

C 英語問題

注意

1. 試験開始の指示があるまでこの問題冊子を開いてはいけません。
2. 解答用紙はすべてHBの黒鉛筆またはHBの黒のシャープペンシルで記入することになっています。HBの黒鉛筆・消しゴムを忘れた人は監督に申し出てください。(万年筆・ボールペン・サインペンなどを使用してはいけません。)
3. この問題冊子は16ページまでとなっています。試験開始後、ただちにページ数を確認してください。なお、問題番号はI～Vとなっています。
4. 解答用紙にはすでに受験番号が記入されていますので、出席票の受験番号が、あなたの受験票の番号であるかどうかを確認し、出席票の氏名欄に氏名のみを記入してください。なお、出席票は切り離さないでください。
5. 解答は解答用紙の指定された解答欄に記入し、その他の部分には何も書いてはいけません。
6. 解答用紙を折り曲げたり、破ったり、傷つけたりしないように注意してください。
7. この問題冊子は持ち帰ってください。

マーク・センス法についての注意

マーク・センス法とは、鉛筆でマークした部分を機械が直接よみとって採点する方法です。

1. マークは、下記の記入例のようにHBの黒鉛筆で枠の中をぬり残さず濃くぬりつぶしてください。
2. 1つのマーク欄には1つしかマークしてはいけません。
3. 訂正する場合は消しゴムでよく消し、消しきずはきれいに取り除いてください。

マーク記入例：

A	1	2	3	4	5
	○	○	●	○	○

(3と解答する場合)

I. 次の文を読み、下記の1～8それぞれに続くものとして、本文の内容ともっともよく合致するものを、各イ～ニから1つずつ選び、その記号を解答用紙の所定欄にマークせよ。

Numbers make modern life possible. “In a world without numbers,” University of Rochester neuroscientist Jessica Cantlon and her colleagues observed in the journal *Trends in Cognitive Sciences*, “we would be unable to build a skyscraper, hold a national election, plan a wedding, or pay for a chicken at the market.”

The central role of numbers in our world testifies to the brain’s extraordinary ability to recognize and understand them—and Cantlon is among the researchers trying to find out exactly how that skill works. Traditionally, scientists have thought that we learn to use numbers the same way we learn how to drive a car or to type letters. In this view, numbers are a kind of technology, a man-made invention to which our all-purpose brains can adapt. History provides some support. The oldest evidence of people using numbers dates back about 30,000 years: bones marked with notches that are considered by archaeologists to have been used for counting. More sophisticated uses of numbers arose only much later, together with the rise of other simple technologies. The Mesopotamians developed basic arithmetic about 5,000 years ago. Zero made its debut in A.D. 876. Arab scholars laid the foundations of algebra in the ninth century. But * calculus did not emerge in full flower until the late 1600s.

Despite the late appearance of higher mathematics, there is growing evidence that numbers are not really a recent invention. Cantlon and others are showing that our species seems to have an innate skill for math, a skill that may have been shared by our ancestors going back at least 30 million years.

Mathematical ** intuition has been explored in studies in which people are forced to rely on intuition rather than learned skills. For example, Cantlon and her colleagues ran an experiment in which adult participants see a set of dots on a computer screen for about half a second, followed by a second set. After a pause, the participants see two sets of dots side by side. They then have a little more than a second to pick the set that is the sum of the previous two pictures. People do fairly well on these tests, which summons up a strange feeling in them: they know

they are right, but they don't know how they got the answer. This suggests that the brain automatically processes numbers.

The fact that we possess a mathematical intuition implies that our evolutionary ancestors had it too. Indeed, recent research indicates that our ancestors possessed such an intuition long before they could walk upright. Scientists have found that certain monkeys can solve some of the same mathematical problems we can. Since monkeys and humans ^{***}diverged 30 million years ago, mathematical intuition presumably is at least that old.

Monkeys can learn, with enough training, to pick out a 4 if they see four dots on a screen. Andreas Nieder, a researcher at the University of Tübingen, discovered that, like humans, monkeys use their prefrontal cortex, the very front of the brain, to make those associations. He has even found individual ^{****}neurons in the region that react strongly to both the number 4 and four dots.

But does a monkey actually understand what a written 4 signifies? To find out, Nieder and his former student Ilka Diester trained monkeys for a new experiment. The monkeys learned to press a lever, after which they saw one number followed by another. If the numbers matched, the monkeys could release the lever to get some juice. If the numbers didn't match, the monkeys had to keep the lever pressed down until a new number appeared, which was always a match.

