

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 13 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。)

Chisato, Ryotaro and Hanae are high school students in Tokyo. One day, they see Mr. Brown, a science teacher from the United States, in the science room.

Chisato: Hello, Mr. Brown.

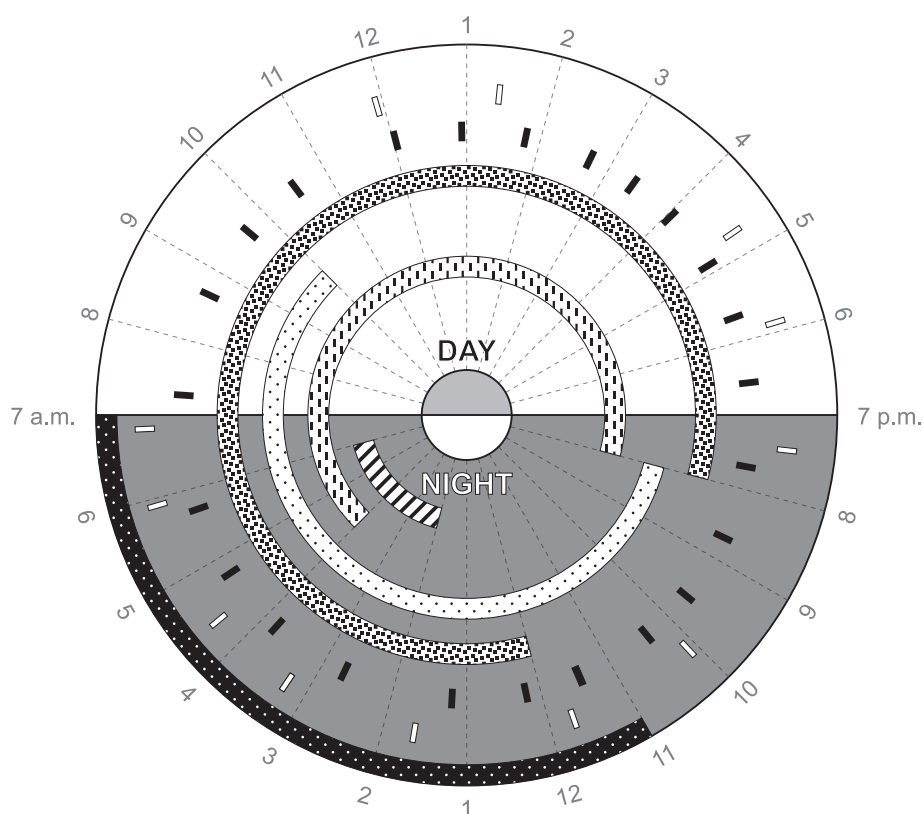
Mr. Brown: Hi, everyone.








Ryotaro: What are you doing, Mr. Brown?

Mr. Brown: I'm going to have a special class for junior high school students next Saturday. So, now I'm preparing for it.

Hanae: What are you going to talk about?

Mr. Brown: Animals' sleep *habits. Look at this *chart. It shows the sleeping time of different animals. This book gave me a lot of information to make it.



- | | | | | | | | |
|---|---|---|---|--|--------|---|---|
|  | A |  | B |  | C |  | D |
|  | E |  | F |  | humans | | |

Ryotaro: There are a lot of differences among animals.

Hanae: Some animals sleep for about twenty hours and some for a very short time.

Mr. Brown: That's right. We all need to sleep, and we sleep for about one-third of the day. However, scientists don't know why we need to sleep. You know, every animal needs to sleep but (2)-a.

Chisato: This chart also shows the difference between animals that sleep at night and those during the day.

Ryotaro: It really does. The numbers of hours cats and dogs sleep are about the same. Though dogs almost always sleep at night, cats almost always sleep in the daytime.

Chisato: I knew *bats act during the night. In fact, they sleep most of the day.

Ryotaro: I thought every animal sleeps just once a day, but I have realized some animals sleep several times a day.

Mr. Brown: I'm not surprised if ⁽³⁾you thought so.

Hanae: This chart shows that horses sleep many times a day but elephants sleep just once. Both animals eat plants but have different sleep habits.

Ryotaro: And both of them sleep for a short time.

