Ripple English
Active Learning Program

Workbook for:
“What is the color of the ocean?”

問題は解きっぱなしにしないで！

英語資格試験の学習は、**解いた後の復習をしなければほとんど効果はありません。**
答え合わせをしておしまいにせずに、**テキストの音読練習やリスニング、多読学習などのインプット学習を何度も反復して記憶に定着させましょう。**ホームページからダウンロードできる音読練習用のテキストをぜひご活用ください。
また、数日置いてから再度解き直すのも効果的です。答えを記憶してしまっているかもしれませんが、回答の根拠をなぞりながら繰り返し解くことで有効な復習になります！

What is the color of the ocean?

1. What is the color of the ocean? Well, the answer **varies** depending on who you ask. An ancient Greek would answer “wine-dark,” while some aboriginal people in Australia will say it’s black. Russians may change their answers from time to time.

2. Physically speaking, color is nothing more than a frequency of the light waves. The lowest visible frequency of light is called red, and the highest frequency we can detect is referred to as purple. Between the boundaries of infrared and ultraviolet, a spectrum of various light wavelengths exists, including blue, green, and yellow. The sun emits all colors of light, but things around us reflect only a part of them. For example, a banana looks yellow because it only reflects yellow light. The other colors are absorbed by the object, and the light energy is turned into heat energy. This is how color scientifically works. However, color is more than just a physical phenomenon for Homo sapiens. We give names to different wavelengths of light, perceive them through our cultural filters, and enjoy various combinations of them as forms of artistic expression. What is the color for humanity?

3. The sensation of color is produced in the brain, not the eye, and the brain does not take the signals from the retina at face value. It is constantly engaged in highly complex and sophisticated computation to stabilize our perception under different lighting conditions. From an evolutionary perspective, if the same fruit on a tree looked one color at noon and a different color in the evening, it would be troublesome because color would not be reliable information to tell if it’s ripe or not. When the signals from the retina do not correspond to what is expected, the brain adjusts them and makes us see a color that does not exist, based on our past experiences and memory. For example, a study shows that a perfectly gray picture of a banana can appear slightly yellow to us, since the brain remembers bananas as yellow and thus regulates the sensation towards its expectation.

(1) The word “vary” in the passage is closest in meaning to
A. astonish
B. hide
C. converge
D. differ

(2) According to paragraph 2, an apple looks green when
A. it is not ripe.
B. it absorbs all range of light except green.
C. it reflects red light.
D. it matches the wavelength of green light.

(3) According to paragraph 3, which of the following is true?
A. Our Visual organ is designed so as to perceive the reality as it is.
B. A color of the same fruit can look different due to the brain function.
C. Our color perception is always adjusted by the brain.
D. How we perceive colors is distorted by the overuse of computers.

4. Languages also significantly interfere with our perception of colors. Russian has two distinct color names for the range that English covers under the name “blue.” They call light blue “goluboy” and dark blue “siniy.” Just as we differentiate red and purple as different colors, Russian speakers distinguish light blue and dark blue as separate categories. When they are tested to tell the difference between two shades of blue, Russian speakers showed quicker responses than English speakers across the boundary between goluboy and siniy. Our color perception is largely influenced by our memory, culture, language and so on. It’s impossible to perceive colors purely without any bias.

5. Homer is an ancient Greek poet known as the author of the epic poems "Iliad" and “Odyssey," which beautifully portray adventures of Greek gods and heroes. Despite his vibrant depiction, his works contain a lot of color descriptions that are **puzzling** to us today. For example, he described the ocean as “wine-dark.” He also applied the term "wine-dark" to cattle. How is it even possible that the sea and cattle have the same color as wine? This is not because Homer was colorblind, but because ancient Greek didn’t have a word meaning “blue”.

