

1 Answer questions (1) ~ (5).

(1) Choose the word that is most similar in meaning to the underlined word.

著作権の関係で問題文は掲載できません。

注) *pharmaceuticals: drugs for medicine

*tweak: make a small change

*potency: the strength of a drug

- a. improvement
- b. regulation
- c. selection
- d. understanding

(2) Choose the phrase that best fits the blank and completes the topic sentence.

著作権の関係で問題文は掲載できません。

注) *miniscule: very, very small

*dystopian: very bad and unhappy

*variability: being likely to change or vary

- a. animals will have to adapt to changes in the climate
- b. climate change will look different for everyone
- c. technology will bring many changes
- d. the weather will become harder to predict

(3) Choose the title that best represents the main idea of the following passage.

著作権の関係で問題文は掲載できません。

注) *biometrics: measuring data about your body

*delineates: defines in detail

- a . Cellphone vs. smartphone
- b . Comparing phone prices
- c . Features of a smartphone
- d . The history of the telephone

(4) Choose the word that best fits the blank.

The structure of the human eye is often compared to a camera. While we don't need to know the detailed structure, it's important to understand the basic parts, as we will need to have that basic knowledge to understand the latter parts. The light that enters our eyes passes through our cornea*, which is a [] layer. It covers the iris and pupil. The iris is the colored portion of the eyes, while the pupil is the opening that allows the light to pass into the inner eye. The opening of the pupil is controlled by the iris.

注) *cornea: one of the outer layers covering the eyeball

- a . foggy
- b . muddy
- c . mysterious
- d . transparent

- (5) Choose the sentence that is true according to the following passage.

Have you ever wondered why children always seem to have bags of energy and never run out of steam? Researchers have discovered that children have the stamina and levels of recovery of endurance athletes. In fact, scientists say children's muscles recover from “high-intensity exercise” a lot quicker than athletes. A study looked at the performance levels of children when they were cycling, and compared their fitness to that of athletes. Researcher Dr Sebastien Ratel said: “We found the children used more of their aerobic metabolism and were therefore less tired during the high-intensity physical activities. They also recovered very quickly — even faster than the well-trained adult endurance athletes.” The researchers hope that their findings will help scientists better understand how the human body changes with age. It could lead to advances in the fight against diabetes and other diseases. Dr Ratel said the research was particularly important as more children become less active. He warned: “With the rise in diseases related to physical inactivity, it is helpful to understand the physiological changes with growth that might contribute to the risk of disease.” He added that children should maintain their fitness as they grow up and play as much as they could so they remain healthy as adults. He said: “Children seem to have the ability to play and play and play, long after adults have become tired.”

- a . Athletes are more likely to tire easily as they become older.
- b . Children can overcome tiredness more quickly than a well-trained athlete.
- c . Diabetes among children is on the rise recently.
- d . High-intensity physical activities are popular activities for children.

[出典]

- (1) “Automating molecule design to speed up drug development”, Rob Matheson, July 6, 2018, MIT News Office,
<https://news.mit.edu/2018/automating-molecule-design-speed-drug-development-0706>, 一部改
- (2) “Male and Female Farmers Cope Differently with Climate Change”, Jesslyn Shields, June 28 , 2018, HowStuffWorks,
<https://science.howstuffworks.com/environmental/green-science/male-and-female-farmers-cope-differently-climate-change.html>
- (3) “smartphone”, Margaret Rouse, June 5, 2018, TechTarget,
<https://searchmobilecomputing.techtarget.com/definition/smartphone>
- (4) Reprinted from “Do Eye Exercises Help Improve Vision?” by Mahak Jalan, Science ABC. Copyright © 2018 Science ABC Limited.
- (5) Banville, Sean “Children are as fit as endurance athletes” Breaking News English. 26 April, 2018. Copyright © 2018 Sean Banville. Used with permission