Mr. Brown: You have a good point. Then, why do they sleep so little?

Hanae: They are plant-eating animals, so I think meat-eating animals like lions may *attack them while they are sleeping.

Mr. Brown: It's true for horses.

Hanae: How about elephants?

Mr. Brown: Baby elephants can be attacked by lions but their parents can't, because they are very big. They only eat plants...

Chisato: Now I've got it! They won't be full because plants don't give them a lot of energy.

Mr. Brown: You're right. They don't need to divide their sleep into several times, because usually they are not attacked. However, they need a lot of time to eat plants. As a result, (2)-b. Horses, on the other hand, can be attacked anytime, so they have to divide their sleep into many times.

Ryotaro: I feel sorry that horses cannot have a nice long sleep.

Mr. Brown: In addition, they sleep on their feet because they always have to be prepared to run when something dangerous happens around them.

Ryotaro: I can't believe it.

Mr. Brown: Of course, they sometimes need to lie down for deep sleep. I mean, while a few horses are lying down to get some deep sleep, others are sleeping on their feet to take care of their *surroundings. By using the two kinds of sleep across the group, its members *take turns getting deep sleep.

Ryotaro: Amazing!

Mr. Brown: However, they lie down to sleep for about ten minutes.

Hanae: I don't think they can get a lot of rest in such a short time.

Chisato: Mr. Brown, *frigatebirds have the shortest time for sleeping in this chart. Why?

Mr. Brown: Frigatebirds are a kind of seabird and they can fly for weeks without stopping.

Chisato: Do you mean they don't sleep while they are flying?

Mr. Brown: Good question. Flying uses a lot of energy. So, for a long time, ⁽⁴⁾scientists 【 ① birds ② especially study ③ had ④ sleep ⑤ that ⑥ these birds ⑦ thought ⑧ to ⑨ who 】 in some way. But they didn't know how they were sleeping in the air. A few years ago, a group of scientists caught fifteen frigatebirds and put a small *device on their heads, then *released them again. They checked the birds' *brainwaves while they were flying. They were taking trips for ten days and 3,000 kilometers without a break. Finally, the team found that the birds actually slept while they were flying.

Chisato: Wow. They can fly and sleep at time.

Mr. Brown: Each day they slept for only about forty minutes in total, but each sleep lasted for only about ten *seconds.

Ryotaro: Will they fall into the sea if they fall *asleep when they are flying?

Mr. Brown: No. In fact, all of the sleep happened when they were going up on the wind.

Ryotaro: Oh, I see.

Mr. Brown: While they were sleeping in the air, only one side of their brain was resting and the other side was *awake.

Hanae: I learned that dolphins sleep in such a way when I was in elementary school. When the left side of their brain sleeps, their right eye is closed. When the right side of the brain sleeps, their left eye is closed. Their way of sleeping is necessary for them to come up to the *surface of the sea and take in air. It also protects them from any fish that may want to hurt them.

Mr. Brown: True. But frigatebirds fly high in the sky and have no animals that attack them.

Chisato: Then, why do their brains have to take turns resting?

Mr. Brown: One reason is that .

Chisato: I'm surprised that they cannot do that though they are seabirds.

Mr. Brown: Actually, their *wings are weak against water. If they get wet, it will be difficult for frigatebirds to fly. If they are on the ocean, they may be eaten by big fish.

Ryotaro: So, they have to keep flying.

Mr. Brown: Yes. Another reason is that they have to keep one eye open to watch where they are going. And they don't want to hit other frigatebirds while they are flying.

Chisato: Great.

Mr. Brown: I've got one more surprise for you. Frigatebirds sometimes rest both sides of the brain at time.

Hanae: Do they get deep sleep while they are flying?

Mr. Brown: Yes, they do. As I said before, each sleep is very short and happens when they are going up. So they never fall into the sea.

Hanae: I see.

Mr. Brown: But they sleep for about twelve hours on land.

They all laugh.

Mr. Brown: Some animals living under the sea and some birds are known to put only half of their brain to sleep at a time. Some scientists these days think that something similar might be happening in our brains when we are in a strange environment.

Ryotaro: What do you mean?

Mr. Brown: For example, if you have ever slept in a hotel, gone camping, or even slept over at a friend's house, you have sometimes felt sleepy or tired the next day.

