確認問題
345

ことわざ・教養・背景知識 CHECK TEST

背景知識チートシート：宇宙・物理・最新科学 確認問題集

宇宙・物理・最新科学の確認問題24問。常識をくつがえす英文と科学の方法の英文で、論理と重要語を確かめる。

元のチートシートへ

月　日　名前　／ 24問

表で解いて、裏で答え合わせ。まちがえた所は元のシートへ。

◆ Ⅰ 次の英文を読み、設問に答えよ

[1] Pictures of astronauts floating inside the International Space Station often lead people to believe that there is no gravity in space. In fact, at the height where the station orbits, about 400 kilometers above the ground, gravity is still about 90 percent as strong as it is on the Earth's surface. [2] Why, then, do astronauts float? The answer is that the station and everyone in it are constantly falling toward the Earth. They do not hit the ground because they are also moving sideways at a tremendous speed, nearly eight kilometers per second. As they fall, the curved surface of the Earth falls away beneath them, so they keep going around the planet (1) getting any closer to it. Since the astronauts and the station fall together, the astronauts feel weightless(ア). [3] This example shows how a common-sense explanation can be wrong even when it seems obvious.(イ)

1 Choose the best word for (1).

a for　b after　c by　d without

2 According to paragraph [1], which of the following is true?

a Gravity is stronger at the height of the space station than on the ground.

b Gravity at the height of the space station is only slightly weaker than on the ground.

c The space station orbits about 4,000 kilometers above the ground.

d There is no gravity at the height of the space station.

3 Why do the astronauts not hit the Earth?

a Because they are moving sideways very fast as they fall.

b Because the station's engines keep pushing them upward.

c Because the Earth's surface is flat.

d Because there is no gravity in space.

4 The underlined word (ア) weightless means ＿＿＿.

a as if they had no weight　b heavier than usual

c unable to move　d extremely tired

5 下線部(イ)の a common-sense explanation(常識的な説明)とは何か。最も適切なものを選べ。

a 宇宙には重力がないので宇宙飛行士は浮く、という説明

b 地球の表面は丸い、という説明

c 宇宙ステーションは地球に向かって落ち続けている、という説明

d 宇宙ステーションは秒速約8kmで動いている、という説明

◆ Ⅱ 次の英文を読み、設問に答えよ

In everyday English, the word "theory" often means little more than a guess, as in "I have a theory about why he was late." (A) In science, however, the word has a much stronger meaning. (B) A scientific theory is an explanation supported by a large body of evidence, such as the theory of evolution or the theory of relativity. (C) According to the philosopher Karl Popper, a claim is scientific only if it could, in principle, be shown to be false by observation. (D) A statement that no possible observation could ever (2) is not exactly wrong, but it is not science either. This is why scientists are often more careful than the public about saying that something has been "proved."

6 次の英文を入れるのに最も適切な位置を、本文の (A)～(D) から選べ。Even such well-supported theories, however, remain open to revision if new evidence appears.

a (A)　b (B)　c (C)　d (D)

7 Choose the best word for (2).

a repeat　b announce　c explain　d disprove

8 According to the passage, which of the following is true?

a In science, a theory is not just a guess but an explanation backed by much evidence.

b The theory of evolution is only a guess.

c Scientists often say that their theories have been proved forever.

d Popper argued that scientific claims can never be tested.

9 Why does the author give the example "I have a theory about why he was late"?

a To show that guesses are always wrong

b To show the everyday meaning of the word "theory"

c To give an example of a scientific theory

d To explain Popper's idea of science

◆ Ⅲ 空所に入る最も適切な語句を選べ

10 A planet that orbits a star other than the Sun is called an ＿＿＿.

a exoplanet　b asteroid　c satellite　d comet

11 The region around a star where liquid water could exist on a planet's surface is known as the ＿＿＿ zone.

a habitable　b dead　c danger　d time

12 A light-year is a unit of ＿＿＿, not of time.

a weight　b speed　c distance　d brightness

13 Broken satellites and other pieces of space _____ travel at high speeds and can damage working spacecraft.
a debris b travel c weather d vacuum

14 An _____ mission sends robots instead of astronauts.
a uncrewed b commercial c international d crewed

15 Before research papers are published, they usually go through peer _____, in which other experts check them.
a group b pressure c review d support

16 The Sun produces energy through nuclear _____, in which light atomic nuclei join together.
a fusion b fission c waste d weapons

17 Hayabusa2 brought material from the asteroid Ryugu back to Earth, an example of a sample _____ mission.
a test b survey c return d size

18 The _____ syndrome describes a situation in which collisions create more debris, which then causes still more collisions.
a Kessler b Hubble c Fermi d Stockholm

◆ Ⅳ 下線部の意味に最も近いものを選べ

19 Some argue that the money should be spent on problems on Earth <u>instead</u>.
a after space research b in addition to space research
c in place of space research d because of space research

20 Science <u>advances</u> by correcting its own mistakes.
a slows down b loses trust c makes progress
d becomes simpler

21 <u>The absence of evidence is not the same as evidence of absence.</u>
a If we cannot find something, it does not exist.
b Evidence is always missing in science.
c We should stop looking for things we cannot find.
d Not finding something does not prove that it does not exist.

22 The 1967 treaty states that no country can <u>claim</u> the Moon.
a say that it owns b visit c take pictures of d study

◆ Ⅴ 設問に答えよ

23 次の英文を和訳せよ。The stars we see in the night sky look the way they did when their light left them, not the way they are now.