The monkeys were able to learn to release the lever for matching numbers and to keep it down for numbers that did not match. If they had succeeded simply by matching shapes, you would expect them to sometimes confuse similar-looking numbers. They might choose 1 as a match with 4 because both are made of straight lines, for example. But Diester and Nieder found that the monkeys got confused in a different way. The monkeys were most likely to mix up numbers that were numerically close to each other: the stick-like 1 and the curved 2, for example. What's more, the monkeys took more time to release the lever if larger numbers matched than if smaller ones did—another sign that the animals were responding to quantity, not shape.

These recent studies cast a new light on the old notched bones. The earliest recorded numbers occur at the same time as the first appearance of many other expressions of abstract thought, from bone flutes to carvings of well-rounded female

figures. Before then, humans may have thought about numbers the way monkeys still do today. But once our ancestors began to link their natural instinct for numbers with a new ability to understand symbols, everything changed. Math became a language of ideas, of measurements, and of engineering possibilities. The rest—the skyscrapers and supermarkets and weddings—derived from that.

* calculus : 微積分学

** intuition : 直観

*** diverge : 分岐する

**** neuron : ニューロン, 神経細胞

1. The main purpose of paragraph 2 is to describe
 - イ. the brain's ability to recognize numbers.
 - ロ. the role of mathematics in the modern world.
 - ハ. the traditional view of numbers.
 - ニ. the intuitive basis of mathematics.

2. The underlined word "innate" (paragraph 3) is closest in meaning to
 - イ. complex.
 - ロ. genuine.
 - ハ. inherited.
 - ニ. undiscovered.

3. The participants in Jessica Cantlon's experiment had to rely on mathematical intuition because they
 - イ. were not told the purpose of the experiment.
 - ロ. didn't receive enough training on how to do the problems.
 - ハ. were not allowed to use a calculator.
 - ニ. had only about a second to answer each question.

4. The underlined word "summons up" (paragraph 4) is closest in meaning to
- イ. causes.
 - ロ. describes.
 - ハ. moves.
 - ニ. reveals.
5. Neider found that monkeys and humans
- イ. have approximately the same level of mathematical ability.
 - ロ. use the same part of the brain for mathematical associations.
 - ハ. find it easier to work with numbers than with dots.
 - ニ. take the same time to solve mathematical problems.
6. Neider and Diester concluded that the monkeys in their experiment understood what numbers mean because they
- イ. made mistakes with numbers that were numerically close.
 - ロ. took longer to respond to stick-like numbers than to curved numbers.
 - ハ. matched numbers that were similar in shape.
 - ニ. took longer to respond to smaller numbers than to larger numbers.
7. The author would probably agree that
- イ. numbers are a recent human invention.
 - ロ. only humans possess mathematical intuition.
 - ハ. numbers are not as important to modern society as symbols.
 - ニ. only humans can use numbers as part of a symbolic system.
8. The most appropriate title for this passage is
- イ. Are Humans Superior at Math?
 - ロ. The Invention of Higher Mathematics.
 - ハ. Are We Born Mathematicians?
 - ニ. The Evolution of Math.

II. 次の文を読み、下記の1～8それぞれに続くものとして、本文の内容ともっともよく合致するものを、各イ～ニから1つずつ選び、その記号を解答用紙の所定欄にマークせよ。

At the end of the 19th century, a typical food-shopping trip wasn't as easy as it is today. Buying groceries would have included several steps: a stop at the butcher, a stop at the fruit store, a stop on the street to buy milk from a horse-drawn wagon, and a final stop at the local grocer to get canned goods, potatoes, sugar, etc. But walking along the *aisles would have been out of the question at the grocer. Customers told the grocer what they wanted at the counter, and a clerk would fill their order.

Then, in 1916 Clarence Saunders opened the Piggly Wiggly Store in Memphis, Tennessee. According to the *Encyclopedia of Pop Culture*, "Astonished customers were given baskets (shopping carts weren't invented) and sent through the store to pick what they needed—a job formerly reserved for clerks." Although customers were a little bewildered by the dozens of stocked aisles at first, Piggly Wiggly was an immediate success. It made \$114,000 in the first six months, with expenses of only \$3,400. Before long, there were over 1,000 Piggly Wiggly stores in 40 states. The self-serve grocery store began to spread.

Amazingly, one of the biggest factors in the growth of the supermarket was the invention of the automobile ignition switch. Previously, housewives had to limit their shopping to stores within walking distance; it was too difficult and dangerous to turn the starter crank to get a car started. But once there was an easy way to start the car, housewives were set to travel miles to get a bargain.