2 Read the following article and answer questions (1) ~ (5).

- [1] In this day and age, the average person gets about 6-7 hours of sleep. Our days usually start early, with lectures and office jobs starting as early as 7 or 8am. Everyone must be all too familiar with the sleepy, groggy* feeling that we get in the wee hours* of the morning. But is this normal? Are our late night habits correct? Or is it time for us to make some changes in our daily schedule? First, let's see what our normal body clock tells us.
- [2] The human body is wonderful, as it is wired in complex, yet efficient ways. However, what happens when you put diesel in a car designed to run on unleaded? Its efficiency will decrease, right? Similarly, going against our body's normal clock decreases our own efficiency.
- [3] A biological clock is the innate* mechanism in a body that regulates its various functions and behavior. It is like the body's internal clock, which determines what functions should occur at what time. Our normal body clock is synchronized with the time of the day, i.e., night-time or day-time.
- [4] This is due to the hormone melatonin, which most of us have heard of before. Consuming coffee and caffeinated drinks “decreases melatonin levels”, but what is melatonin and what does it do?
- [5] Simply put, melatonin makes you sleepy. Of course, it has other effects too, but it's famous for controlling your sleep patterns. Melatonin levels usually peak at night, around 2am, and then start decreasing by 7am. This is why your sleep will be deepest between 2am-4am. This is a very good argument to present to your teachers for not holding early morning lectures. Or, the next time you're late, just blame it on your body clock! These melatonin levels are low throughout the day and start rising again around 8-9pm in the evening. This surge and drop of melatonin is due to light exposure. Our bodies are designed to function according to the availability and presence of natural light. Melatonin also affects the immune system and blood pressure. At night, with increased levels of melatonin, our elevated blood pressure levels decrease. This helps the body to relax.
- (中略)
- [6] Completely contradicting the body's internal clock can lead to major mishaps*. Now, I know it isn't possible to change our daily routine overnight, but we can attempt to not stay up until 3am. The body can adapt to slight changes, but not to such drastic changes. Refraining from regular exposure to artificial light after 10-11pm would give the body some amount of respite*. Melatonin levels drop during late morning, so scheduling important events that require an alert mind after that time slot would increase efficiency. A short relaxation period after lunch might also help, since melatonin levels

increase at that point. However, if a person is caught up on sleep, that might not be necessary, as melatonin is not the only deciding factor for sleep. Planning your day around the body's natural clock ensures maximum efficiency and output.

[出典]

Reprinted from “Can Exposure To Light Change Our Internal Body Clock?” by Mahak Jalan, Science ABC. Copyright © 2018 Science ABC Limited.

- 注) *groggy: weak and unsteady
*wee hours: early hours
*innate: natural, something you are born with
*mishaps: small mistakes and unlucky events
*respite: rest

- (1) In which of the following paragraphs does the author specify substances that lower the level of melatonin?
- a. Paragraph 1
 - b. Paragraph 3
 - c. Paragraph 4
 - d. Paragraph 6
- (2) In which of the following paragraphs does the author give advice about the best time to concentrate on details?
- a. Paragraph 1
 - b. Paragraph 2
 - c. Paragraph 3
 - d. Paragraph 6
- (3) In which of the following paragraphs does the author compare the human body to an automobile?
- a. Paragraph 2
 - b. Paragraph 3
 - c. Paragraph 4
 - d. Paragraph 5
- (4) According to the article, when are melatonin levels at their highest?
- a. 2am
 - b. 7am
 - c. after lunch
 - d. 9pm
- (5) What is the main point of this article?
- a. Contradicting the body's internal clock makes you more efficient.
 - b. Knowledge of your biological clock may help you to work more effectively.
 - c. Melatonin levels rise and fall during the day and night.
 - d. The average person gets about 6-7 hours of sleep and starts work early.

3 Follow the directions and write sentences in English.

(1) Write a question to complete the conversation below.

A : Did you ever find that charging cable that you have been looking for?

B : Yes, after looking for almost a month.

A : Great. Now you don't have to borrow mine all the time.

B : I found it buried under this pile of clothes right here.

(2) Write a question to complete the conversation below.

A : Now that you've joined the cycling club, are you going to buy a new bicycle?

B : I already bought a new one just last week.

A : Really! _____

B : It didn't cost very much because it was on sale.

(3) Write a question to complete the conversation below.