Ryotaro: Yes, I have.

Mr. Brown: When we sleep in a new place, something special is happening in our brains. Only one side of the brain falls asleep, but the other side of the brain is awake. The reason for this is not clear, but it could be because .

Chisato: That means the left brain is watching out for our surroundings, right?

Mr. Brown: Right.

Hanae: Our brains may have sleep system as frigatebirds.

Mr. Brown: Yes. I hope scientists will find why some animals sleep in that way.

Ryotaro: Thank you, Mr. Brown. We had a great time.

Mr. Brown: Nice talking to you, everyone. Now I've got a hint about what to talk about to junior high school students.

Chisato: I enjoyed talking with you.

Hanae: Good luck on your special class.

Mr. Brown: Thank you. I'm sure it will be fun.

[注]	habit 習性	chart 図	bat コウモリ
	attack 攻撃する	surroundings 周囲の状況	
	take turns ~ing 交代で~する		frigatebird グンカンドリ
	device 機器	release 解き放す	brainwave 脳波
	second 秒	asleep 眠っている	awake 起きている
	surface 表面	wing 翼	

〔問1〕 Mr. Brown が作成した図の A～F にあてはまるものは、次のア～カのどれか。

- | | | |
|-------------|----------------|----------|
| ア bats | イ cats | ウ dogs |
| エ elephants | オ frigatebirds | カ horses |

〔問2〕 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～オ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 their sleeping time becomes shorter because of their body size
- イ they have to protect themselves from some dangerous animals
- ウ they are not able to rest on the ocean while they are flying over it
- エ some areas in the left side of the brain are acting as a “night watch”
- オ it isn't always good for some animals to sleep for eight hours as we do

〔問3〕 ⁽³⁾you thought so 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 Ryotaro found that cats and dogs have different sleep habits because the chart shows the different sleeping time.
- イ Ryotaro imagined that other animals also sleep like humans because most people usually sleep once a day.
- ウ Ryotaro learned that every animal once slept in the daytime but some of them have changed their sleep habits.
- エ Ryotaro believed that elephants and horses sleep in a similar way because they are plant-eating animals.

〔問4〕 (4) scientists 【 ① birds ② especially study ③ had ④ sleep ⑤ that ⑥ these birds ⑦ thought ⑧ to ⑨ who 】 in some way 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	⑥	④
イ	①	⑧	⑥
ウ	⑤	⑧	①
エ	⑤	⑧	⑥
オ	⑥	①	④
カ	⑥	⑧	①

〔問5〕 本文の流れに合うように、 ～ の中に共通して入る連続する2語を本文中から抜き出さない。

〔問6〕 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 Mr. Brown is going to teach junior high school students why animals need to sleep.
- イ Chisato has found that bats are asleep in the daytime and awake all through the night.
- ウ Ryotaro is surprised to know that horses usually keep standing while they are sleeping.
- エ Hanae has realized that dolphins close one side of their eyes while they are sleeping.
- オ Frigatebirds don't sleep in the air because they have to protect themselves from other birds.
- カ Some scientists have found that human brains have a sleep system like dolphins.
- キ The right side of human brains is asleep while they are sleeping in a strange environment.

- 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。)

A new museum of Yurinoki City will soon open. In the museum, visitors will enjoy a lot of exhibitions of traditional Japanese *textile dyeing. People in the city hope that the visitors will be interested in its famous industry. The city has many *dyehouses which change the color of *textile with *dye. By the museum, a small park will be built, and a *stream will *flow there. The people feel glad because their favorite stream of the good old days will come back. The name of the stream is the Sumiya River, or *Sumiyagawa*. *Sumiyagawa* was one of the *branches of the Marumo River, or *Marumogawa*. The Sumiya River flowed from Yurinoki Memorial Park and went through the city. Another branch of *Marumogawa*, the Eida River, or *Eidagawa*, used to flow in the town of Tsujitani and reached Tsujitani Station, the center of the *transportation network in the city. There were many branches of *Marumogawa* before, but most of them were (1)-a under the ground when new towns were built in the city around 1960. *Sumiyagawa* and *Eidagawa* were among them. People today know *Eidagawa* as the name of the town near Tsujitani Station. In the town of Tsujitani, they have a large project including the *revival of *Eidagawa*. Soon, people visiting the new Yurinoki museum will enjoy soft wind from *Sumiyagawa* just like people facing *Eidagawa*.

