

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。

※「リーディング」問題構成について

2022年に大学入試センターにて実施された「2025年度大学入学共通テスト試作問題モニター調査」では、大問数が第8問構成へと変更されています。ただしこの問題構成はモニター調査で必要な情報を収集するために構成したもので、本番に向けて問題構成は今後も引き続き検討をすとの付記があります。

この問題集では新しい第8問構成の問題（第5回）とこれまで通りの第6問構成の問題（第1～4回）の両パターンの問題を収録しています。

英語 (リーディング)

各大問の英文や図表を読み、解答番号 ~ にあてはまるものとして最も適切な選択肢を選びなさい。

第1問 (配点 10)

A You are going on a school field trip in August. The following printout will be passed out to students regarding the destination.

Name _____

Field Trip Report

AQUARIUM OF THE BLUE

Discover the wonders of many kinds of marine life!

- ▶ Hours: 8:00 AM – 8:00 PM
- ▶ Adult: \$42.00 Child (3-11): \$21.00
- ▶ Dolphin feeding experience
- ▶ No outside food or drinks allowed

AMIGO WILDLIFE PARK

Experience creatures from all over the world

- ▶ Hours: 10:00 AM – 5:00 PM
- ▶ Adult (13-61): \$21.95 Child: \$17.95
- ▶ Observe the life of Asian elephants
- ▶ Wear comfortable clothes
- ▶ Smoking and alcohol are prohibited

What You Should Do

Carefully compare the two options listed above. Choose one location for your field trip report assignment. (Circle the place you have decided to go and submit this printout to your teacher.)

問1 What does the printout tell you to do about the field trip?

- ① Ask the teacher to carefully choose which place to visit.
- ② Fill out the printout and submit it to the teacher.
- ③ Find out about the location of the field trip for next summer.
- ④ Write a report focusing on your most favorite animal you saw.

問2 Which of the following applies to both places?

- ① No food or drinks are allowed in the facility.
- ② Their hours of operation are the same.
- ③ Ticket prices are different for adults and seniors.
- ④ You will meet a wide variety of creatures.

B You are a high school student interested in exploring the wonders of the universe during the summer break. You find a website advertising a fun summer camp about the stars and the universe, hosted by an observatory and research institute.



Eric's Space Workshop (ESW) has been offering immersive space exploration camps for senior high school students since 2001. Immerse yourself in a two-week adventure under the beautiful stars!

Dates: August 3-17, 2024

Location: Mount Saurus observatory in Hannibal Park

Cost: 1,000 dollars, including food and accommodation (additional fees for optional activities such as building robots and telescopes)

Courses Offered

◆ **ASTROGEOLOGY:** Besides observing the starry sky, you'll analyze authentic meteorites under a unique microscope, create a poster with other students highlighting the findings of the analysis and classification of these pieces, research meteorites that have previously landed on Earth, write a document and prepare a presentation for August 17th.

◆ **SOCIAL STUDIES:** In addition to watching the stars, you will observe the Space Station as it orbits the Earth. You will also find out how high above the ground the station is, how long it takes to travel around the Earth, and the role of the Space Station with assigned study partners. Then, prepare a report before the presentation on the final day.

◆ **LITERATURE:** You'll investigate the stories associated with the constellations, their connection to national events, and discover cultural differences. No need to feel burdened as you will be assigned to a study group. You will compile a report on your findings through the presentation on the final day of the program.

▲ 2024 Summer Application: JUNE 27 - JULY 28

Step 1: Complete the online application form to register.

Step 2: ESW will contact you about scheduling an online interview.

Step 3: On the day of the interview, you'll be asked to describe the course you want to attend and what you expect from it.

Step 4: ESW will notify you when your course registration is complete.

問1 All ESW courses have .

- ① group studying
- ② hands-on experiments
- ③ observation with a telescope
- ④ presentation of a certificate

問2 During the end of all ESW courses, participants will .

- ① attend the graduation ceremony
- ② complete their course registration
- ③ grade each other's presentations
- ④ write a report on their studies

問3 What will you do after you submit the online application? .

- ① You will contact the staff member for an online interview.
- ② You will describe space from what you already know about.
- ③ You will explain what you seek in the workshop.
- ④ You will upload your student ID card.

第2問 (配点 20)

A You wanted to buy portable dumbbells for exercising when travelling. You were searching on a UK website and found this advertisement.

Fitness Mozart presents the new Mozart Dumbbells

Mozart Dumbbells are easily adjustable dumbbells with designs by world-class mechanical engineers to achieve the perfect at-home weightlifting experience.