6. **Nothing has changed in the eye’s anatomy over the last millennia**, but languages are constantly changing. For example, the native population in Murray Island speak their unique language. Until recently, they only had three distinct names for colors; black, white, and red. Everything other than red was probably categorized into black or white based on its brightness, which is why they called the sky and the sea “black.”

7. Anthropologists have shown that any language acquires the names for colors in a particular order. Languages start with black and white. Red is always the second color to receive a name. Then, languages discover yellow and green, and finally a word meaning “blue” is coined. People give names to things they feel the need to talk about. Red is a signal for many vital things, such as bleeding and face flushing due to fever. Yellow and green are also important to spot ripe fruits from a green background. Of course, blue is familiar as the color of the sky and the sea. But ancient Greeks and many others didn’t find any pressing incentives to name it.

(4) According to paragraph 4, which of the following is NOT true?
A. Russian speakers showed different reaction when two shades of blue belonged to different categories.
B. Our color perception is significantly influenced by the language we speak.
C. English speakers recognize light blue and dark blue as the same category.
D. Russians coined “goluboy” and “siniy” because their brain distinguish them as different color categories.

(5) The word “puzzling” in the passage is closest in meaning to
A. creative
B. difficult
C. confusing
D. obscure

(6) Which of the following text best expresses the essential information in the highlighted sentence?

Nothing has changed in the eye’s anatomy over the last millennia,

A. Our biological system didn’t change at all in the last several thousands years.
B. Our medical understanding on the function of eyes didn’t improve at all.
C. Our visual system didn’t diverge through 10,000 years of evolution.
D. Scientific studies on the function of eyes didn’t make good progress.

(7) According to paragraph 7, ancient Greek didn’t have a word for blue because
A. they were barely familiar to the color.
B. they didn’t have to do so.
C. their color perception was different from ours.
D. their culture was not matured enough.

8. Everything you see on a screen is actually a combination of the three primary colors: red, green, and blue, or RGB. Surprisingly, our biological color perception works the same way. We have a thin layer of cells in the back of our eyeballs, called the retina. The retina has two different types of light-detecting cells: rods and cones. The rods are used in low-light conditions to detect brightness, and cones are used to perceive colors. There are three kinds of cones, each of which roughly corresponds to the color of red, green, and blue. When we see a color, each cone sends its own distinct signal to our brain. For example, when we see purple, both the red and blue cones get activated. Our brain receives the signals from the cones and processes this information to reconstruct purple. Everything we perceive through the eyes derives from the combination of red, blue, and green.

9. Three primary colors, when carefully arranged on a canvas, creates breathtaking vibrance and harmony in the arts. For example, *"The Madonna della Sedia"* serves as a prime example. While the red color of Madonna's sleeve at the center tightens the overall impression, the green on the left and yellow and blue on the right, whose mixture creates green, provide a sense of balance. Another work **showcasing** a skillful combination of primary colors is *"Fine Wind, Clear Morning"* by Hokusai, part of his *Thirty-six Views of Mount Fuji* series, which is characterized by the dynamic contrast of the red mountain, the blue sky, and green forests.

Raphael "The Madonna della Sedia" (1514)

Katsushika Hokusai "Fine Wind, Clear Morning" (1830-1834?)

(8) According to paragraph 8, which of the following is NOT true?
A. The retina has two kinds of cells to perceive light stimuli.
B. Rods have little to do with our perception of colors.
C. Cones reintegrate the signals of three primary colors.
D. We recognize yellow by processing signals from red and green cones.

(9) The word "showcasing" in the passage is closest in meaning to
A. selling
B. utilizing
C. safekeeping
D. exhibiting

10. *"Café Terrace at Night"* by Vincent van Gogh. It fascinates us at the very first glance, perhaps because of his elaborate use of colors. The striking contrast between the vivid yellow and deep blue immediately draws our attention. Whether van Gogh intended it or not, the **allure** of this painting can be explained by the theory of complementary colors.

