

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 **3** までで、2 ページから 14 ページまであります。

2

次の対話文を読んで、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。)

Mari is a junior high school student who lives in Tokyo. Emily is a high school student from the UK. She came to Japan a month ago, and has stayed with Mari's family since then. Takeshi is Mari's brother. He is a high school student. One evening, Mari, Emily, and Takeshi are talking in the living room.

Mari: Is everything all right at school, Emily?

Emily: I enjoy the classes and I'm glad all my classmates are so friendly to me.

Mari: I'm happy to hear that. But if you need any help, we'll be ready to help you at any time.

Emily: Oh, thanks. Actually, there's one thing I want you to teach me.

Takeshi: What is it?

Emily: Wait a minute. I'll go and get it from my room.

Emily comes back with a book.

Emily: I bought this book yesterday. It's a book about origami. I read it and tried making some by myself, but it was too difficult for me. Will you help me?

Mari: Sure. I'm good at origami.

Emily: Great!

Takeshi: What do you want to make? You can make many kinds of things, such as animals, birds, flowers, fish, and boxes.

Emily: I want to make a flower and send it to my mother.

Mari: How about this flower?

Emily: It looks pretty. I want to try it. By the way, what does this line mean?

Takeshi: It means “*valley fold.” You fold the paper along the line, and it'll look like the letter “V.”

Mari: And this different type of line means “mountain fold.” It's the *opposite of “valley fold.”

Takeshi: Each symbol has its own meaning. If you learn the meaning, you'll be able to make origami easily.

Emily: Interesting! They're just like *musical notation. If you know the meaning of the symbols, you can play any piece of music you like.

Takeshi: That's right.

Mari: Now, let's make the flower.

They finish making the origami flower.

Emily: Wow, it's so beautiful. Origami is fun!

Takeshi: A few days ago, I read in the newspaper that there's an origami *exhibition at the art museum this month. Shall we go there this weekend?

Emily: Sounds good! I'll be free this Sunday. How about you, Mari?

Mari: I'll be free, too.

Takeshi: OK, then let's go there together.

On Sunday, they go to the museum. Mr. Ito, the manager of the exhibition, welcomes them.

Mr. Ito: Good morning. Welcome to our exhibition. Is this your first visit here?

Takeshi: Yes, it is.

Mr. Ito: I can show you the exhibition if you like.

Emily: Oh, thank you. That's very kind of you.

Mr. Ito: All right. Then, please come this way. In this room you can learn about the history of origami. Do you know where paper was first invented?

Mari: In Japan?

Mr. Ito: No. People say it was invented in China and was brought to Japan. According to some researchers, paper was first used in Japan for writing. They say people began to fold it or cut it into different shapes, and used it for other things, such as *decorations for *wedding ceremonies. More and more paper was needed, so paper began to be produced all over Japan. The paper, or *washi*, was thin and strong, so various origami works were created. Look at this book.

Emily: What is it?

Mr. Ito: This is the oldest origami textbook that *exists in Japan. It was printed around 1800. It shows how to make paper cranes.

Takeshi: Around 1800! That means paper cranes have been around for about 200 years.

Mr. Ito: (1)-c Look at this *sword. You can see some origami cranes *carved on the *hilt. This sword was used around 1600. That means paper cranes already existed more than 400 years ago.

Mari: That's surprising.

Mr. Ito: Yes. They have a long history. Let's go to the next room. You can enjoy some of the works created by origami artists of the 21st century.

Takeshi: I like this origami bee. It looks (2)-a.

Mari: I like this origami horse. It's so cool.

Mr. Ito: Yes. This artist makes good origami animals. I like his works, too.

Emily: This artist is from the US, and this artist is from Spain. Oh, this artist is from the UK, my home country!

Mr. Ito: There are origami artists all over the world. Many of them belong to an origami

group in their own country and work with other origami artists there.

Takeshi:

Mr. Ito: Origami is popular not only in Japan but also in foreign countries. Now, let's go to the next room. Have you ever thought about how origami is related to our health?

Mari: No. How are they related?

Mr. Ito: Many doctors say that origami is good for our health because our brain becomes active through the activity. When you *work on origami, you use your *imagination, and choose the best color of paper for your idea. You read the instructions in your origami books, and have to *figure out how to fold the paper. Then you move your fingers and try hard to fold the paper carefully. Sometimes you may enjoy chatting with other people while folding the paper. All of these make your brain active. Look at this picture. It shows which area of the brain becomes active when you work on origami.

