

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 14 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には、本文のあとに〔注〕がある。)

Takeru, Reiko, Cathy, and Koji are high school students. Cathy is from Australia. They are in the same class. They are talking about the homework for earth science after school.

Takeru: What should we do our research about? Do you have any ideas?

Reiko: How about sand? Cathy, I remember you showed us some beautiful pictures of your city. Can I see them again?

Cathy: Sure, Reiko. Here you are. This is a beach near my house.

Reiko: Thanks. Look at these pictures. It's beautiful white sand.

Cathy: I heard that you also have white sand beaches in Japan. I saw them on TV before I came to Japan.

Koji: You mean Okinawa? I've never been there, but yes, Okinawa is famous for its white sand beaches. But around here, the beaches have black sand.

Reiko: I wonder why some beaches have white sand like this and others black.

Cathy: That's interesting.

Reiko: Takeru, what do you think about doing our research about sand?

Takeru: Yeah, sounds interesting. OK, first, let's look for information at home and then we'll talk about it tomorrow.

The next day in the PC room.

Takeru: OK, everybody is here. Who wants to start?

Koji: Well, I did my research about the colors of sand because I'm interested in it. Around the world, there is sand of many different colors. White, black, red, pink and even green.

Cathy: Pink and green? Amazing.

Koji: I'll explain white sand. Some white sand beaches are made in a different way from most beaches. They are actually broken pieces of *coral. Also, there are some fish with strong teeth and they eat food on the coral but at the same time, they eat the coral itself, too. The fish cannot *digest the coral so the *grains of coral come out of their bodies as white sand.

Cathy: Wow. I didn't know that fish played an important part in making white sand.

Reiko: How about black sand beaches? How are they made?

Koji: They are made from pieces of rock from *volcanoes.

Cathy: Does Japan have many volcanoes?

Koji: Yes, Japan has more than 100 volcanoes, so there are many black sand beaches in Japan.

Cathy: Um . . . , can anyone tell me the difference between a rock and sand?

Takeru: I can. The difference is the size. If the *diameter is between 2mm and 0.06mm, it is called sand.

Koji: So when a rock becomes smaller, it becomes sand, right? How long does it take?

Takeru: It's hard to say. It takes a long, long time. By the way, I found out something interesting about sand.

Koji: What is it?

Takeru: Some sand dunes make sound.

Reiko: Sand dunes?

Cathy: Do you have them in Japan?

Takeru: Yes. One of the most famous sand dunes in Japan is in Tottori.

Cathy: We also have some beautiful sand dunes in Australia. But what do you mean some sand dunes make sound?

Takeru: When you walk on the sand or *slide down the sand dunes, you can hear some sounds.

Cathy: What kind of sounds?

Koji: Do all sand dunes and beaches make sound?

Takeru: One question at a time! Well, Cathy, they make different kinds of sound depending on the size and the speed of the sand grains. Some make *squeaking sounds and some make low, long sounds like a Japanese drum. And Koji, (2) . You see, clean sand is the key.

Koji: What do you mean?

Takeru: Clean sand is needed to make sound. When clean, round grains of sand *rub against each other, it makes a sound. When you wash a glass cup and rub it with your finger, it makes a squeaking sound. (1)-b

Koji: How many sand dunes and beaches make sound in Japan?

Takeru: In Japan, we only have singing beaches. About 50 years ago, there were about 60 beaches, but now there are about 20.

Cathy: Why?

Takeru: Because of environmental reasons. Now, the sand is not so clean anymore.

Cathy: It's so sad to know that there are less singing sand beaches.

Reiko: I agree. This is one of the problems about sand, and actually, I've found another one.

Koji: Another one? There's more?

Reiko: Did you know that sand is an important *resource in our daily lives?

Takeru: Are you serious? I don't use any sand. Of course, when I was little, I used to play with my sister at the park and make sand balls.

Reiko: A sand ball? I made lots of them. I really enjoyed it. Anyway, during my research I read ⁽³⁾a United Nations report.

Koji: There's a United Nations report on sand?

Takeru: What did it say?

Reiko: It said that sand is the second most used natural resource on earth after fresh water.

Koji: I know that water is important for people all over the world. Water is used for drinking, cooking, washing, and growing plants. But what do we use sand for?

Reiko: You see, sand is necessary for *concrete.

Cathy: And you need concrete to build houses, buildings, roads, bridges and things like that.

Reiko: Not only that. Sand is used to make PC screens, glasses, smartphones, *toothpaste and many other things.

Takeru: I didn't know that sand was used in so many things.

Cathy: I also read that United Nations report. It said that around the world, each person uses about 18kg of sand every day.