In the north of Yurinoki City, Nanasaka High School stands on the hill called *Komagaoka*. If you look at the west side of the school, you will find some strange views. A back street running almost in line with the main street is just like a *valley. Some houses on the street stand on something like a side wall of a river. Between the buildings you will see some stairs (1)-b to another back street. In addition, the back street shows a gentle *curve. Can you imagine what was there?

The strange back street used to be a stream called *Narukawa*, and it flowed into its main stream *Marumogawa* about 150 years ago. Today, you will never see the real *Narukawa*, and just a back street goes down to *Marumogawa*. This kind of street is often called a *culvert. People often think of culverts as covered rivers or *waterways flowing under the ground, but here, culverts are the places which used to be rivers, *irrigation canals, or open waterways. So, at a culvert, ⁽²⁾【① find ② flow ③ lost ④ can ⑤ the signs ⑥ you ⑦ the ⑧ of】. Some culverts are lower than other areas and look like valleys. Other culverts are too narrow for cars to go through, and they go zigzag or sometimes run into different courses from the main street. Some culverts are designed as *walkways or public walks and people can follow the lost original stream by walking along them. On a culvert, you can sometimes find something like a *railing of a bridge, and see that actually there was a bridge over a stream flowing long ago. All these are helpful to imagine how streams were flowing when they were above ground.

They covered some of those waterways and changed them into streets. Today, people walk along those culverts without knowing it, but most culverts in Yurinoki City have such histories.

There is another culvert of *Marumogawa* near Nanasaka High School. The Hane River, or *Hanekawa*, used to run along the east side of *Komagaoka*, went through the rice field in the area and flowed into its main stream, *Marumogawa*. The rice field became a large textile factory, but even today, (4) when you walk around the area. A narrow back street by the factory tells you the history.

In the seventeenth century, people built a *riding ground on *Komagaoka* and a lot of *samurai warriors came to the ground and practiced *horseback riding. People didn't call the hill *Komagaoka* at that time, but those warriors gave it the new name as the riding ground stood on the hill. The word "koma" comes from horses. The local people were kind and welcomed the samurai warriors, so some warriors wanted to do something to thank them; they did a performance of horseback *archery at a local shrine. That was the beginning of *Yabusame*, a traditional Japanese archery done while riding a horse. By the *Yabusame* performance, warriors prayed for peace in *Komagaoka*, and the local people's good rice harvest. They stopped the performance for some period of time, but people started it again about fifty years ago to celebrate the new birth of the town, when the original *Sumiyagawa* went under the ground.

Today, people are happy to enjoy both the performance of *Yabusame* and flow of the stream.

〔注〕 textile dyeing 染織	dyehouse 染織工房	textile 織物
dye 染料	stream 小川	flow 流れる
branch 支流	transportation network 交通網	
revival 復活	valley 谷	curve カーブ
culvert 暗渠 <small>あんきょ</small>	waterway 水路	irrigation canal 灌溉用水 <small>かんがい</small>
walkway 遊歩道	railing 欄干 <small>らんかん</small>	riding ground 馬場
samurai warrior 武士	horseback riding 馬術	archery 弓術

〔問1〕 (1)-a と (1)-b の中に、それぞれ次の A～D のどれを入れるのがよいか。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 buried B burying C led D leading

	(1)-a	(1)-b
ア	A	B
イ	A	D
ウ	B	C
エ	C	A
オ	D	B
カ	D	C

〔問2〕 ⁽²⁾【① find ② flow ③ lost ④ can ⑤ the signs ⑥ you ⑦ the ⑧ of】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 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	①	③
イ	②	⑤	①
ウ	④	⑧	①
エ	④	⑧	②
オ	⑧	②	①
カ	⑧	⑥	③

〔問3〕 (3) 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 People tried to solve those problems and they decided to put several streams or waterways under the ground.