Emily: It's amazing! Origami has such a good *effect on our health.

Mr. Ito: It has a good effect on children. It also helps adults to stay healthy.

Emily: I'll tell my parents about this!

Mr. Ito: Let's go to the next room. Come this way. Look at this boat. This type of boat is called a kayak.

Mari: Is this an origami kayak?

Mr. Ito: No, it isn't. It is a real kayak. You can ride in it if you want to.

Takeshi: Then, why is it in this exhibition?

Mr. Ito: Because it is related to origami in some way. Can you guess how?

Takeshi:

Mr. Ito: Look at it carefully. Do you see the lines? If you fold it along the lines, the kayak gets smaller and smaller, and finally it becomes as small as a suitcase. Shall we try?

They fold the kayak.

Takeshi: Wow! It's smaller now.

Emily: I can't believe it!

Mr. Ito: You can put it in your house when you aren't using it. Also, you can carry it to a river easily when you want to use it. This kayak was created by a man who loves riding in a kayak. When he moved to a new house, there was not enough space to put his kayak. Then he read an article about an origami artist, and got the idea of creating a *foldable kayak. He kept making different *models using paper, and finally he was in making the right model. Then he made a real kayak based on the model, and this is the one he made.

Takeshi: He must be a creative man.

Mr. Ito: He sure is. Just like the man who created this kayak, some *experts are trying to

use the *technique of folding and *unfolding in their own fields. ⁽⁴⁾ For example, one university in the US is trying 【 ① and ② a tiny robot ③ be ④ can ⑤ create ⑥ folded ⑦ sent ⑧ that ⑨ to 】 into the body to carry medicine. If they can make one, they may be able to *cure the injured part of the body more easily. Origami is giving ideas for new technology.

Emily: Wow! How interesting!

Mr. Ito: Well, this is the end of the tour. I hope you enjoyed the exhibition.

Takeshi: Thank you for showing us around. We learned a lot of new things about origami.

They leave the museum.

Mari: I learned that ⁽⁵⁾ origami is both old and new. It's part of our tradition, but it's still very helpful now.

Takeshi: I was especially (2)-c about the foldable kayak. Maybe we can make some other foldable things like the kayak.

Emily: It'll be fun to think about it!

〔注〕 valley 谷	opposite 正反対のもの	musical notation 楽譜
exhibition 展覧会	decoration 飾りつけ	wedding ceremony 婚礼
exist 存在する	sword 刀	carve 彫る
hilt 刀の柄(手で握る部分)	work on ~ ~に取り組む	
imagination 想像力	figure out ~ ~を理解する	
effect 効果, 影響	foldable 折りたたむことができる	
model 模型	expert 専門家	technique 専門技術
unfold (折りたたんだものを)開く		cure 治療する

〔問1〕 本文の流れに合うように、 ～ の中に英語を入れるとき、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 I agree with you.
- イ I have no idea.
- ウ I think so.
- エ I wonder how much it is.
- オ Yes, I do.
- カ No, I don't like it.
- キ Longer than that.
- ク That's a nice idea.

〔問2〕 本文の流れに合うように、 ～ の中に英語を入れるとき、その組み合わせとして最も適切なものは、次のア～クの中ではどれか。

	<input type="text" value="(2)-a"/>	<input type="text" value="(2)-b"/>	<input type="text" value="(2)-c"/>
ア	real	possible	exciting
イ	real	successful	exciting
ウ	really	possible	exciting
エ	really	successful	exciting
オ	real	possible	excited
カ	real	successful	excited
キ	really	possible	excited
ク	really	successful	excited

〔問3〕 本文の流れに合うように、 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 didn't know that origami is enjoyed by so many people around the world.
- イ I didn't know that these origami artists are so famous in Japan.
- ウ I didn't know that there are so many origami groups in Japan.
- エ I didn't know that many origami artists belong to origami groups to stay healthy.

〔問4〕 (4) For example, one university in the US is trying 【 ① and ② a tiny robot ③ be ④ can ⑤ create ⑥ folded ⑦ sent ⑧ that ⑨ to 】 into the body to carry medicine. 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、【 】内で3番目と6番目と9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。

	3番目	6番目	9番目
ア	①	④	②
イ	①	⑧	⑥
ウ	②	③	⑦
エ	②	⑦	⑥
オ	⑧	⑥	⑦
カ	⑧	⑦	②

〔問5〕 (5) origami is both old and new とあるが、この内容を最もよく表しているものは、次の中ではどれか。

- ア Origami is enjoyed not only by children but also by adults.
- イ Some old origami works are kept in a good condition thanks to modern technology.
- ウ Origami works from a long time ago and a modern origami textbook are shown at the exhibition.
- エ People have enjoyed origami since a long time ago, and we still get new ideas from it today.