Takeru: That's a lot!

Koji: I understand that we use sand a lot but I still don't get what the problem is.

Reiko: The problem is that people all over the world use too much sand, so there is not enough sand.

Takeru: But there are sand dunes and *deserts all over the world, so I think there is a lot of sand.

Reiko: I thought so too. But only some types of sand can be used in the *construction *industry.

Koji: Do you mean that you cannot use desert sand for construction?

Reiko: That's right.

Takeru: Why?

Reiko: Because the grains of sand in deserts are too small.

Takeru: Then, where do people get sand for construction?

Cathy: It is usually taken from *quarries. However, people took so much sand from these areas that the sand is almost gone. Now, people are taking more sand from seas and rivers.

Koji: Is it OK to do that?

Reiko: For one thing, it influences the beaches themselves.

Takeru: In what way?

Reiko: When you take sand from sea floors, sand on the beaches slides into the ocean. Because of this, we are losing our beautiful beaches. Also, it influences living things, such as animals and birds.

Cathy: If we lose the beaches, what will happen to them?

Reiko:

Koji: That's too bad.

Cathy: People are beginning to realize the sand problem, so they are trying to do something about it.

Reiko: Right. Some people came up with the idea to make sand from glass bottles.

Koji: How?

Reiko: They made a sand machine. When people put a bottle in the machine, the machine breaks the bottle and it becomes sand.

Koji: What? Why?

Reiko: Because a glass bottle is originally made from sand. You can say it's recycling.

Cathy: Many scientists are trying to think of things to use other than sand, such as *ash. They are also thinking of other ways to recycle concrete.

Takeru: I've learned a lot today. Many people talk about the importance of water, trees, and clean air, but nobody says, "Save sand." What should we do about problems like this?

Reiko: I really feel that the earth's resources are limited. I think it is important to think about the environment.

Koji: I agree, and we should pay more attention to the problems around the world.

Cathy: We have to make the world a better place for our future.

Takeru: That's right. Let's share this in class tomorrow.

〔注〕 coral サンゴ	digest 消化する
grain 粒 ^{つぶ}	volcano 火山
diameter 直径	slide 滑る
squeak きしむ	rub こする
resource 資源	concrete コンクリート
toothpaste 歯磨き粉	desert 砂漠 ^{さばく}
construction 建設	industry 産業
quarry 石切り場	ash 灰

〔問1〕 会話の流れに合うように、本文中の空所 ～
 の中に、英文を入れるとき、最も適切なものを次の
ア～ク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 It's like that.
- イ I hope so.
- ウ That's not true.
- エ But I know how it works.
- オ I remember that.
- カ Of course it is.
- キ I have never thought about that.
- ク Of course not.

〔問2〕 会話の流れに合うように、本文中の空所 に英語を
入れるとき、最も適切なものは次の中ではどれか。

- ア I don't know the answer
- イ the answer is the same
- ウ the answer is no
- エ the answer is yes

〔問3〕 ⁽³⁾a United Nations report の内容として、最も適切なものは次の中ではどれか。

- ア There are many black sand beaches in Japan, because Japan has more than 100 volcanoes.
- イ People all over the world use more fresh water than sand as a natural resource.
- ウ Both fresh water and sand are used for the same purpose but people use fresh water more.
- エ Everyone in the world can only use 18kg of sand a day because we are using too much sand.

〔問4〕 会話の流れに合うように、本文中の空所 (4) に入る発言を自分で考えて **15 語以上の英語** で書きなさい。英文は二つ以上にしてもよい。なお、「,」「.」「!」「?」などは語数に含め^{ふく}ないものとする。また、I'll のような「'」を使った語や e-mail のような「-」で結ばれた語はそれぞれ 1 語と扱うこととする。

〔問5〕 次の〔質問〕に対する答えとして、本文の内容と合う最も適切なものは下の中ではどれか。

〔質問〕 Why is it important to save sand?

ア Because there were about 20 beaches 50 years ago, but now there are about 60 beaches.

イ Because we need sand to make concrete and things in our daily lives, but there is not enough sand.

ウ Because there are not enough sand dunes and deserts all over the world.

エ Because glass bottles are originally made from sand and we need sand to use sand machines.