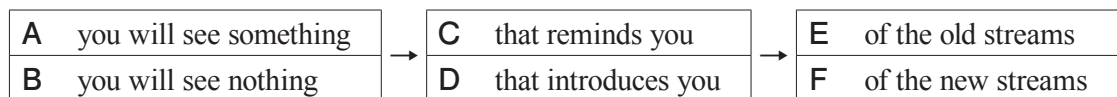
B Later, about a century and a half ago, they began to use those waterways for irrigation and industries in the area.

C About 400 years ago, people built several towns in the Yurinoki area and created waterways as transportation networks.

D At the same time, the number of people living in the area quickly increased and some waterways became dirty and the water sometimes flowed over the land.

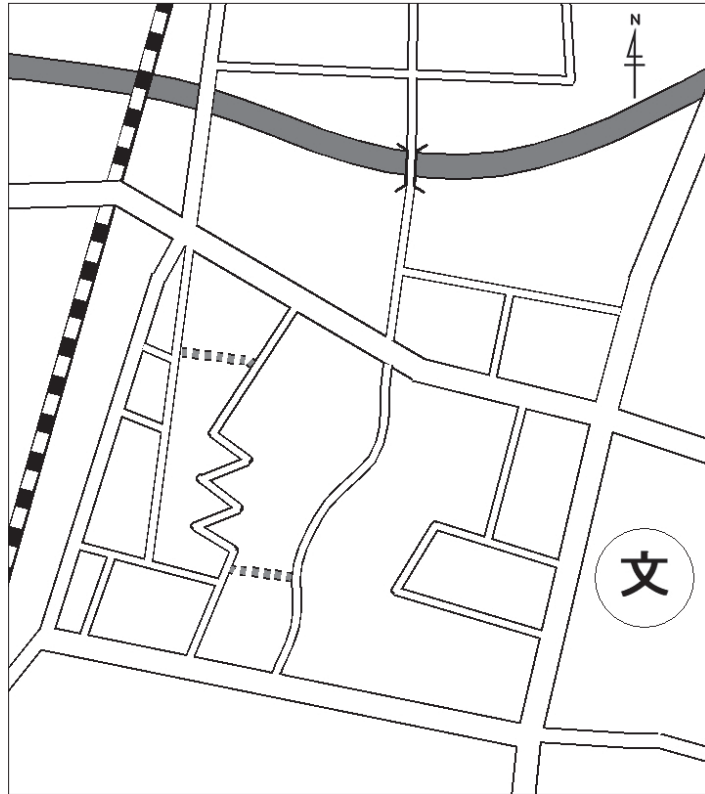
ア A→B→C→D イ A→D→B→C ウ B→A→C→D
 エ B→C→D→A オ C→B→D→A カ C→A→D→B