〔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 Emily wanted to know the meaning of a symbol shown in an origami book.
- イ Symbols used in music are also used in origami instruction books.
- ウ Takeshi learned from the newspaper that an origami exhibition was going to start next month.
- エ *Washi* was too soft for origami, so new types of paper began to be produced all over Japan.
- オ Paper cranes were first created around 1800.
- カ Mr. Ito showed works created by origami artists before he explained the history of paper.
- キ Mr. Ito showed a picture of a brain to explain how origami is related to people's health.
- ク The man who created the foldable kayak was inspired by origami works he saw in an exhibition.

〔問7〕 次の英文は、Emily が母親に送ったカードの内容である。(a) ~ (d)
に入る適切な英語 1 語を答えなさい。なお、同じ記号の空所には同じ単語が入
る。

Dear Mom,

Happy birthday! I am sending you a small birthday present. It's an origami flower. Have you heard of origami? It's the Japanese art of (a) paper. You can make various things just by (a) a piece of paper. I think it's amazing. I know you love flowers, so I made one for you. It wasn't easy for me to make it by myself, but (b) to Mari and Takeshi's help, I was able to make it. I hope you like it!

Today, I went to see an origami exhibition with Mari and Takeshi. I learned that origami has a good effect on our health. It (c) our brain active and, as a result, helps us stay in good health. I want you to be healthy, so I will teach you how to make origami flowers when I return to the UK.

How is Dad? I hope he is well. Please (d) him that I am doing well in Japan.

Love,
Emily

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。)

Humans have long wondered, “How did the *Universe begin?” or “Are there any other planets with signs of life?” We have developed a lot of *telescopes and researchers have used them to try to explain these great mysteries.

Trying to solve these mysteries are some of the goals of *the James Webb Space Telescope. It was sent into space in 2021 and started to work the next year. It is the largest and most powerful space telescope ever built. Scientists believe look at stars billions of *light-years away. A light-year is the *distance that light travels in one year. When we look at stars, for example, 100 light-years away in space, we are actually looking at the stars as they were 100 years ago. Scientists say that the Universe is about 13,800,000,000 years old, and the James Webb Space Telescope may be able to show us some of the first stars in the Universe.

Why is the James Webb Space Telescope able to take pictures of stars so far away? Let’s look at some facts about this telescope.

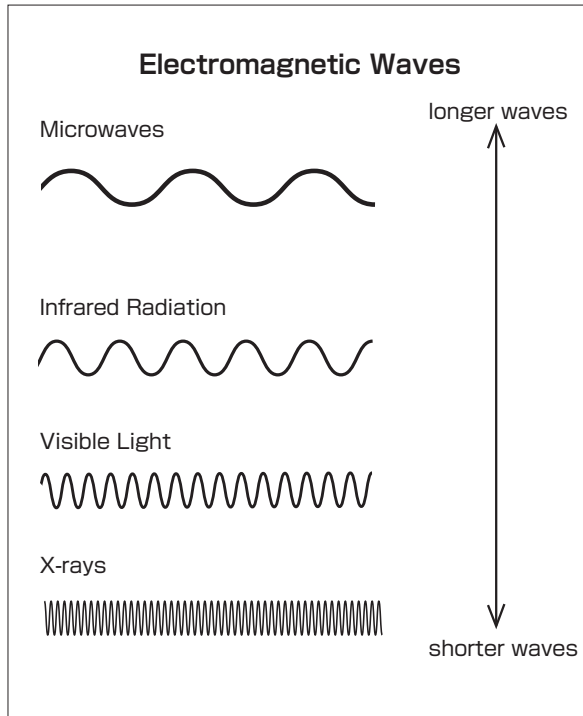
As you can imagine from its name, . Of course, we have some excellent telescopes on the Earth, but putting telescopes into space is a good way of getting a clearer view of the planets and stars. The main reason is that some of the light from space doesn’t reach the Earth. The air on the Earth keeps it away.

Telescopes catch *signals from stars by using mirrors to collect the light from them. If the mirror is bigger, the telescope can catch more signals.