This led to another significant innovation: the free parking lot. For the first time, parking was available right in front of a store, customers didn't have to look for a space on crowded streets. The attractiveness of this concept was demonstrated when the Kroger Grocery and Bakery Company opened in Indianapolis, surrounded on four sides by free parking lots. The store performed 40 percent above initial predictions, and a huge 80 percent of customers arrived by car.

When the Depression hit in 1929, families found themselves struggling to buy food. Michael Cullen, manager of a Kroger grocery store, suggested opening a huge self-serve store far from high-rent districts, selling everything a shopper needed under one roof. Kroger executives thought the idea was crazy. So Cullen did it on

his own, using his savings. King Kullen opened in March 1930 in an abandoned warehouse in Jamaica, Long Island.

Cullen knew the grocery business inside and out, which allowed him to buy drastically reduced merchandise from the surplus stocks of food manufacturers. In addition, his store's size gave him great buying power; he bought massive quantities at lower prices than his competitors could. Success came quickly. Two years later, Cullen was operating seven more stores, and the superstore concept was widely imitated. A few years later, in 1933, Cincinnati's Albers Supermarket became the first store to actually use the term "supermarket." When Sylvan Goldman invented the shopping cart in 1937, supermarkets had everything they needed for long-term success.

As chain stores became more powerful, both the media and independent grocers began campaigns against them. Even *Time* magazine referred to them as "cheapies," assuring the American public that these giant "disgraces" were only due to bad times and would disappear soon. Independent grocers launched campaigns to boycott supermarkets because they used "unfair" methods to overcome their competition—such as staying open at night and selling items at or near cost. But customers were thrilled to be paying significantly less for food and continued to patronize them. In New Jersey, a law making it illegal to sell food at or below cost was passed and then quickly withdrawn when consumers raged that it was making them pay more for no good reason.

But the real explosion in new supermarkets came in the baby boom years. In 1951, *Collier's* magazine reported that more than three supermarkets were opening a day in the United States, a pace that only increased in the 1960s. In 1950, supermarkets accounted for 35 percent of all food sales in America; by 1960, that figure was 70 percent. The number of small groceries began to decline.

Now the media reversed itself. Supermarkets were no longer a national disgrace—they were a unique symbol of American inventiveness. Beginning in 1956, the U.S. government even began using supermarkets as a propaganda tool to promote "the American Way." Soviet premier Nikita Khrushchev and Queen Elizabeth II both paid a lot of attention as guides at supermarkets demonstrated how a steak was wrapped in cellophane. The U.S. Information Agency even arranged for the Pope to

come and bless an American supermarket.

The government set up demonstration stores in several European cities, where people were amazed at the variety of food under one roof. Italians in particular were astonished by certain aspects of American supermarkets, such as pet food, which didn't exist in Italy. It drew such a large crowd that the pet food section had to be removed. Another was the concept of self-service. Italians were amazed that they could actually touch food before they bought it. Some even suspected that the United States had evil motives in introducing the supermarket.

Supermarkets are widespread in many countries today, but they remain an international symbol of American culture and know-how.

*aisles : 通路

1. The main purpose of the first paragraph is to show that grocery shopping in the late 19th century was
 - イ. casual.
 - ロ. enjoyable.
 - ハ. inconvenient.
 - ニ. inexpensive.

2. The underlined word "bewildered" (paragraph 2) is closest in meaning to
 - イ. confused.
 - ロ. excited.
 - ハ. embarrassed.
 - ニ. impressed.

3. One reason Michael Cullen succeeded with his new store is that he
 - イ. started it after the Depression was over.
 - ロ. bought large quantities of goods at lower prices.
 - ハ. modeled it after the Kroger grocery store.
 - ニ. didn't try to operate more than one store at a time.

4. The passage states that all of the following innovations helped bring about the rise of supermarkets EXCEPT the

- イ. automobile ignition switch.
- ロ. parking lot.
- ハ. shopping cart.
- ニ. refrigerator.

5. The underlined word "patronize" (paragraph 7) is closest in meaning to

- イ. build.
- ロ. buy.
- ハ. criticize.
- ニ. visit.

6. Although critical at first, the media changed its view of supermarkets due to

- イ. their obvious popularity during the baby boom years.
- ロ. the influence of Nikita Krushchev and Queen Elizabeth II.
- ハ. their unfair methods of competing with independent grocers.
- ニ. the influence of the U.S. Information Agency.