Special Features

Mozart Dumbbells have weight-adjusting systems inside that allow you to switch weights in three ways:

1. Manually, turn the dial on the handle to add or remove weight.
2. Enter the desired weight into the Mozart Dumbbell app and the dumbbells will respond accordingly.
3. Select the Auto-Adjustment Mode in the Mozart Dumbbell app and the AI will automatically select the weight according to your performance.

The app also records your training results. It tracks your performance such as how many times you lifted the dumbbells, what weight you lifted, how long your performance was, and more! You can even instantly share them with the app community. This allows you to be part of a global community that encourages and supports each other's fitness progress. You can also select fitness programs designed by world-famous fitness instructors and join online fitness classes.

The Mozart Dumbbells will innovate the fitness industry and fitness experience.

Advantages

Better Balance: Mozart Dumbbells are precisely made so that both ends are of equal weight to decrease the risk of injuries during usage.

Increased Mobility: The weight of dumbbells can easily be removed for easier storage.

Promotes Exercise: The app offers unique exercises based on the user's body. It is as if the user is playing a weightlifting video game.

Information Security: Your app records can be public, private, or only shared with selected members of your choice.

Customer's Comments

- I like how you can adjust the dumbbells' weight physically and also digitally!
- I lost 10 kgs just by following the fitness program in the app, because it was so much fun!
- These dumbbells are great, but I needed a couple of days to get used to the app.
- I had no problem using these dumbbells! I had trouble using other adjustable dumbbells as their dials break easily.
- Sharing your performance with the app community is motivating! But since it was just released recently, there are only a few members.

問1 According to the maker's statement, which best describes the new dumbbells?

6

- ① affordable dumbbells
- ② colourful dumbbells
- ③ ingenious dumbbells
- ④ old-fashioned dumbbells
- ⑤ waterproof dumbbells

問2 Which benefit offered by the dumbbells is most likely to appeal to you?

7

- ① Getting motivated to exercise more
- ② Making the dumbbells more mobile
- ③ Recording your performance and keeping the information private
- ④ Reducing the risk of injuries

問3 One opinion stated by a customer is that .

- ① it is difficult to add or remove the weights of the dumbbells
- ② it is fun to share your performance data with other app members
- ③ the dumbbells are more durable than others
- ④ you can lose weight so fast only by using the dumbbells and without using the apps

問4 One customer's comment mentions the fitness program. Which benefit is this comment based on?

- ① Better Balance
- ② Increased Mobility
- ③ Information Security
- ④ Promotes Exercise

問5 According to one customer's opinion, is recommended.

- ① allowing time to get familiar with the app
- ② charging the dumbbells' battery to the max before using
- ③ comparing the dumbbells' dials with others
- ④ downloading the app before using the dumbbells

B You are a member of the student council. The members have been discussing a student project that motivates students to study more. To get ideas, you are reading a report about a school challenge. It was written by an exchange student who studied at another school in Japan.

Glued to the screen

Last year, we conducted a survey about how students in our school use their time. The result showed that they spend too many hours on smartphones and playing games. That is why we started this Studying App Tournament so that students would use those hours spent on studying, instead of playing games on their smartphones. Students took part in quizzes from January 17th to February 17th. Students would win prizes based on the total amount of points they earned from these quizzes. First place would win 2,000 yen, second place would win 1,000 yen, and third place would win 500 yen. A total of 30 students out of the whole school participated: more than two-thirds of them were second-year students; 7 were first-year students; and the rest were third-year students. How come so few third-years participated? The following feedback may help answer that question.

Feedback from participants

AB: I spent most of the time on the bus using the studying app, and it helped me understand the classes better. Also, you can add notes on the app, which is useful during class. I felt like I didn't need to review the classes when I got back home because I had already done it on my bus ride!

AJ: I heard some of my second-year friends didn't even know about this Studying App Tournament. The tournament had already ended by the time they found out about it. Even if they had known about this, they wouldn't have felt like taking part because 2,000 yen was way less than what they earn in their part-time jobs.

NI: Most of the time I used the app on my small smartphone. I used it a little bit on my home computer, too. Besides, I'm better at studying audio material, though the app does not have any.

RT: I got the highest score ever on the math test! The Studying App Tournament really helped me to study more! There are 4 choices for each question, and you choose the correct one. Simple as that!

VA: The studying app itself was easy to use. However, it's not surprising that third-year students didn't participate in the Studying App Tournament, because they were so busy and focused on preparing for the university entrance exam.

問1 The aim of the Studying App Tournament was to .

- ① create an online community so students could help each other outside of school hours
- ② give students the opportunity to create their own app
- ③ help encourage students to study more
- ④ motivate students to learn about self-learning apps

問2 One fact about the Studying App Tournament is that .

