章を読んで、あとの各問に答えなさい。

(*印の付いている単語・語句には、本文のあとに〔注〕がある。)

*Nao, Mark, and Yuta are high school students. They have finished their homework about *ecosystems, and they are talking about it.*

Nao: Mark, what did you write your report about?

Mark: I wrote about a problem in my hometown, New South Wales, Australia.

Nao: What problem?

Mark: The other day, my uncle who lives there sent me an email with a picture. Look at this picture he took of the swimming pool in his garden.

Yuta: Oh, cute koala! But why was the koala there?

Mark: The koala was drinking water from the swimming pool.

Yuta: What?

Nao: Usually, koalas live in forests, right?

Mark: Yes, they spend most of their time in *eucalyptus trees. Usually, koalas eat only eucalyptus leaves and also get water from them. They only leave a tree when they have to go to another tree. Koalas were never seen in the town before.

Yuta: Does this mean that koalas cannot get enough water in the forest now?

Mark: That's right. The forests were full of eucalyptus trees before, but now many trees are *damaged.

Nao: Why? Because of *climate change?

Mark: Yes. But this is not the only reason. Many of the eucalyptus trees were cut down.

Yuta: So sad. Koalas are losing their homes because of humans.

Nao: I heard that the number of koalas continues to *decrease.

Yuta:

Mark: Yes. In New South Wales, we have already lost about 25% of the koalas in the last 20 years and now there are only about 36,000 koalas. Scientists say that koalas in Australia will be *extinct in 30 years.

Nao: Oh, that is a serious problem. Forests have many kinds of living things. If we lose one *species, that means we also lose many other living things in the same ecosystem.

Mark: Yes. We have to think about how ecosystems work.

Nao: Right. Plants give animals and insects food. Plants also need animals and insects to live. Pollination is *essential for vegetables and fruits to grow, right?

Yuta: What is pollination?

Nao: When *butterflies, *bees, or some birds fly from one flower to another, they help vegetables and fruits to spread their *seeds.

Yuta: I think I understand.

Mark: Sure. Some animals eat insects which carry *diseases. Thanks to this, other animals are protected from those diseases.

Yuta: Oh, every living thing is an important part of the ecosystem. Well, what did you write about, Nao?

Nao: I wrote about an animal damaging an ecosystem.

Yuta: What did it do?

Nao: When I joined a tour to climb mountains, the tour guide showed me big and special *frogs.

Mark: Why were they special?

Nao: Originally, they did not live there. But people brought them to the area from other countries.

Yuta: Why did people bring them to that area?

Nao: Because people heard that the special frogs had the *habit of eating *certain insects. Those insects are bad for some plants. People wanted to reduce the number of those insects.

Mark: Were they able to do so?

Nao: No. The special frogs ate only some of the insects. Instead, the frogs ate different insects and small animals. Now the number of small animals has decreased.

Yuta: Oh, no. Well, what happened to the frogs?

Nao: The frogs have strong *poison, so there are almost no animals that try to eat them. Now the number of the frogs has increased.

Yuta: So, the frogs are damaging the ecosystem.

Nao: But I feel sorry for the frogs.

Yuta:

Nao: They didn't damage ecosystems before they were brought to the area. In the place the frogs originally lived in, some animals ate the frogs without becoming sick.

Yuta: I see.

Mark: Well, what did you write about, Yuta?

Yuta: I wrote about the Cat Project. When I visited an island, people who live there told me about the project.

Mark: Cat Project?

Yuta: Cats were brought to the island to reduce the number of *mice, but they became *wild in the forest. They are dangerous for birds, especially for birds people can see only on that island.

Mark: So, were the cats caught to protect the birds as a part of the project?

Yuta: Yes, they were.

Nao: What happened to them after that?

Yuta: The cats were *trained to live with people. Now new owners take care of the cats.

Mark: Wow, it's a wonderful project which protects both the birds and the cats.

Yuta: Right. I remember the things people on the island told me. "Don't take plants and animals away from the forest." "Don't leave anything in the forest."

Nao: The tour guide said so, too. When we do something, we have to think about living things in ecosystems.

Mark: That's true. When we lose a species, we can never get it back.

Yuta: People need to understand that their actions can damage ecosystems.

Nao: Yes. We should always remember that we are part of an ecosystem and should respect nature.

〔注〕 ecosystem 生態系	eucalyptus ユーカリ	damage 損なう
climate change 気候変動	decrease 減少する	extinct 絶滅した
species 種	essential 不可欠な	butterfly 蝶
bee 蜂	seed 植物の種子	disease 病気
frog カエル	habit 習性	certain ある
poison 毒	mice (mouse の複数形) ねずみ	
wild 野生の	train 訓練する	

〔問 1〕 本文の流れに合うように、 ～ の中に、英文を入れるとき、最も適切なものを次の中からそれぞれ一つずつ選びなさい。ただし、同じものは二度使えません。

- ア What do you mean?
- イ But this is not the end.
- ウ I didn't know that. Is that true?
- エ Are there any other examples?