〔問4〕 本文の流れに合うように、(4) に英語を入れるとき、次のA～Fの組み合わせとして最も適切なものは、下のア～クの中ではどれか。

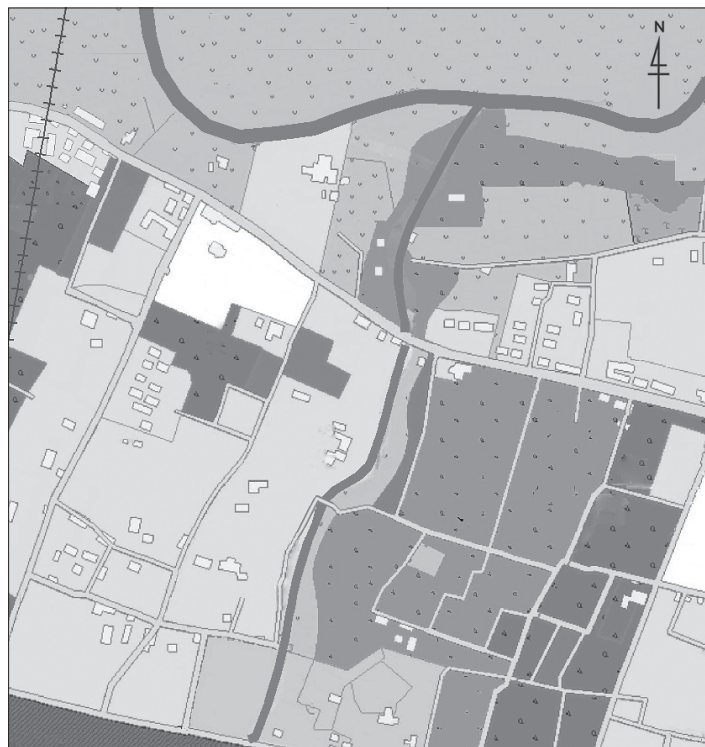


ア A→C→E イ A→C→F ウ A→D→E エ A→D→F
 オ B→C→E カ B→C→F キ B→D→E ク B→D→F

〔問5〕 本文から読み取れる内容をもとに、次の2枚の地図に共通して表れている川として最も適切なものは、下の中ではどれか。



Today's Map



The Map of 100 Years Ago

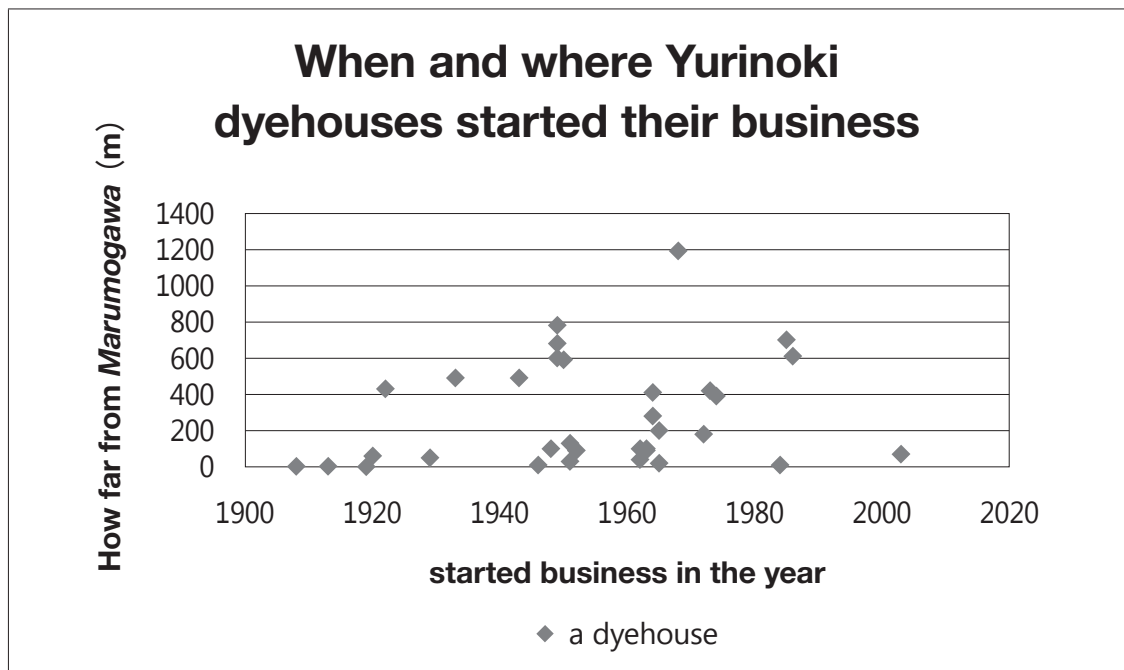
- ア *Eidagawa* イ *Hanekawa* ウ *Narukawa* エ *Sumiyagawa*

〔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 The visitors to the new museum will be happy to know that the city has many dyehouses.
- イ *Sumiyagawa* will flow through a small park by the new museum.
- ウ People will enjoy gentle wind from the same river branch at the new Yurinoki museum and in Tsujitani Town.
- エ Some people often think that culverts are flowing under the ground, and other people think that culverts are used as irrigation canals or waterways.
- オ If you see some kinds of railing of a bridge, you can guess that there was once was a station there.
- カ Most people know that culverts in Yurinoki City have similar histories.
- キ The name of *Komagaoka* became popular after samurai warriors came to the ground to practice horseback riding on the hill.
- ク For some period of time, people never did *Yabusame*, but they started it again about fifty years ago to celebrate the original *Sumiyagawa*.

〔問7〕 下のグラフを見て、次の質問に対する答えを 40 語以上 50 語程度の英語で書きなさい。「.」「,」「!」「?」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。

Write about one thing you have found from the graph. What can you tell from the fact?



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