- ① fewer than 50% of the participants were second-year students
- ② it was held for about four weeks during the winter
- ③ students had to use smartphones to participate
- ④ the majority of participants were male

問3 From the feedback, were activities reported by participants you could do in the studying app.

- A : answering questions related to class
- B : connecting with other students
- C : listening to audio files
- D : making notes on the app

- ① A and B
- ② A and C
- ③ A and D
- ④ B and C
- ⑤ B and D
- ⑥ C and D

問4 One of the participants' opinions about the studying app tournament is that .

- ① the audio materials in the app were useful
- ② the prize money helped motivate students
- ③ the studying app was especially effective for improving history scores
- ④ there was no problem in terms of operating the app

問5 The author's question is answered by .

- ① AB
- ② AJ
- ③ NI
- ④ RT
- ⑤ VA

A You are reading a post by a blogger named Greg. There he explains how to pack bags efficiently when shopping.

The Best Way to Organize Shopping Bags

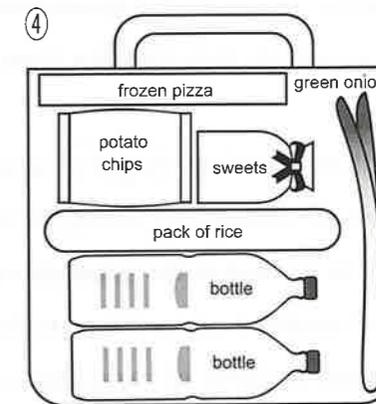
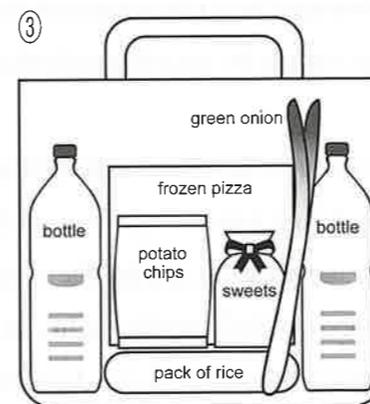
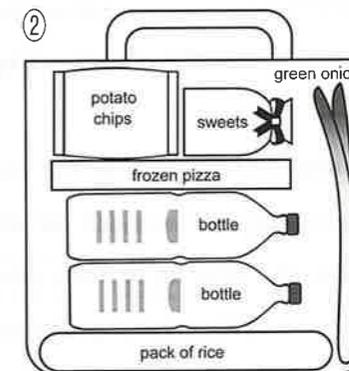
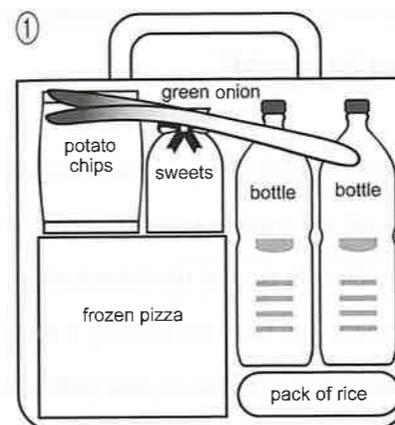
Hi, I'm Greg. Have you ever worked in a supermarket or convenience store? I've been working at a convenience store for half a year, and learned how to place goods in bags well and quickly.

Putting things in bags is just like building a house. The first thing to do is to put tall and hard items in the corners of the bag. Isn't this the same as putting up the poles of a house? Next, you need to place the heavy items on the bottom of the bag as if you were making a floor with them. Then you should put flat items on the sides like the walls of a house. So far, the basic structure has been completed.

Now, you will notice that there is a wide, open space in the middle. There, you should stack items in order from the heaviest to the lightest. If you are buying potato chips or small snacks, you should place them on top.

Finally, place long, thin, soft items such as newspapers, green onions, or candy bars in a way that you fill in the gaps. This will be the final touch.

Is everything good? If you remember the directions I gave you here, you can organize your shopping bags without damaging fragile items. The items in your bag won't fall out when you are carrying them around.



- ① filling the gaps with hard and small items
- ② making a wide, open space in the corner
- ③ placing items so frozen foods go to the bottom
- ④ putting in items as if you were building a house

B You are planning to visit Northern Europe this summer and have found an interesting article on the capital city of Denmark in a travel magazine.

What Makes Copenhagen So Special?

Copenhagen is known as the most bicycle-friendly city in the world. In Copenhagen, bicycles account for about 50% of all transportation to and from school and work. Why do so many people in the Danish capital use bicycles?

The answer is that the Copenhagen government has been promoting a bicycle-focused lifestyle. In 1995, Copenhagen introduced CitiBike, a free bike-share system to create a new, environmentally friendly mode of transport for its citizens and tourists. It was funded by advertising and managed by a city-supported fund. Users can unlock their bicycles from a docking station by inserting refundable coins.