A : Did you go to practice last night?

B : I went for a little while, but I had to leave early to finish a report.

A : _____

B : Only a few showed up last night. Everyone must be busy studying.

(4) Write a complete sentence to answer the following question using the information written in Japanese.

A : Do you know where I can find a supermarket around here?

B : Yes. _____ [二つ目の信号を左折する]

A : OK. Thank you.

(5) Write a complete sentence to answer the following question using the information written in Japanese.

A : I upgraded all of the lighting in my home to LEDs.

B : How much will you be able to save in electricity costs?

A : _____ [年間約 3,000 円]

B : Well, it is better than nothing.

4 次の英文の要旨を、句読点も含め 100 字以内の日本語でまとめ、解答欄に書きなさい。

In July 2017, families in Marion County, Florida, got some surprising news about the school year ahead. “Traditional homework as we know it will disappear, at least for elementary students,” school superintendent Heidi Maier said in a voice message to parents. “Instead of working on classroom assignments at home, we want students reading,” she said.

More than 20,000 students attend the county's 31 elementary schools. Dara Mehr, a fifth grader, is one of them. Last year, Dara had two or three hours of homework a night. “I would have 12 math questions and six or seven pages of work to do for reading,” she told *TIME for Kids*.

Now Dara's only homework is to read for 30 minutes. She enjoys having more time for activities like painting and playing video games. But her mom, Kayla Mehr, misses last year's assignments. “The kids knew that once they finished those worksheets, they were done,” she says, referring to Dara and her sister, Neveah, a second grader. “Sometimes, getting them to sit down and read for 30 minutes is a challenge.”

Around the country, in states from Florida to Vermont to California, elementary schools are experimenting with a no-homework policy. Superintendent Maier and other school leaders say the new policy is based on research. Studies have shown that homework does not boost grades or test scores in elementary school.

Paula Fass is a professor at the University of California, Berkeley, and the author of *The End of American Childhood*. She points out that disagreement over the value of homework is not new. “There's been controversy over homework ever since schooling became a requirement,” she says.

Support for homework has gone up and down through the years. “In the 1900s, a lot of parents thought that homework just occupied children's time [when] they could be doing chores,” says Fass. More than a century later, many still question the role that homework should have in kids' lives.

(一部略)

The National Education Association and the National PTA suggest that students get 10 minutes of homework per grade, starting in first grade. Harris Cooper, who is a professor at Duke University and the author of *The Battle over Homework*, supports this policy, known as the “10-minutes rule.”

But he warns that homework can have a negative impact as well. “If there's too much of it or if it's too difficult, it can lead to frustration and to kids voicing concern about their abilities,” he says. “And that's not a good thing.”

Last year, Kelley Elementary School in Holyoke, Massachusetts, made headlines for eliminating homework. Jackie Glasheen, the principal at the time, told ABC News that she wanted kids to have more quality time with family. “We want them to engage with their families, talk about their school days, and go to bed,” she said.

But this year, the school has a new principal, Isamar Vargas. Students in kindergarten through eighth grade have homework once again. But they receive only one assignment per day.

Vargas explained that the school takes a balanced approach. “We want to build responsibility and structure,” she says. “But we don't want to take away the important time that children have with their families or practicing sports.”

Kelley Elementary won't be the only school to experiment with its policies. “One thing you can know is that this is part of a long history of conflict over homework,” says Fass, the Berkeley professor. “And that can be expected to continue.”

[出典]

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5 次の英文を読んで、下の問いに答えなさい。

著作権の関係で問題文は掲載できません。

[出典]

Harvey Seifter and Peter Economy. *Leadership ensemble lessons in collaborative management from the world's only conductorless orchestra*. 1st ed, Times Books, 2001, PP.11-12, 一部改

注) *seams: the lines where two pieces of cloth are sewn together

- (1) Orpheus Chamber Orchestra のリハーサルを見て、筆者が感じたことを、本文に即して、句読点を含めて日本語 60 字以内で説明しなさい。
- (2) リーダーに必要な資質はどのようなものだと思いますか、50 語程度の英語で書きなさい。