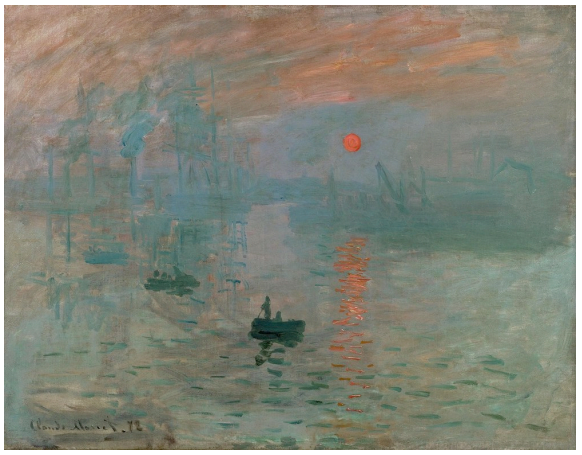
11. Complementary colors are pairs of colors located on opposite sides of the color circle, such as blue and yellow, green and magenta in the RGB model. When they are placed next to each other, they create a strong contrast yet beautiful harmony. Another intriguing aspect of complementary colors is that, when they are mixed, they produce gray color by killing each other's tones. Along with the tones, brightness of the colors have to be in contrast. Vibrant yellow calls for dark blue to neutralize its intensity and maintain balance. As a result, a pair of complementary colors can create a distinct harmony that entirely differs from one with similar colors. It is an equilibrium within a dynamism, unity within a diversity. Some of the masterpieces in the history of the arts take great advantage of complementary colors. *"Girl with a Pearl Earring"* by Johannes Vermeer is characterized by the combination of yellow and blue. While van Gogh's work places bright yellow against dark blue, Vermeer harmonizes intense blue with dull yellow. *"Impression, Sunrise"* by Claude Monet also makes a textbook example, which features the vivid red sun against a grayish cyan background.

(10) The word "allure" in the passage is closest in meaning to
A. technique
B. attraction
C. intention
D. significance

(11) According to paragraph 11, which of the following is NOT true?
A. Both Vermeer and van Gogh's works make a good use of complementary colors.
B. The gray color produced as the mixture of complementary colors is vibrant and beautiful.
C. Monet made the sun impressive by putting it against its complementary color.
D. Both tones and brightness need to be in contrast.

Vincent van Gogh "Café Terrace at Night" (1888)

Johannes Vermeer "Girl with a Pearl Earring" (1665?)



Claude Monet "Impression, Sunrise" (1872)

Answers

(1) D
(2) B
(3) C
(4) D
(5) C
(6) A
(7) B
(8) C
(9) D
(10) B
(11) B

(1) 文中の “vary” と最も意味が近いのは
A. astonish（驚かせる）
B. hide（隠れる）
C. converge（1つにまとまる）
D. differ（異なる）

(2) ２段落によると、リンゴは次の場合には緑色に見える
A. it is not ripe.（熟れていないとき）
B. it absorbs all range of light except green.（緑を除くすべての色を吸収したとき）
C. it reflects red light.（赤色の光を反射したとき）
D. it matches the wavelength of green light.（緑色の光の波長と調和したとき）
Aはまあその通りなんですがそういう話はしていないです。

(3) 3段落の内容に合致するのは？
A. Our Visual organ is designed so as to perceive the reality as it is.（私たちの視覚器官は、現実をありのままに認識するように設計されている）
B. A color of the same fruit can look different due to the brain function.（脳の働きにより、同じ果物でも色が違って見えることがある）
C. Our color perception is always adjusted by the brain.（私たちの色の知覚は常に脳によって調整されている）
D. How we perceive colors is distorted by the overuse of computers.（コンピューターの使いすぎにより、私たちの色の認識が歪んでいる）