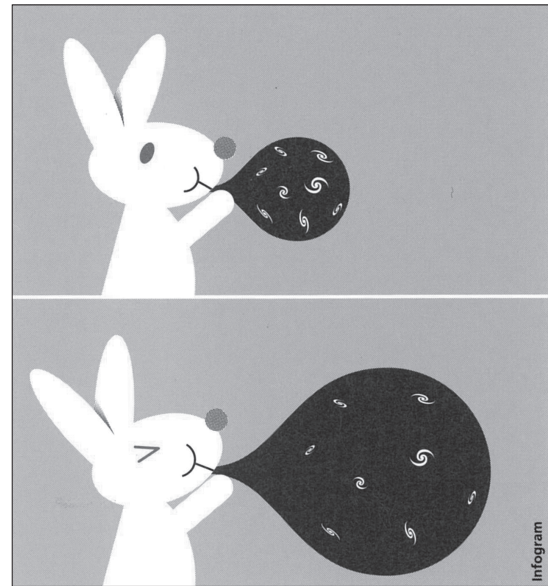
(2)

Another important fact is that the James Webb Space Telescope takes pictures of the Universe by using special cameras. These cameras can catch *infrared radiation. Infrared radiation is a type of *electromagnetic wave and it cannot be seen by the human eye. As you can see in Picture 1, electromagnetic waves are called by different names such as *microwaves, infrared radiation, and *X-rays, according to the *length of each *wave. Light that the human eye can see is called *visible light and is also a type of electromagnetic wave. Infrared radiation cannot be seen by the human eye, but it is still used in our daily lives. For example, you may use a *remote control when you want to turn off the air conditioner. It sends a signal to the air conditioner by using infrared radiation.

<Picture 1>



<Picture 2>



「新・天文学入門」(岩波ジュニア新書) より

So why does the James Webb Space Telescope use cameras that can catch infrared radiation? One reason is that infrared radiation can be used to see through *dust in the Universe. We cannot see things behind or inside of dust clouds in space by using visible light. On the other hand, infrared radiation can pass through them more easily. Scientists believe that stars and planets are born inside these dust clouds, so they believe that looking inside with these cameras may help them discover new things.

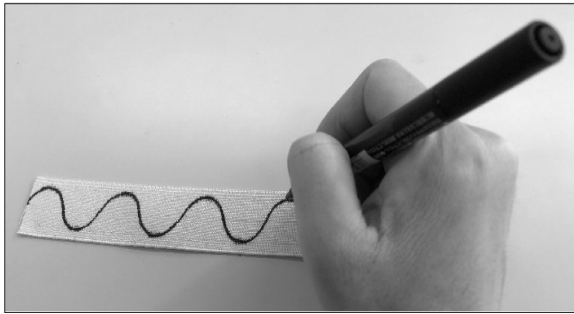
Another important reason is that it is necessary to use infrared radiation to be able to catch the signals from early stars because the Universe is becoming larger. Almost 100 years ago, a scientist noticed that other groups of stars were moving away from us. That wasn't all. He also discovered that the *farthest groups of stars were moving away from us faster than the ones close to us. Look at Picture 2. This shows the way this happens. When the *balloon becomes bigger, the distance between the groups of stars on the balloon becomes larger.

Light which left stars far away from us can take billions of years to reach our planet. While it is traveling, the length of the light wave increases because the Universe is becoming bigger.

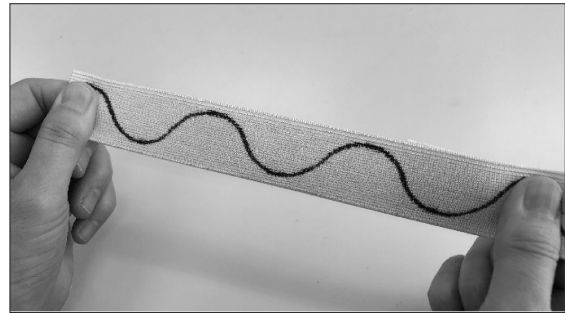
⁽³⁾ This means that visible light waves 【 ① get ② from ③ into ④ coming ⑤ waves ⑥ longer ⑦ stretched ⑧ those stars 】 and become infrared radiation.

Let's see how it happens. Look at Picture 3. In the picture, a pen is used to draw a wave on a piece of *elastic. The elastic is then stretched, as you can see in Picture 4. It shows how an electromagnetic wave is stretched when the distance it travels increases. The James Webb Space Telescope is trying to take pictures of the farthest stars. They are so far away (4).