24 次の日本文を英訳せよ。宇宙はどこか1つの国ではなく、全人類のものであるべきだ。

1 **d　without**
落ちながらも地面が丸く遠ざかるので「近づくことなく」回り続ける。without doing＝～することなく。any closer の any も否定の文脈と合う。

2 **b　Gravity at the height of the space station is only slightly weaker than on the ground.**
about 90 percent as strong＝地上の約9割＝少しだけ弱い。「重力がない」は In fact で否定された思い込み。4,000 km は 400 km の数字ずれ。

3 **a　Because they are moving sideways very fast as they fall.**
They do not hit the ground because ～ の部分が直接の根拠。エンジンで押し上げる話は本文にない。curved surface（丸い表面）とあるので flat は逆。

4 **a　as if they had no weight**
-less＝～がない。重さを感じない状態。宇宙飛行士とステーションが一緒に落ちているので、床に押しつけられない（自由落下）。

5 **a　宇宙には重力がないので宇宙飛行士は浮く、という説明**
第1段落の lead people to believe that there is no gravity in space が「常識的だが誤った説明」。落ち続けている、は本文が示した正しい説明の方。『常識をくつがえす』型。

6 **c　(C)**
such well-supported theories は直前の「多くの証拠に支えられた理論（進化論・相対性理論）」を指す。強い理論でも新しい証拠で改められる→だから Popper の反証の話へ、と続く。

7 **d　disprove**
直前の「観測で誤りと示せる（shown to be false）なら科学」の裏返し。どんな観測でも反証できない主張は科学ではない。falsifiability（反証可能性）。

8 **a　In science, a theory is not just a guess but an explanation backed by much evidence.**
supported by a large body of evidence の言いかえ。「進化論はただの推測」は日常語の theory との取り違え。「証明された」と言うことに科学者は慎重、とあるので最後の選択肢は逆。

9 **b　To show the everyday meaning of the word "theory"**
In everyday English … as in ～ の as in は「例えば～のように」。日常の意味を先に示し、In science, however で科学の意味と対比する構成。

10 **a　exoplanet**
exoplanet＝系外惑星。exo（外の）＋planet。1995年に太陽に似た恒星を回るものが初めて見つかった。satellite は惑星を回る衛星。

11 **a　habitable**
habitable zone＝生命居住可能領域。inhabit・habitat と同じ語源で「住める」の意味。液体の水が存在しうる距離の範囲。地球外生命の長文の必須語。

12 **c　distance**
光年＝光が1年に進む距離。year に引っぱられて時間の単位と思うのが定番の誤解。not of time の対比が手がかり。

13 **a　debris**
space debris＝宇宙ごみ。debris[dəbríː]は不可算名詞で -s を付けない。壊れた衛星や破片が高速で回り、衝突の危険がある。

14 **a　uncrewed**
uncrewed＝無人の（crew＝乗組員）。manned より性別に中立な言い方。instead of astronauts（宇宙飛行士の代わりに）が言いかえ。

15 **c　review**
peer review＝査読（同じ分野の専門家による審査）。peer pressure（仲間からの同調圧力）と混同させるひっかけ。科学の条件（再現性・査読）の話で出る。

16 **a　fusion**
nuclear fusion＝核融合（軽い原子核がくっつく）。fission＝核分裂（重い原子核が割れる）で、今の原子力発電所はこちら。join together が決め手。

17 **c　return**
sample return＝サンプルリターン（試料を持ち帰る）。brought … back が言いかえ。はやぶさ2は2020年にリュウグウの試料を地球に届けた。

18 **a　Kessler**
the Kessler syndrome＝ケスラーシンドローム（1978年に提唱）。衝突→破片→さらに衝突の連鎖。Fermi は地球外文明の証拠がない「パラドックス」の方。

19 **c　in place of space research**
instead＝その代わりに。宇宙開発への支出を批判する側の主張。in addition to（～に加えて）は「両方に使う」で逆。

20 **c　makes progress**
advance＝進歩する＝make progress。by doing（～することで）。まちがいを直せることが科学の強みだ、という宇宙の長文の主題。

21 **d　Not finding something does not prove that it does not exist.**
「証拠がない」≠「ないという証拠」。地球外生命が「まだ見つからない」と「いない」は違う、という議論の決め台詞。2つ目の選択肢はまさに本文が否定する考え。

22 **a　say that it owns**
claim＝（自分のものだと）主張する。宇宙条約（1967年）は天体の領有を認めない。訪問や研究はできるので、ほかの選択肢は条約の内容と合わない。

23 **夜空に見える星は、今の姿ではなく、その光が星を出発した時の姿をしている。**
採点ポイント：The stars (that) we see（目的格の関係代名詞の省略）／the way S V（SがVする様子）／A, not B の対比。遠い星ほど昔の光を見ている。

24 **Space should belong to all humankind, not to any single country.**
採点ポイント：belong to～（～のものだ。進行形にしない）／A, not B。humankind は性別に中立。別解：all of humanity。

もっと無料で学ぶなら
原田英語.com
究極の英単語帳（PDF印刷）・共テ単 キョウテタン・共通テスト満点チートシート・英文法大全・英作文超絶採点くん・時事英語ナビ…
受験に役立つ無料の英語アプリと、約2,800本の記事。
原田英語.com
ほかのチートシート（全439本・無料）