〔問6〕 本文の内容と合っているものを，次のア～クの中から二つ選びなさい。

- ア Cathy lives close to a white sand beach in Australia and she has visited some white sand beaches in Japan.
- イ Reiko is interested in the white color of sand in Australia, so she asked Koji to do some research about it.
- ウ Takeru, Reiko, Cathy, and Koji looked for information about sand in the PC room together before going home.
- エ Some white sand beaches are made from broken pieces of coral, and some kinds of fish play an important part in making white sand.
- オ There is a clear difference between a rock and sand, and the difference is the color and the diameter.
- カ In some beaches and sand dunes, people can hear sound when they rub sand on a clean glass cup.
- キ We cannot use desert sand for construction because the grains of sand in deserts are too large.
- ク Some people think that the sand problem is serious, and many scientists are trying to think of using other things instead of sand.

3 次の文章を読んで、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。)

Just imagine. You have just arrived at the nearest station from your school. It starts raining suddenly. You realize you forgot to bring your umbrella. If you wait here until it stops raining, you'll be late for school! So you decide to go to school in the rain. Then a question comes to mind. "I don't want to get wet. Is it better to walk in the rain, or run?" Maybe some people have thought about this question, but how many of you have tried to find out the answer?

You can find questions like this in your daily life. To find out an answer, you need to make a *hypothesis and *prove that it is right. First, you collect information about your question by reading books. Then, you make a hypothesis from the information. Next, you collect more information and do some *experiments to check the hypothesis. Of course, your first hypothesis is often wrong. (1)-a In this way, you will be able to make a better hypothesis and get closer to the answer.

It sounds like a difficult *process, but you usually follow these steps in your daily life without knowing it. For example, imagine you want to get better grades in math. First, you should check how long you study math for in a week. You find out that the time for studying math is shorter than for other subjects. So your hypothesis goes like this. (2) ① You find out their way of studying math is different from yours. ② So you decide that time spent studying is not important and that you may get better grades for a different reason. ③ If you study math for a longer time, your grades will be higher. ④ However, though you do that, your grade doesn't get better. ⑤ In your class, some students are good at math, and you ask them how they study it. First, they try solving the problem. If they cannot answer the question, they look at the answer and try to understand how to solve it. Next, they try to answer the same question one more time. If they can't answer it again, they try to know what they do not understand by checking the answer. They repeat this process until they are able to answer the question by themselves. Here you realize that, until now, you have just written the answers to questions in your notebook before you have understood how to solve them. (3) So you think that if you change how you study math, your grades will get better. In this way, you can get closer to your goal.

One scientist said, "Humans are weak, so we often give up when we try to do something. (1)-b" In the past, *light bulbs didn't work for a long time, so the scientist decided to make better light bulbs. He thought about what to use for the *filament of the light bulbs, and tried almost everything. He even tried using *cotton thread and his friend's *beard! Of course, they burned easily and didn't work at all. One day, he found a *folding fan and used the bamboo of it for the filament. (4) ① to ② was ③ working for ④ kept ⑤ that ⑥ about

⑦ the light ⑧ he ⑨ surprised ⑩ learn】 two hundred hours. After about six thousand tries, he finally found the right one. When his friend asked him, “Why were you able to keep trying though you *failed so many times?” He answered, “I have not failed. I have just found that six thousand things don’t work well.”

Even now, scientists are trying to find the answer to many questions. Have you ever wondered why *zebras have *stripes? Scientists have worked on this question for over 150 years. They had a lot of ideas, but they couldn’t find a way to prove it. However, some scientists have recently found out that *horseflies can’t *land on zebras. When horseflies try to land on horses, they slow down before landing.

(1)-c

 The scientists thought that this happens because of the stripes and they have done some experiments to prove that their hypothesis is right. They covered the bodies of some horses in coats with zebra stripes, and they learned that horseflies only landed on the parts without the coats. They found out that horseflies can see the horse but can’t see the stripes until they get close to them. Because of that, they lose their *sense of distance and fail to slow down. Scientists are still working on this question, but maybe the zebras have stripes to protect them from horseflies. Now farmers are actually using this finding to keep horseflies away from their animals.

⁽⁵⁾Another scientist made *lithium-ion batteries and won the Nobel Prize. He was able to do so because he not only kept studying but also thought about the needs of society. When he was in elementary school, his teacher introduced him to an old book about science. The book taught him many things, such as why *candles burn. After that, he became interested in science and at university he decided to study *petrochemistry, a popular subject at that time. A university teacher there said it is important to learn *the fundamentals to come up with a unique idea. Later he realized the most important thing is to be *curious about everything and think about “why.” After graduating from university, he started working at a company. He did a lot of research and experienced a lot of difficulties. For example, in the first 10 years working at the company, he came up with three ideas but they were not successful. In addition, even after making the lithium-ion battery, it was many years until people started using it. People were afraid that it was not safe so they didn’t want to use it at first. However, he never gave up. After working on lithium-ion batteries for about 40 years, he finally won the Nobel Prize for improving the lives of many people.