〔問2〕 次の英文が本文の内容に合うように、の中に入る算用数字を答えなさい。

About koalas lived in New South Wales in Australia 20 years ago.

〔問3〕 本文の内容に合う英文の組み合わせとして最も適切なものは、下のア～シの中ではどれか。

- ① Mark took a picture of a koala drinking water from the swimming pool in the garden in his hometown.
- ② Koalas are losing their homes because climate change damaged eucalyptus trees and many of them were cut down.
- ③ Nao joined the tour, climbed mountains, and showed the tour guide many kinds of special frogs.
- ④ The number of the special frogs has increased because there are almost no animals that try to eat them.
- ⑤ People brought cats to the island because mice were dangerous, especially for birds in the forest.
- ⑥ Yuta heard that people caught birds to protect them because they are seen only on the island.
- ⑦ Nao remembers the things people on the island said, so she thinks we should not take plants and animals away from the forest.
- ⑧ It is very important for us to think about living things because our actions can damage ecosystems.

ア	① ⑤	イ	② ⑥	ウ	③ ④
エ	⑤ ⑧	オ	① ③ ⑥	カ	② ④ ⑧
キ	② ⑥ ⑦	ク	④ ⑥ ⑧	ケ	① ④ ⑤ ⑦
コ	② ③ ⑦ ⑧	サ	② ④ ⑥ ⑦	シ	③ ⑤ ⑦ ⑧

〔問4〕 次の文章は、本文の中で述べられている内容についてまとめたものである。

(a) ~ (d) の中に、それぞれ適切な**英語 1 語**を入れなさい。

Plants and animals (a) each other in an ecosystem. Plants give other living things food. Thanks to animals and insects, plants can spread their seeds. Some animals eat insects which carry diseases, and other animals are safe from those diseases. However, we see some examples of how ecosystems are damaged. In Australia, koalas have to (b) forests because they cannot get enough water there. Frogs with a strong poison were taken from another ecosystem to reduce the number of insects. Now they are damaging the ecosystem. Cats were also damaging the ecosystem of an island. However, because of the (c) people started, not only the birds but also the cats are protected. We should not (d) that we belong to an ecosystem and have to respect nature.

3

次の文章を読んで、あとの各問に答えなさい。なお、[1]～[8]は段落の番号を表している。
(*印の付いている単語・語句には、本文のあとに〔注〕がある。)

[1] What is laughing? Some people say that we don't have to learn to laugh. It's just something we're born with. Many babies laugh for the first time when they're 3 or 4 months old, long before they can speak. They laugh when they see something like their favorite toy, a pet, or their mother or father. When babies are *tickled, they laugh. The *laughter means they enjoy that very much. Laughing is a kind of language that babies use to communicate.

[2] A famous person once said, "Humans are the only animals that laugh." However, do you know that some *apes also laugh? When chimpanzees or gorillas are tickled, they make sounds. This means they are laughing. Of course, ⁽¹⁾【very / make / are / from / they / the sounds / ours / different】, but they're the beginning of human laughter. Some animals, such as dogs and dolphins, also use sounds to show that they're having fun during play. Like human babies, they communicate with each other by using sounds.

[3] One of the amazing things about laughing is that it does not happen for no reason. Let's try a simple *experiment. Try to laugh out loud right now. Or ask someone around you to laugh. ⁽²⁾We all know that it's difficult to do so. That's because we need reasons to laugh, and laughing is one of the ways to express our *emotions and ideas.

[4] In many cases, we laugh when we're with other people. We laugh to show that we agree with them. By laughing with them, we also show that we like them. We want to show that we have something to share. Laughing is a message that we send to others.

[5] Laughing is *social and contagious. Contagious means that something spreads quickly among a group of people. If someone starts to laugh, then another person will also start to laugh. When we laugh together, a positive *relationship is created. If we share a laugh, we'll both feel happier, better and more positive. Shared laughter is one of the greatest ways of keeping our relationships fresh and exciting. So laughing plays an important part in social relationships.

[6] Some scientists wanted to know how shared laughter would change a relationship between *strangers. So they did an experiment. In a room, *subject A watched some videos on TV. In a different room, subject B watched the same videos. While they were watching those videos, a *screen was showing what the other was doing through a camera. So subject A and subject B could see each other on the screen. When one subject laughed a lot at a video, the other subject also laughed a lot. When one subject laughed a little at another video, the other subject also laughed a little. After the experiment, both subjects felt positive emotions toward each other. They said, "We want to know more about each other because we laughed at almost all the same scenes. So maybe we have something *in common."