Furthermore, Copenhagen's bicycle system includes a system called "Green Wave" which manages the timing of traffic lights during commuting hours so that cyclists can proceed at the intersections they pass more easily. Before the system was first established on the main bicycle routes in 2007, traffic lights were coordinated in favor of cars. Later, cyclists have to stop for a red light less frequently than before. This system makes their commute to work much more easier.

In 2010, the City of Copenhagen launched a website to receive requests from cyclists. It began accepting a variety of requests, including information about road damage and the establishment of dedicated waiting zones for cyclists at intersections. According to the Copenhagen city government, they received 7,944 requests for repairing road damage and repaired 6,396 of them in 2013.

Copenhagen aims to be the first CO₂-neutral capital by 2025, the leader in green technology and innovation in Europe. It is building 45 routes (746 km in total) of "bicycle superhighway" between the city and the countryside. The construction is expected to end by the year 2045. As general bicycle use is

currently increasing in large cities, the government expects the 'bicycle superhighway' to increase the number of cyclists in rural areas. When the superhighway is complete, it is expected to reduce CO₂ emissions by 1,500 tons per year.

問1 Put the following events (①~④) into the order in which they happened or will happen. → → →

- ① Building a superhighway for bicycles between the city and the countryside
- ② Introducing the "Green Wave" system
- ③ Launching a free public bicycle-sharing system
- ④ Launching a website to accept requests from cyclists

問2 How does the "Green Wave" system work?

- ① Cyclists can bring their own bicycles into trains or buses.
- ② Cyclists can pass through intersections with less frequent red traffic lights.
- ③ Cyclists can request when the traffic lights turn green on a website in advance.
- ④ Cyclists do not have to stop pedaling at red traffic lights during commute hours.

問3 Which of the following is true about the "bicycle superhighway"? 23

- ① It is aimed to increase cyclists outside of cities.
- ② It is being built and will be completed in 2025.
- ③ It is planned to be built only in the countryside for the time being.
- ④ It will be free from the risk of surface damage compared to other roads.

第4問 (配点 16)

You are studying the benefits gained from keeping pets. You are going to refer to the two articles below to discuss what you learned in the next class.

How a pet benefits you: Why not keep one?

Karim Woodson

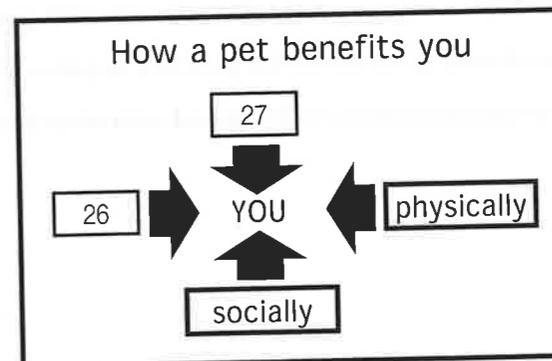
Veterinary Surgeon, at Moth Municipal Animal Clinic

Why do people keep pets? Many of you may answer, "No reason. I just want a loving companion." But without realizing it, pets benefit you more than you think. Let me explain this from several points of view. Firstly, keeping pets can lower the levels of stress hormones and reduce symptoms of anxiety. A study published in the International Journal of Workplace Health Management reported that keeping a dog in the office lowered the levels of perceived stress among employees.

Interacting with pets can also boost mood and increase feelings of happiness. Therefore, pet owners often have higher self-esteem and are happier than non-pet owners. In fact, one study found that spending just 15 minutes with a dog can increase levels of oxytocin, a hormone associated with social bonding and pleasure in the brain.

Spending time with pets requires owners to perform more daily routines than non-pet owners. They may play with them, feed them, clean the floor or their cages and walk them, which will force the owners to become more physically active. Dogs, in particular, can benefit their owners in this respect. Dog owners are more likely to meet daily physical activity guidelines than non-dog owners. In addition, a report found that dog walking is associated with healthier body weight and fewer doctor visits.

Lastly, pets can provide their owners with companionship and reduce feelings of social isolation. This is because having a pet can reduce levels of loneliness and ownership promotes social interaction with people you may meet while taking care of your pet, such as vets and other owners.



Effects keeping pets can have on you: Not just good ones

Seth Atwood

Animal Therapy Teacher, at Bkeren Animal College

I teach students who want to be animal therapists and am a dog owner myself. Over the past few years, I have studied the effects of pet ownership on owners' communication skills. Several studies have explored these effects.