<Picture 3>



<Picture 4>



The cameras of telescopes which use infrared radiation are easily affected by *heat. The temperature is very low in space, so being in space is good for them. The James Webb Space Telescope is very far from the Earth. The distance between the Earth and the James Webb Space Telescope is longer than that of the Earth and the Moon. The Moon is about 380,000 kilometers away from the Earth. The telescope is about 1.5 million kilometers away from the Earth and stays in the *shade of the Earth when it moves around the Sun. This reduces the amount of light and heat that the telescope receives from the Sun. The telescope also has a large shade against the Sun. It is bigger than the big telescope itself, as large as a tennis court, and protects the important parts of the telescope from the Sun. The hot side of the shade facing the Sun is about 85°C but the other side is about -233°C.

Since the James Webb Space Telescope started to work, it has been surprising us with the very clear pictures . They are clearer than those taken by telescopes before the James Webb Space Telescope. In developing this telescope, thousands of researchers and engineers from all over the world worked together. We have seen how researchers are trying to discover early stars in space, but this is just one of the goals of the James Webb Space Telescope. There are some other important ones. Research into space by using scientists from countries which have paid money for the telescope. It is also open to any researchers in the world who want to answer questions like “How did the Universe begin?”, “Where do we come from?”, or “Are we alone in the Universe?”.

〔注〕 Universe	宇宙	telescope	望遠鏡
the James Webb Space Telescope	ジェイムズ・ウェッブ宇宙望遠鏡		
light-year	光年	distance	距離
infrared radiation	赤外線	signal	信号
microwave	マイクロ波	electromagnetic wave	電磁波
wave	波	X-ray	エックス線
dust	ちり	length	長さ
elastic	ゴムひも	visible	目に見える
		remote control	リモコン
		balloon	風船
		heat	熱
		shade	陰・日よけ

〔問1〕 本文の流れに合うように、 ～
の中に英語を入れるとき、最も適切なものを次のア～カ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 is in space
- イ it is not just for
- ウ it is impossible to
- エ it gave us a message
- オ it will allow them to
- カ it sends back to the Earth

〔問2〕 の中には、次のA～Dの文が入る。本文の流れに
合うように、正しく並べかえたとき、その組み合わせとして最も適切なものは、
下のア～カの中ではどれか。

- A The mirrors were folded and carried into space.
- B Scientists want a telescope with a big mirror in space, but it's very difficult to send a giant, heavy mirror into space.
- C When it arrived in space, the mirrors were carefully spread out to make a big mirror.
- D So, engineers gave the James Webb Space Telescope 18 smaller mirrors that are connected to each other.

- ア A→C→B→D イ A→C→D→B ウ B→D→A→C
- エ B→D→C→A オ D→B→A→C カ D→B→C→A

〔問3〕 (3) This means that visible light waves 【 ① get ② from ③ into ④ coming ⑤ waves ⑥ longer ⑦ stretched ⑧ those stars 】 and become infrared radiation. 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、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。

	2番目	5番目	8番目
ア	②	③	⑥
イ	②	③	⑦
ウ	②	⑦	⑤
エ	⑦	④	⑤
オ	⑦	⑤	⑧
カ	⑦	⑧	⑤

〔問4〕 本文の流れに合うように、 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 that infrared radiation from the stars has become weaker
- イ that the stretching of the Universe has made the visible light into infrared radiation
- ウ that it is almost impossible to change the visible light into infrared radiation
- エ that the James Webb Space Telescope can't use infrared radiation

〔問5〕 本文の内容と合っているものを、次のア～キの中から二つ選びなさい。

ア The James Webb Space Telescope will be seen from stars that were born about 13,800,000,000 years ago.

イ Some telescopes on the Earth are excellent because they are under the air that surrounds the Earth.

ウ Electromagnetic waves cannot be seen by the human eye.

エ Scientists are using cameras that can catch infrared radiation to find something new inside of dust clouds in space.

オ With the help of the James Webb Space Telescope, one scientist found that groups of stars were becoming larger.

カ The distance between the Earth and the James Webb Space Telescope is over one million kilometers longer than the distance between the Earth and the Moon.

キ The James Webb Space Telescope is between the shade and the Sun.

〔問6〕 次の質問に対するあなたの考えを、**40語以上50語程度の英語**で答えなさい。

「.」「,」「!」「?」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書きなさい。

Imagine that you have a special telescope. By using this telescope, you can see anything in the Universe or any place on the Earth. What do you want to see? Why do you want to see it?

6
月

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