[7] There is another purpose for laughter. It works like medicine. Laughing makes our immune systems stronger. Some university teachers in the US did an experiment. They studied the stress levels and short-term memory of 20 healthy people in their 60s and 70s. One group was asked to watch a funny video for 20 minutes. This group was called “humor group.” The other group was asked to sit without talking, reading, or using their smart phones for 20 minutes. This group was called “non-humor group.” After 20 minutes, the subjects of both groups gave saliva samples and took short memory tests. Can you guess the results? When their saliva samples were studied, the “humor group” showed much lower levels of the stress hormone than the “non-humor” group. In addition, the “humor group” did better on short-term memory tests than the “non-humor group.” By laughing, we can improve our health.

[8] So what should you do in your everyday life? There are lots of things to do. First of all, smile. Smiling is the beginning of laughter, and smiling is also contagious. Many people these days are busy with their phones, and they do not pay any attention to their surroundings, but you should not look down at your phone. Instead, look up and smile at your classmates, your teachers and your parents. Maybe they will start smiling too, and then you will start talking. Also, if people are laughing and you hear them, move toward them and ask, “What’s so funny?” Sometimes humor and laughter are personal among a small group, but usually not. More often, people are very happy to share something funny because it gives them a chance to laugh again. Why don’t you spend time with fun, happy people? Maybe you do not think of yourself as a funny person, but still you can look for people who like to laugh and want others to laugh. Why don’t you bring humor into your life? Laughter is the key to happiness and is the best (4) to help us to enjoy our health.

[注] tickle くすぐる
 experiment 実験
 relationship 人間関係
 screen 画面
 study 研究する
 saliva 唾液
 surrounding 周囲

laughter 笑うこと
 emotion 感情
 stranger 他人
 in common 共通して
 short-term 短期間の
 sample サンプル

ape 類人猿
 social 社会性のある
 subject 被験者
 immune 免疫
 humor ユーモア
 hormone ホルモン

〔問4〕 本文の流れに合うように、(4)の中に**本文中の英語1語**を書きなさい。

〔問5〕 本文の内容に合う英文の組み合わせとして最も適切なものは、下のア～シの中ではどれか。

- ① Many babies start talking before laughing when they see their favorite things because they want to say that they enjoy those things very much.
- ② Animals, such as dogs and dolphins, try to communicate with human babies while they are having fun together during play.
- ③ We often laugh as a way of communicating that we like or agree with other people when we are together.
- ④ If you share a laugh together with other people, a positive relationship is created and you want to know more about them.
- ⑤ The “non-humor group” used their smart phones for 20 minutes before the short-memory test, so they did better than the “humor group.”
- ⑥ The “humor group” showed less stress hormone than the “non-humor group” though both groups watched videos in the experiment.
- ⑦ When you hear the sound of laughing, you need to ask what is so funny before moving toward it because laughter is a personal thing.
- ⑧ If you are not a funny person, you should spend time with people who don't like to laugh and want others to laugh.

ア	① ③	イ	② ⑤	ウ	③ ④
エ	④ ⑥	オ	⑤ ⑦	カ	① ② ⑤
キ	② ④ ⑦	ク	② ⑥ ⑧	ケ	③ ⑤ ⑥
コ	④ ⑦ ⑧	サ	① ③ ④ ⑧	シ	② ③ ⑤ ⑥

- 4 次の文章を読んで、あとの各問に答えなさい。なお、[1]～[8]は段落の番号を表している。
(*印の付いている単語・語句には、本文のあとに〔注〕がある。)

[1] Many of the things we use in our homes and at school need electricity. But do you know when and where people began to use electricity in Japan? In 1878, electricity was first used in Tokyo when a light was turned on there. In those days, electricity was not well known to people. Electricity was usually used for light, and slowly began to be used for other things. Now, in our daily lives, we not only *depend on electricity but also think it will always be there when we need it. When we open the *refrigerator, we think food will be cold. When we need to talk to someone on the phone, watch TV, or even use the washing machine, everything works because of electricity. But how did people discover electricity and find ways to use it in their daily lives?

[2] In the past, people all over the world were very interested in lightning, the bright light in the sky caused by electricity. In fact, some people ⁽¹⁾ how / that kind / use / thought / energy / about / of / to in their lives. In the 18th century, the *path to the everyday use of electricity first began to take shape. In 1752, an American did an *experiment with a key and a *kite and showed that lightning and electricity are connected.