Firstly, owning a pet can increase the chances to interact with other pet owners, leading to the development of new friendships. A study published in the International Journal of Workplace Health Management found that pet owners reported higher levels of social support from colleagues than non-pet owners. Positive effects on communication skills can result from increased interaction with others. Additionally, pets communicate non-verbally, so owners of pets become accustomed to understanding their pets' feelings and intentions through body language and vocalizations. This, in turn, can improve owners' ability to interpret and use non-verbal communication when interacting with people.

However, the benefits of living with pets can have negative effects. Although pets can increase social interaction with other pet owners, the same cannot be said for interactions with non-pet owners. Limiting the types of people you interact with can lead to social isolation and reduced communication skills, especially if owners' dependency on pets is excessive. Owners may become less sympathetic towards values and tastes that differ from their own.

If you wish to ensure that your life with your pets is enjoyable and beneficial, you should be aware of the potential negative effects while maintaining a balance between interactions with pets and with other humans.



問1 Woodson says that .

- ① dog owners are healthy because they usually get up early
- ② keeping a dog can lead to a pleasant atmosphere in a workplace and active lifestyle
- ③ keeping pets does far more good than harm to owners
- ④ people prefer specific kinds of pets without realizing it

問2 According to a study, keeping a dog in the office lowered stress levels of .

- ① the dog itself
- ② the dog owner
- ③ the managers
- ④ the workers

問3 Summarize the benefits of keeping pets Woodson explains by choosing two best options to fill in the chart. (The order does not matter.) ·

- ① academically
- ② biologically
- ③ economically
- ④ financially
- ⑤ psychologically

問4 Both writers agree on the advantage pet owners can gain by 28.

- ① communicating with their pets non-verbally
- ② interacting with their new acquaintances
- ③ learning about the behaviors of pet animals
- ④ performing daily routines for their pets

問5 Which could be a good way to solve the negative effects of keeping pets that Atwood explains? 29

- ① go out and take exercise once a week
- ② join a group tour consisting of pet owners
- ③ join a party and talk to people from various backgrounds
- ④ learn about human gestures and facial expressions

第5問 (配点 15)

Your English teacher has told everyone in your class to find an inspiring story and present it to a discussion group, using notes. You have found a story written by an American journalist.

The Legendary Couple: Herb & Dorothy

Bill Jordan

Herbert Vogel was born in 1922 in Harlem, New York City, the son of a Russian Jewish garment worker. He dropped out of high school, served in the U.S. Army during World War II, and worked as a mail sorter for the U.S. Postal Service until he retired in 1979.

Dorothy Faye Hoffman was born to a Jewish stationery merchant. She earned a bachelor's degree in library science from Syracuse University and a master's degree from the University of Denver, and worked as a librarian at the Brooklyn Public Library until her retirement in 1990.

Herbert and Dorothy met in 1960, fell in love, and got married in 1962. From the beginning of their marriage, the Vogels' life revolved around art. Herbert worked the night shift at the post office while studying at the Institute of Fine Arts during the day. Dorothy followed suit and began taking painting and drawing classes at New York University. They both studied painting and drawing for a while, but realized that they didn't have enough talent to become artists. Soon the couple chose to view and collect art rather than paint on their own.

Their first art purchase was a small sculpture of crushed metal by John Chamberlain. Since they were both on modest salaries, the couple couldn't afford expensive pictures by famous artists. Within their means, the Vogels bought what they liked little by little. Walking hand in hand through SoHo in Manhattan, the Vogels visited numerous galleries and began collecting works of art, mostly minimalist and conceptual art, which were not very popular in the early 1960s.

Their way of acquiring artwork was to make friends with young, promising artists who were still unknown. The Vogels attended nightly gallery events and talked with many such artists as Robert and Sylvia Mangold, Donald Judd, Richard Tuttle, and Sol LeWitt. Not being wealthy, they bought the artists' works in

monthly installments, and sometimes fell behind on their payments. However, the artists recognized the Vogels' aesthetic sensibilities and their financial situation, so they never complained when the payment was delayed. Eventually, they became known as "Herb & Dorothy" and gained fame and popularity in the New York art community.

Herb & Dorothy's basic policy for collecting was to live on Dorothy's salary and spend all of Herb's income on purchasing art. They did not own a car, take vacations, or travel abroad, and often spent their evenings at a nearby Chinese deli. They had one more purchase policy: Herb & Dorothy purchased what they could take home by subway or cab. The reason was simple: they lived in a tiny one-bedroom apartment in Harlem.

In the early 1990s, Herb & Dorothy's apartment was overflowing with their collection in every available space from floor to ceiling, kitchen to bathroom, and door to wall. It primarily consisted of drawings, but it also included paintings, sculptures, photographs, and prints by more than 170 artists. Amazingly, their collection had grown to over 4,000 works of art, assembling one of the most significant and comprehensive collections of minimalist and conceptual art in the world.