From these stories we learn that it is important to be interested in something and to keep trying to reach your goals without giving up. So, the next time a question like the one about the rain comes to mind, what will you do? Here are two choices: you stop thinking about the question or you keep wondering and try to find the answer. The decision is yours.

〔注〕 hypothesis 仮説	prove 証明する
experiment 実験	process 過程
light bulb 電球	filament フィラメント
cotton thread 木綿糸 ^{もめんいと}	beard あごひげ
folding fan 扇子	fail 失敗する
zebra シマウマ	stripe シマ模様
horsefly アブ	land 着地する
sense of distance 距離感 ^{きょりかん}	lithium-ion battery リチウムイオン電池
candle ろうそく	petrochemistry 石油化学
the fundamentals 基本	curious 好奇心がある

〔問1〕 本文の流れに合うように、(1)-a ~ (1)-c
に次の①～⑥の英文を入れるとき、最も適切な組み合わせは、下のア～カの中
ではどれか。

- ① But you should not give up and should do the same question one more time.
- ② But you can learn something from it and you can make another one.
- ③ When they try to land on a zebra, they slow down in the same way.
- ④ You have to be strong when you decide to give up your dream.
- ⑤ The best way to be successful is to always try one more time.
- ⑥ But when they go near a zebra, they don't slow down at all.

	(1)-a	(1)-b	(1)-c
ア	①	②	③
イ	①	⑤	⑥
ウ	②	④	③
エ	②	⑤	⑥
オ	④	①	③
カ	④	②	⑥

〔問 2〕 (2) の①～⑤の文を、本文の流れに合うように、正しく並べかえたとき、2番目と4番目にくるものの組み合わせとして最も適切なものは、次のア～カの中ではどれか。

	2番目	4番目
ア	①	③
イ	②	④
ウ	②	⑤
エ	④	①
オ	④	⑤
カ	⑤	④

〔問 3〕 (3) So you think that if you change how you study math, your grades will get better. とあるが、あなたがこれまでにやり方を変えたことでうまくいったことと、その結果について具体的に **30語以上の英語**で書きなさい。ただし、本文に出てきた方法は除く。 英文は二つ以上にしてもよい。なお、「,」「.」「!」「?」などは語数に含めないものとする。また、I'llのような「'」を使った語や e-mail のような「-」で結ばれた語はそれぞれ1語と扱うこととする。

〔問 4〕 (4) 【① to ② was ③ working for ④ kept ⑤ that ⑥ about ⑦ the light ⑧ he ⑨ surprised ⑩ learn】 とあるが、本文の流れに合うように、【 】内の単語・語句を正しく並べかえたとき、①～⑩の中で **2番目と5番目と8番目**にくるものの組み合わせとして最も適切なものは、次のア～カの中ではどれか。なお、文頭にくる語も小文字になっている。

	2番目	5番目	8番目
ア	②	⑧	①
イ	②	⑩	④
ウ	②	⑩	⑤
エ	④	⑤	①
オ	④	⑧	⑩
カ	④	⑩	②

〔問5〕 ⁽⁵⁾ Another scientist に関する説明として、最も適切なものは次の中ではどれか。

- ア The scientist came up with the idea of making the lithium-ion battery soon after he started working at the company.
- イ The university teacher said that the most important thing is to be interested in everything.
- ウ People didn't use the lithium-ion battery for a long time because they were worried about using it.
- エ The scientist became interested in science because a university teacher said that petrochemistry was a popular subject.

〔問6〕 本文の内容と合っているものを、次のア～クの中から二つ選びなさい。

- ア Many people have thought about the question about the rain and have tried to find out the answer.
- イ Before you make a hypothesis, you have to gather a lot of information and do many experiments.
- ウ Only scientists can make a hypothesis to find out answers to questions because you have to follow some difficult steps.
- エ The light bulb only worked for a short period, so the scientist wanted to think of a way to change the situation.
- オ The scientist tried using cotton thread and his friend's beard, and he found that they worked better than bamboo.
- カ Some scientists did experiments on horses and realized that horseflies cannot see the stripes from far away.
- キ People are hoping that one day they can think of a way to use the idea of zebra stripes on other animals.
- ク The scientist won the Nobel Prize because he worked on lithium-ion batteries without thinking about people's needs.

- 4 次のイラストに描かれた状況を説明したうえで、それについてあなたの考えを50語以上の英語で書きなさい。英文は二つ以上にしてもよい。なお、「,」「.」「!」「?」などは語数に含めないものとする。また、I'llのような「'」を使った語や e-mail のような「-」で結ばれた語はそれぞれ1語と扱うこととする。