7. During the 1950s, the U.S. government

- イ. did research on supermarkets in other countries.
- ロ. made use of supermarkets as a symbol of America.
- ハ. adopted the concept of self-service for its own operations.
- ニ. encouraged Europeans to open supermarkets in their own countries.

8. The most appropriate title for this passage is

- イ. How to Buy and Sell Groceries.
- ロ. Grocery Shopping Around the World.
- ハ. Origins of the Supermarket.
- ニ. The Shopping Experience of American Consumers.

Ⅲ. 次の文中の空所(1)～(9)を補うのもっとも適当な語を、それぞれ対応する下記イ～ニから1つずつ選び、その記号を解答用紙の所定欄にマークせよ。

Our lazy old cat, PJ, became well known for sleeping around the neighborhood and used to nap in the spare bedroom of a young couple, who lived three doors up from us. While I wasn't always aware (1) his friendships, it didn't matter as (2) as he always came home at mealtimes.

One day, we invited some new neighbors over for drinks. Not long (3) the evening, our new neighbor saw PJ (4) comfortably on the window ledge. "You've got my cat!" she exclaimed, (5). We learned that at their house, PJ was known as Cougar.

PJ continued living with us for a while. But when we got a new kitten and a new dog, he finally walked out. He was missing for ten days (6) my husband spotted him near his office. He brought our wandering cat home, but it was clear that PJ wasn't happy. After he meowed for a while, I let him out and he never returned.

A few months later, our new neighbor told us she'd seen PJ: It seems that an elderly neighbor had welcomed him into her home, and (7) taking up residence there PJ's size had doubled and he had been given his own velvet lounge chair to lie in. The old lady and PJ had become very (8) of each other, ever since he'd followed her home. (9) a smart cat!

- | | | | |
|--------------------|--------------|-------------------|-----------|
| (1) イ. about | ロ. for | ハ. of | ニ. with |
| (2) イ. far | ロ. long | ハ. much | ニ. soon |
| (3) イ. by | ロ. in | ハ. into | ニ. over |
| (4) イ. sat | ロ. sits | ハ. sitting | ニ. to sit |
| (5) イ. had laughed | | ロ. having laughed | |
| | ハ. laughing | | ニ. laughs |
| (6) イ. because | ロ. before | ハ. in case | ニ. once |
| (7) イ. ever | ロ. from | ハ. if | ニ. since |
| (8) イ. attracted | ロ. concerned | ハ. fond | ニ. kind |
| (9) イ. How | ロ. What | ハ. Who | ニ. Why |

IV. 次の文1～8のそれぞれにおいて、下線部イ～ニのうち、英語表現上正しくないものを1つずつ選び、その記号を解答用紙の所定欄にマークせよ。

1. Becoming fluent in more than one language not only advances children's thinking skills but also brings them cognitive gains at adulthood.

2. By all the discussion on global warming, singularly little has been achieved to date.

3. It is important to remember that good decisions, based on an accurate analysis of the risks involving, can still lead to bad outcomes.

4. Aristotle, a philosopher of ancient Greece, who had one of the world's greatest mind, taught that only by knowing the origin of something can it be truly understood.

5. As a father of three, he strives to spend so much time as possible with his children, despite his busy schedule.

6. The most advanced computer offers a much better communication experience, with twin cameras allow users to chat with several other users via video.

7. We are essentially responsible to choose our own direction, although family and friends may well give us advice about what to do.

8. More than 30,000 years ago the human body was represented in sculptures and
in images were painted on cave walls, and this suggests that people in those days
clearly understood their body shape and form.

V. 次の日本語と同じ意味になるように、下記の英文の空所(イ)～(へ)それぞれに1語を補い、文を完成せよ。解答は解答用紙の所定欄にしるせ。

ホモ・サピエンスと呼ばれる現生人類は、150,000年ほど前に東アフリカ或いは南アフリカに存在していた一群の人々を祖先に持つ可能性が高いことが、最新の遺伝学的研究によって示されている。その地から彼らは数を増やし、徐々に自分たちの環境を大きく変化させつつ、地球上のあちこちに広がっていった。今日地球上には約70億の人間が生息している。他の哺乳類と同様、彼らは温血動物であり、体毛があり、子供を乳で育てる。

The (イ) genetic studies indicate that modern humans—the species *Homo sapiens*—may well have (ロ) from a group of people in eastern or southern Africa some 150,000 years ago. From here they (ハ) around the globe, multiplying (ニ) number, and gradually making more and more extensive changes to their surroundings. Today there are about seven billion humans on the planet. (ホ) other mammals, they are warm-blooded, have body hair, and produce milk to (ヘ) their young.

【以下余白】