In 1992, Herb & Dorothy decided to donate their entire collection to the National Gallery of Art in Washington, D.C. To their surprise, it took five trucks to transport them! Then, in 2008, the National Gallery announced their support for "Fifty Works for Fifty States," a plan to donate 50 works from Vogel's collection to galleries in all 50 states.

The collection of contemporary art that a public servant couple had accumulated in their one-bedroom apartment over half a century is now managed by the National Gallery of Art. Even though their collection was worth several million dollars, the Vogels never considered selling any of their artwork. They simply wanted the American people to enjoy their collection for free.

Herbert Vogel passed away in 2012 at the age of 89, but he left behind a remarkable collection of contemporary art that he amassed with his wife over half a century. Their collection and love for art can be seen in the National Gallery of Art and galleries around the country.

Your presentation notes:

Herb & Dorothy's Life

Herbert Vogel and Dorothy Hoffman

- Herbert was .
- Dorothy worked as a librarian.

Married life of Herbert and Dorothy

- Their life revolved around art.
- They chose to rather than to become artists.

Important events in Herb & Dorothy's life

→ Their first art purchase → → →

Why did Herb & Dorothy donate their collection to the National Gallery of Art?

Because .

What we can learn from this story

-
-

問1 Choose the best option for .

- ① a garment worker
- ② a modern artist
- ③ a postal worker
- ④ a school teacher

問2 Choose the best option for .

- ① appreciate and collect works of art
- ② buy expensive pictures by famous artists
- ③ run an art gallery
- ④ sponsor young, promising artists

問3 Choose four out of the five options (①~⑤) and rearrange them in the order they happened. → → →

- ① Attending nightly gallery events
- ② Buying a small sculpture of crushed metal
- ③ Donating their collection to the National Gallery of Art
- ④ Project of "Fifty Works for Fifty States"
- ⑤ Taking painting and drawing classes

問4 Choose the best option for .

- ① it has branch museums in all the states
- ② it is located in the capital of the U.S.
- ③ it specializes in displaying contemporary art
- ④ it would display their collection for free

問5 Choose the best two options for and . (The order does not matter.)

- ① Herb & Dorothy built a famous art museum that showcases historical art.
- ② Herb & Dorothy had a reputation among artists for their taste in buying art.
- ③ Herb & Dorothy made a fortune in the art business.
- ④ Herb & Dorothy never sold their collection.
- ⑤ Herb & Dorothy often rented trucks and other large vehicles when buying large art objects.

第6問 (配点 24)

- A You are in a discussion group in school. You have been asked to summarize the following article. You will speak about it, using only notes.

Research on Expert Performance in Team Sports

In pretty much every area, a sign of expert performance is the ability to see patterns in a collection of things that would seem random or confusing to people with less well-developed mental representations.

In other words, experts see the forest when everyone else sees only trees. This is perhaps most obvious in team sports. Take soccer, for instance. You have eleven players on a side moving around in a way that to the inexperienced seems a furious chaos with no apparent pattern beyond the obvious fact that some players are drawn to the soccer ball whenever it comes near. To those who know and love the game, however, and particularly to those who play the game well, this chaos is no chaos at all. It is all a beautifully nuanced and constantly shifting pattern created as the players move in response to the ball and the movements of the other players. The best players recognize and respond to the patterns almost immediately, taking advantage of weaknesses or openings as soon as they appear.

To study this phenomenon, I and two colleagues, Paul Ward and Mark Williams, investigated how well soccer players can predict what's coming next from what has already happened on the field. To do this we showed them videos of real soccer matches and suddenly stopped the video when a player had just received the ball. Then we asked our subjects to predict what would happen next. Would the player with the ball keep it, attempt a shot at the goal, or pass the ball to a teammate? We found that the more accomplished players were much better at predicting what the player with the ball should do. We also tested the players' memory for where the relevant players were located and in what directions they were moving by asking them to recall as much as they could from the last frame of

the video before it was hidden from them. Again, the better players outperformed the weaker ones.

We concluded that the advantages better players had in predicting future events were related to their ability to predict more possible outcomes and quickly analyze through them and come up with the most promising action. In short, the better players had a more highly developed ability to interpret the pattern of action on the field. This ability allowed them to perceive which players' movements and interactions mattered most, which allowed them to make better decisions about where to go on the field, when to pass the ball and to whom, and so on.

