

問4 Choose the best statement to complete the poster.

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- ① Spencer's affection for small animals
- ② Spencer's cooperative colleague
- ③ Spencer's inborn patience
- ④ Spencer's love for candy bars

第6問 (配点 25)

A You are going to make a presentation in class about the bicycle, or bike, and found the following article. You are making a presentation poster and preparing for the presentation based on the article.

### **The bike—one of the greatest inventions in history**

Children and adults around the world use bikes for many purposes: for exercise, for races, for fun, or as a means of transportation. Bikes as we know them evolved in the 19th century thanks to the efforts of several different inventors. The first "bike" is believed to have been created in 1817 in Germany. It consisted of a frame and two small wheels. It had no pedals or brakes. Riders had to push their feet against the ground to move themselves forward. This machine was called a "fast feet." Because of its simple mechanism, a fast feet was easy to build, but was restricted to paved areas and not practical enough to travel to distant places.

In the 1870s, a French inventor made an improvement to the bikes' design. It was to incorporate one large front wheel and one small rear wheel. The front wheel could be nearly twice as tall as a person! This bike was called a "penny-farthing." The name came from two coins: the penny and the farthing. The former was far larger than the latter. A rider pushed two pedals attached to the front wheel in the same way young children today pedal their tricycle, or a three-wheeled bike.

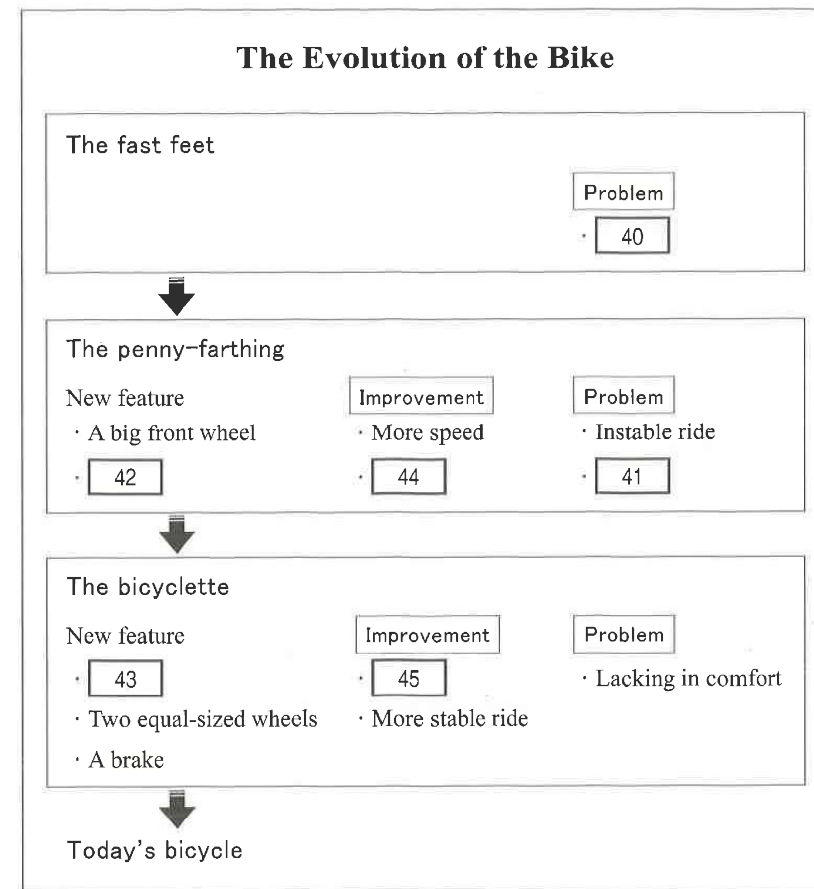
The bigger front wheel of the penny-farthing allowed riders to move faster, as one push of the pedal gave them a greater driving force compared with smaller wheels. In addition, a large wheel made the ride smoother, allowing a rider to roll over rocks and holes in the road. This strangely shaped machine became popular during the 1870s and 1880s, and helped establish the first bike clubs and bike races. However, the penny-farthing wasn't safe. With an extremely large front wheel, the riders often lost their balance and fell. Also, it was difficult to get on and off because the seat was attached near the top of the front wheel.

In 1879, a new type of bike was invented in Britain. It was called a "bicyclette," the origin of the word bicycle. It had a chain connecting the rear wheel to the pedals. This made possible a more efficient bicycle that could use a smaller front wheel, and therefore, a lower seat. It was much more stable than the penny-farthing because of the lower center of gravity. Also, it was equipped with a brake, which allowed even safer riding. In fact, another name for the bicyclette was "safety bicycle."

The bicyclette used solid rubber tires. They often made riding uncomfortable. To solve this problem, in 1888, balloon tires filled with air were invented. This almost completed the basics of today's bikes. The popularity of the improved two-wheeled vehicle exploded across the globe. More and more people began to use a bike as a casual means of transportation.

Today, bikes are so rooted in our lives that many of us learn some important life lessons from them. To some children, learning to ride a bike must be the first opportunity to learn that effort does bear fruit. At first, we find it impossible to ride a bike, but after some practice we become able to do it. Also, Albert Einstein had something to say about riding a bike. He said, "Life is like riding a bike. To keep your balance, you must keep moving." In this quote, he encouraged us to move forward without stopping. He might have learned this when practicing riding a bike in his boyhood.

## Your Presentation Poster



問1 Choose the best option for  and  in the poster to describe the problems of each type of bike.