[3] Now we know that lightning happens when static electricity moves from one place to another. When electricity does not move and stays in one place, it is known as static electricity. Why does static electricity happen in the rain? When small pieces of ice move up and down within rain clouds and *rub against each other, static electricity is created. At that time, the small pieces of ice get *positive or *negative electric charges. Electric charges are the *amount of electricity on things. When rain clouds with more positive charges touch other clouds with more negative charges, *electrons move from the clouds with more negative charges into the clouds with more positive charges.

[4] We see this kind of static electricity in everyday situations. It even gathers on our bodies.

Let's look at an example.

(3)

Electricity in lightning happens in the same way.

[5] Here is a simple experiment you can do to see how static charges work. Prepare a balloon, some very small pieces of paper, and a wool blanket. Keep the balloon in the air over the pieces of paper. Nothing will happen. Now, rub the balloon over the wool blanket for a short time. Then, keep the balloon in the air over the pieces of paper again. This time, the pieces of paper will be pulled to the balloon and continue to *stick to it.

[6] Why did that happen? Before the experiment, the balloon and the paper *respectively had the same amount of positive and negative electric charges. So the balloon did not pull the pieces of paper and also did not push away the pieces of paper. By rubbing the balloon on the wool, some electrons moved from the wool to the balloon. The wool now has negative charges, and the balloon has negative charges. When you now put the balloon close to the pieces of paper, the balloon and the papers move toward each other because the balloon now has more negative charges and the papers have a positive charge. There are *forces between charges like *magnets. This means that charges pull each other and charges push away from each other. Electricity happens when these kinds of forces work together.

[7] From the 19th century to the 20th century, by studying earlier findings about electricity, scientists began to understand the forces behind magnets and electricity, and this led to the *invention of technology which uses electricity. In 1825, an English scientist discovered a kind of magnet which is produced by the *flow of electrons known as an electric current. This is called an electromagnet. When electricity runs through a *coil of *wire, it works like a magnet. Through this finding, scientists understood how electricity works. In 1831, another English scientist discovered that magnets can create an electric current. By passing a magnet through a coil of *copper wire, he produced an electric current and created the first machine for producing electricity. It was really a great invention for humans. Almost all the electricity we use today is made by using magnets and coils of copper wire. In 1879, an American scientist was able to control an electric current to create a *bulb which produced light for more than 13 hours. In 1911, a scientist showed that electricity can move faster across wires at lower temperatures. Thanks to this finding, information and energy could be passed along wires. After that, many technologies were created that led to today's information systems.

[8] As we have seen, technology using electricity is one of the greatest inventions in human history. Electricity is now an important part of homes, businesses and *industries, and we cannot think of a world without it. But this is not true in some countries. About 15 percent of the people in the world do not have electricity. Engineers are now working hard to create ways for them to use electricity. In the near future, they will be able to use electricity for the first time. How will this influence their societies?

〔問4〕 [6] の段落の **a** ~ **d** の中に、次の①~④の単語を本文の流れに合うように入れたとき、その組み合わせとして最も適切なものは、下の中ではどれか。

- ① more ② less ③ similar ④ different

	a	b	c	d
ア	①	②	③	④
イ	②	①	③	④
ウ	①	②	④	③
エ	②	①	④	③

〔問5〕 本文の内容に合う英文の組み合わせとして最も適切なものは、下のア~コの中ではどれか。

- ① In 1878, when electricity was used for turning on a light in Tokyo, people already depended on electricity in their daily lives.
- ② An American did an experiment using a key and a kite and found that lightning was not connected with electricity.
- ③ When the balloon and the paper in the experiment have the same amount of positive and negative electric charges, the balloon pulls the paper.
- ④ In 1825, an English scientist discovered that an electromagnet is produced by an electric current and works like a magnet.
- ⑤ The machine for producing electricity was created by passing a coil of copper wire through a magnet, and it was a great invention.
- ⑥ In 1911, a scientist showed that electricity can move faster at higher temperatures, and this led to today's information systems.
- ⑦ The technology to use electricity is one of the greatest inventions in human history, but people in some countries do not have electricity.
- ⑧ About 15 percent of the people in the world are now working hard to create a way to use electricity.

ア	① ⑤	イ	② ④	ウ	③ ⑦
エ	④ ⑥	オ	④ ⑦	カ	① ③ ⑤
キ	① ④ ⑦	ク	① ⑤ ⑥	ケ	② ⑥ ⑧
コ	⑤ ⑦ ⑧				

〔問6〕 下の質問について、あなたの考えや意見を、40語以上50語以内の英語で述べなさい。「.」「,」「!」「?」などは、語数に含めません。これらの符号は、解答用紙の下線部と下線部の間に入れなさい。

What is an important invention in the history of science and technology, and why?

2
西

英

計