Something very similar is true for football, although it is mainly the quarterback who needs to develop mental representations of events on the field. This explains why the most successful quarterbacks are generally the ones who spend the most time in the film room watching and analyzing the plays of their own team and their opponents. The best quarterbacks keep track of what's happening everywhere on the field, and after the game they can generally recall most of the game's plays, providing detailed descriptions of the movements of many players on each team. More importantly, effective mental representations allow a quarterback to make good decisions quickly: whether to pass the ball, whom to pass to, when to pass, and so on. Being able to make the right decision a tenth of a second faster can be the difference between a good play and a disastrous one — between, say, a completed pass and an interception.

For the experts we just described, the key benefit of mental representations lies in how they help us deal with information: understanding and interpreting it, holding it in memory, organizing it, analyzing it, and making decisions with it. The same is true for all experts — and most of us are experts at something, whether we realize it or not.

B You are in a student group preparing for an international science presentation contest. You are using the following passage to create your part of the presentation on an interesting creature.

Octopuses are fascinating creatures that you can learn so much from. There are close to 300 species, and they come in many different shapes and sizes. The smallest species would be smaller than 2.5 centimeters long weighing less than a gram, while the largest species are an average of 4 meters weighing 50 kilograms. Octopuses, along with squid and cuttlefish, make up the cephalopod class of marine animals. They have evolved dramatically since the cephalopods originated more than 600 million years ago. These animals have many unique characteristics that set them apart from other invertebrates, or spineless animals.

The word "cephalopod" means "head-foot" in Greek. It refers to the octopus' unique body structure in which its arms branch directly from its head. Directly opposite of its arms, or above its head, there is a highly muscled, balloon-like structure called the mantle. The mantle is filled with most of the animal's organs such as gills, digestive systems, and others, which explains its swollen shape. The mantle's strong muscles protect these vital organs and help with breathing and body shrinkage. The mouth is located on its underside, where the eight arms meet. Its beak is the only hard part of the animal's skeleton-less body. This enables the octopus to squeeze and fit its entire body through any small spaces that its beak can go through. When the food is taken in from the mouth, it is then moved to the muscular crop. The crop holds the food before it is digested in the stomach. The partially digested food then moves into the intestine, where nutrients are absorbed into the bloodstream. By the time it reaches the end of the intestine, or the entrance of the funnel, it is fully converted to stool. The stool is ejected from the funnel, forming into slender ribbon-like substance. There are more functions the funnel is responsible for, which will be discussed later.

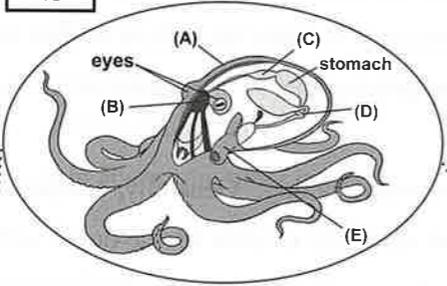
Another feature that sets them apart from other animals is their multiple brains, not just two or three, but nine in fact! The central brain is located between their eyes, so when the food is chewed up in the mouth, it goes past it. In general, the

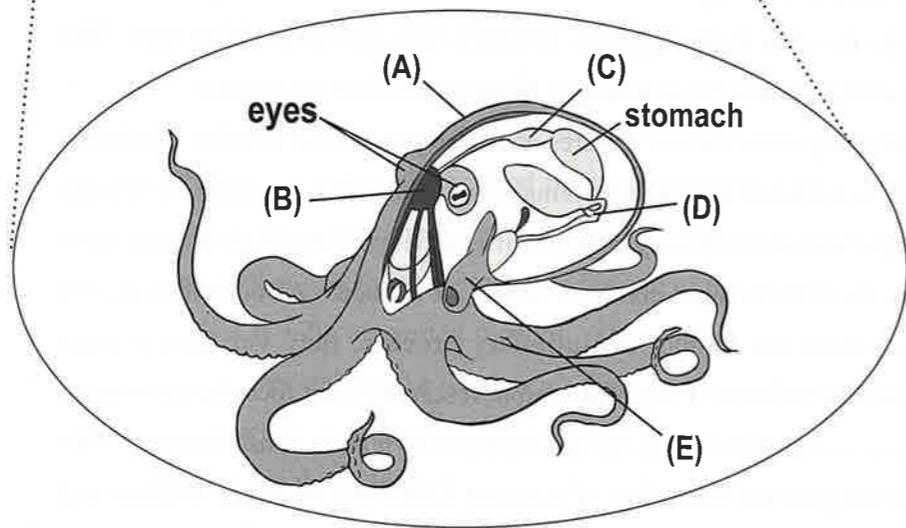
central brain contains roughly 180 million neurons out of 500 million in total. The remaining neurons are evenly distributed in the 8 tentacles. If you do the math, you'll find more than half of the neurons are in the tentacles, rather than the central brain! With each tentacle having its own ganglia, or group of neurons, they can act individually from each other and from the central brain. This is advantageous to octopuses as their bodies are fluid and lack any skeleton, resulting in a lack of proprioception, or in other words, the sense of where its body part is located or doing. For instance, we can locate the back of our heads without seeing it, thanks to proprioception. However, octopuses constantly reshape their fluid bodies to adapt to their surroundings, thus they lack proprioception. This is substituted by having smaller brains in each tentacle.