- ① Difficulty of getting on and off
- ② Fragility of the body
- ③ Inability to turn well
- ④ Unsuitability for rough roads

問2 Choose the best option for  and  in the poster to describe the new components which were added to each type of bike.

- ① A chain
- ② A handle
- ③ A third wheel
- ④ Pedals

問3 Choose the best option for  and  in the poster to describe the points at which each type of bike was better than the former type.

- ① Lower seat
- ② More reasonable price
- ③ More simple structure
- ④ Smoother ride

問4 The author of this article likely mentioned Albert Einstein to give an example of .

- ① a campaign which made the bike more popular
- ② a lesson one can learn from riding a bike
- ③ a life with ups and downs
- ④ a machine the great scientist invented

問5 At the introduction of your presentation, you are going to give an outline of the article. Choose the best option to complete the outline.

[Outline]

The history of the bike started in the early 19th century as a very simple vehicle with just two wheels. By the end of the century, the bike had . Now the bike has become very familiar to many of us.

- ① become a tool that reflected the latest scientific development
- ② established its status as an easy way to travel
- ③ gained its popularity especially among young people
- ④ nearly replaced other means of transportation

**B** You are studying about new technologies. You are going to read the following article to understand what is happening in operating rooms now.

In most operating rooms today, there are two or three surgeons, an anesthesiologist, several nurses, and the patient. All of these people are needed for even a simple surgery. This situation, however, has begun to change. Surgical robots may replace several surgeons during an operation. In a few hospitals today, an operation needs only one surgeon, a computer, and a surgical robot. Looking even further into the future, the surgeon may not have to be there at all!

Robotic surgery has many advantages. First of all, it can be less traumatic for the patient. For example, during traditional heart surgery, the surgeon must open the patient's chest in order to perform the operation. Often, the opening, or incision, is about 30 cm long. However, with the newest robotic surgery, called the da Vinci system, it is possible to make only three or four small incisions — about two centimeters each — instead. Because the incisions are so much smaller, the patients experience much less pain and bleeding. As a result, they can recover much faster. Furthermore, robotic surgery can be performed more quickly than traditional surgery, which means the surgeons are not so exhausted when they are finished.

During the robotic surgery, the doctor controls the robotic "arms" using a computer. Currently, the doctor must be in the operating room with the patient for the robotic systems to react instantly to the doctor's hand movements. With further developments in this technology, the doctor will be able to control the robot from another room. Eventually, the doctor will not have to even be in the same hospital as the patient. This would allow surgeons to perform operations on patients kilometers away — even hundreds of kilometers!

Michael Troy strongly believes that the da Vinci robotic surgery system saved his life. He was a 22-year-old college student when he learned that he had kidney cancer. The news was devastating. "I thought this was the end for me," Michael said. "Many doctors did not want to perform surgery on me because my cancer was so severe. They would have to make a huge incision in my back in order to remove my kidney."

Then, one of Michael's doctors suggested that Michael might have one other option. He sent Michael to see Dr. Fuentes at Queens Memorial Hospital in Clemens, Missouri. Dr. Fuentes said to Michael, "I think I can save your kidney." At first, Michael did not believe the doctor. "Of course I was skeptical," Michael says. Dr. Fuentes explained that in order to remove the cancer and save Michael's kidney, he would need four hands to get into the small area. However, with a da Vinci robot under his control, Dr. Fuentes could effectively perform the surgery making only small incisions to Michael's body.

Dr. Fuentes showed Michael a video of the da Vinci system. "After I watched the video, I knew that this was the best — maybe even the only — possible treatment for me." A week later, Michael had the surgery. As promised, Dr. Fuentes saved a large part of Michael's kidney, and removed the cancer. "This was all due to the da Vinci system," adds Michael. Today, Michael is a healthy college graduate. "I'm so grateful to Dr. Fuentes for saving my life and my kidney," says Michael.

問1 According to the article you read, which two of the following are true of robotic surgery? (The order does not matter.)  ·

- ① It can take less time than traditional surgery.
- ② It is more exhausting for the surgeons than traditional surgery.
- ③ The medical fees for it can be lower than those for traditional surgery.
- ④ The opening of the patient's body can be smaller than in traditional surgery.
- ⑤ The surgeon does not have to be in the operating room with the patient.

問2 How did Michael feel after watching the video of the da Vinci system?

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- ① He still did not believe robots could perform operations.
- ② He still wanted to undergo treatment other than an operation.
- ③ He thought this type of surgery would be perfect for him.
- ④ He was still very worried about the surgery.

問3 The writer probably mentions the story of Michael in order to

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- ① describe the partnership between conventional doctors and robotic surgeons
- ② emphasize the effectiveness of robotic surgery
- ③ explain the anxiety patients feel about robotic surgery
- ④ show both good and bad aspects of robotic surgery

問4 Which of the following statements best summarizes the article?

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- ① Doctors will be completely replaced by robots in the very near future.
- ② Robotic surgery is becoming more helpful and effective for patients and doctors.
- ③ There are still too few cases of robotic surgery to judge its advantages.
- ④ Traditional surgery is always exhausting for surgeons and nurses.

## リーディング——第2回

時間 80分

100点 満点

- 1 — 解答にあたっては、実際に試験を受けるつもりで、時間を厳守し真剣に取りくむこと。
- 2 — 巻末にマークシートをつけてあるので、切り離しのうえ練習用として利用すること。
- 3 — 解答終了後には、自己採点により学力チェックを行い、別冊の解答・解説をじっくり読んで、弱点補強、知識や考え方の整理などに努めること。