(4) 4段落の内容に合致しないのは？
A. Russian speakers showed different reaction when two shades of blue belonged to different categories.（ロシア語話者は、２つの青の色合いが異なるカテゴリーに属する場合、異なる反応を示した）
B. Our color perception is significantly influenced by the language we speak.（私たちの色の知覚は、私たちが話す言語に大きく影響される）
C. English speakers recognize light blue and dark blue as the same category.（英語話者は、水色と紺色を同じカテゴリとして認識している）
D. Russians coined “goluboy” and “siniy” because their brain distinguish them as different color categories.（ロシア人がgoluboyとsiniyという言葉を作ったのは、かれらの脳がそれらを異なる色のカテゴリーとして区別しているためだ）
Dは因果関係が逆のため誤り。語彙として別れているために、脳の反応に違いが生じているというのが本文での趣旨。

(5) 文中の “puzzling” と意味が最も近いのは
A. creative（創造的な）
B. difficult （難しい）
C. confusing（困惑させる）
D. obscure（ぼんやりした）

(6) 以下のハイライトされた文章のエッセンスをもっとも良く表しているのは？
Nothing has changed in the eye’s anatomy over the last millennia,（過去数千年にわたり、目の解剖学的構造は何も変わっていない）
A. Our biological system didn’t change at all in the last several thousands years.（私たちの生物学的システムは、過去数千年間まったく変わっていない）
B. Our medical understanding on the function of eyes didn’t improve at all.（目の機能に関する医学的な理解はまったく向上しなかった）
C. Our visual system didn’t diverge through 10,000 years of evolution.（私たちの視覚システムは、10,000年の進化を通じて分岐し多様化することはなかった）
D. Scientific studies on the function of eyes didn’t make good progress.（目の機能に関する科学的研究はあまり進んでいない）

(7) ７段落によると、古代ギリシャ語が青に相当する語彙を持たなかったのは
A. they were barely familiar to the color.（青がほとんど馴染みある色ではなかったから）
B. they didn’t have to do so.（その必要がなかったから）
C. their color perception was different from ours.（彼らの色覚が我々のそれと異なっていたから）
D. their culture was not matured enough.（彼らの文化が十分に成熟していなかったから）
段落最後の文”But ancient Greeks and many others didn’t find any pressing incentives to name it.”（青色に名前をつける差し迫った動機がなかった）に対応するBが正解。

(8) ８段落の内容に合致しないのは？
A. The retina has two kinds of cells to perceive light stimuli.（網膜には光刺激を知覚するための2種類の細胞がある）
B. Rods have little to do with our perception of colors.（杆体は私たちの色の認識とはほとんど関係がない）
C. Cones reintegrate the signals of three primary colors.（錐体は3原色の信号を再統合する）
D. We recognize yellow by processing signals from red and green cones.（赤と緑の錐体からの信号を処理することで我々は黄色を認識する）
信号を再統合して色を再構築する処理は脳で行われており、錐体で行われる処理ではないのでCが誤り。

(9) 文中の “showcasing”と意味が最も近いのは
A. selling （売っている、売られている）
B. utilizing （活用している）
C. safekeeping（保管、保護）
D. exhibiting（披露する、展示する）

(10) 文中の “allure” と意味が最も近いのは
A. technique（技術）
B. attraction （魅力）
C. intention（意図）
D. significance（重要性）

(11) 11段落の内容に合致しないのは？
A. Both Vermeer and van Gogh’s works make a good use of complementary colors.（フェルメールとゴッホの作品はどちらも補色をうまく使っている）
B. The gray color produced as the mixture of complementary colors is vibrant and beautiful.（補色が混ざり合って生まれるグレー色は鮮やかで美しい）
C. Monet made the sun impressive by putting it against its complementary color.（モネは、補色と対比させることで太陽を印象的にした）
D. Both tones and brightness need to be in contrast.（色調と明るさの両方が対照的である必要がある）
補色を混ぜた結果グレーが生まれると述べているだけで、そのグレー色の評価については言及されていないのでBが誤り。