The octopus' movement is another feature worth noting. Generally, octopuses move in the form of crawling. They can crawl vertically or even upside-down with the tentacle's row of suckers. A more interesting method of moving can be seen when the octopus is in danger. In such circumstances, the octopus maneuvers more quickly by using its funnel. The octopus first fills the mantle with water and closes it, like a water balloon. Imagine holding a water balloon and you let go of the opening, as it flies away violently while squirting away water. The octopus uses a similar principle by releasing the water from the mantle and out through the funnel, which jets the octopus in the opposite direction at a maximum of 40 kph. The octopus can alter its course by pointing its funnel in different directions.

There are many more unique features of an octopus, as one scientist mentioned that they are considered the closest living form to an alien on earth. From the octopus' origin and evolutionary process, it can be said that they are the most complex species with the least common factors of humans. As octopuses are the most distant from the human evolutionary process, they yet have a clear consciousness like humans. From this reason, researchers are focusing on octopus brain waves as a possible clue to the mechanisms of human consciousness. This may unlock not just the mysteries of octopus' traits like its brain systems and movement patterns, but the fundamental understanding of how the consciousness of all possible organisms on earth may have been established.

Your presentation slides:

<p>Octopus: The most interesting animal</p> <p style="text-align: right;">1</p>	<p style="text-align: center;">Basic Information</p> <ul style="list-style-type: none"> There are about 300 species varying in size and shape. 44 <p style="text-align: right;">2</p>
<p style="text-align: center;">Body Structure</p> <p style="text-align: left;">45</p>  <p style="text-align: right;">3</p>	<p style="text-align: center;">About the Brain</p> <ul style="list-style-type: none"> 46 47 <p style="text-align: right;">4</p>
<p style="text-align: center;">Movement</p> <ul style="list-style-type: none"> The octopus uses its tentacles to crawl in any direction. 48 <p style="text-align: right;">5</p>	<p style="text-align: center;">What the Octopus Tells Us</p> <p style="text-align: left;">49</p> <p style="text-align: right;">6</p>



問1 Which of the following should you include for 44 ?

- ① Octopuses are not relatives of ocean animals with shells, as they do not have any.
- ② Octopuses have spines, which sets them apart from other invertebrates.
- ③ Some octopuses have no more than a gram of body weight.
- ④ The average size of all species of octopuses is around 4 meters.
- ⑤ The octopus belongs to "cephalopod", which means "head-foot", as both its arms and head have neurons.

問2 Complete the missing labels on the illustration of an octopus for the **Body Structure** slide. 45

- ① (A) central brain (B) mantle (C) crop (D) funnel (E) intestine
- ② (A) central brain (B) mantle (C) crop (D) intestine (E) funnel
- ③ (A) crop (B) central brain (C) funnel (D) mantle (E) intestine
- ④ (A) mantle (B) central brain (C) crop (D) funnel (E) intestine
- ⑤ (A) mantle (B) central brain (C) crop (D) intestine (E) funnel

問3 For the **About the Brain** slide, select two features of an octopus' brain that are true. (The order does not matter.) 46 · 47

- ① Close to 40 million neurons are in each tentacle.
- ② Neurons are in their tentacles so that the octopus' skeletons can be fluid.
- ③ The ganglia in each tentacle allow the octopus to have proprioception.
- ④ The ganglia in each tentacle allow them to act in a different way from each other without the central brain's command.
- ⑤ The number of neurons in the central brain is twice the number of neurons in their tentacles.

問4 For the **Movement** slide, select a feature of an octopus that is true. 48

- ① The octopus fills up its body with air like a balloon and releases it to move its body.
- ② The octopus jets away by pointing the funnel to control the course.
- ③ The octopus produces a balloon-like substance and fills it with water.
- ④ The octopus takes in water from the funnel and fills its body up in preparation to jet away.
- ⑤ Water comes out directly from the mantle, causing the octopus to jet off in the opposite direction.

問5 Which is the best statement for the final slide? 49

- ① It is best to research octopuses to find out about alien consciousness.
- ② Octopus brain activities may be the key to unlocking the mystery of the origins of consciousness in living organisms.
- ③ Studying octopuses may help apply the octopus' unique features to the human body.
- ④ The human and octopus evolutionary processes are said to be different because they have very different consciousness.