

令和6年度推薦試験A（公募制）  
理解力評価テスト問題  
（数学・英語）

令和7(2025)年度入試に実施する  
「総合選抜（女子奨学生）」、「推薦試験A（公募）」、「推薦試験B（公募）」  
における理解力評価テスト及び基礎学力試験のご参考にしてください。  
なお、基礎学力試験は特別奨学生選抜試験の代替試験になっています。



# 数 学



注意：問題（１）から（４）の解答は〔第１面－数学〕の「１」の解答マーク欄を使用してください。

問題

(1)  $x = \frac{1}{2 + \sqrt{3}}, y = \frac{1}{2 - \sqrt{3}}$  のとき,  $x + y = \boxed{\text{ア}}, xy = \boxed{\text{イ}},$

$x^3y + xy^3 = \boxed{\text{ウエ}}, x^3 + y^3 = \boxed{\text{オカ}}$  である.

(2) 方程式  $2|x| + 3|x - 2| = 3x + 9$  の解は  $x = -\frac{\boxed{\text{キ}}}{\boxed{\text{ク}}}, \frac{\boxed{\text{ケコ}}}{\boxed{\text{サ}}}$  である.

(3)  $\triangle ABC$  において,  $AB = 3, CA = 8, \angle CAB = 60^\circ$  のとき,  $BC = \boxed{\text{シ}}$  で

あり,  $\triangle ABC$  の面積は  $\boxed{\text{ス}}\sqrt{\boxed{\text{セ}}}$  である. また,  $\triangle ABC$  の外接円の半径は

$\frac{\boxed{\text{ソ}}\sqrt{\boxed{\text{タ}}}}{\boxed{\text{チ}}}$  である.

(4)  $x, y$  を実数とする. 以下の欄に当てはまる番号を選べ. ただし, 同じものを繰り返し用いてもよい.

(i)  $x = 3$  は  $\sqrt{x^2} = 3$  であるための  $\boxed{\text{ツ}}$ .

(ii)  $xy = 0$  は  $x^2 + y^2 = 0$  であるための  $\boxed{\text{テ}}$ .

(iii)  $x, y$  がともに有理数であることは,

$x + y, x - y$  がともに有理数であるための  $\boxed{\text{ト}}$ .

(iv)  $x, y$  がともに無理数であることは,

$x + y, x - y$  がともに無理数であるための  $\boxed{\text{ナ}}$ .

- |                     |                     |
|---------------------|---------------------|
| ① 必要十分条件である         | ② 必要条件であるが, 十分条件でない |
| ③ 十分条件であるが, 必要条件でない | ④ 必要条件でも十分条件でもない    |

(〔第１面－数学〕の「１」の解答マーク欄で使用する欄は ナ までです.)

注意：問題（５）から（７）の解答は〔第１面－数学〕の「２」の解答マーク欄を使用してください。

(5)  $a$  を定数とする．連立不等式  $\begin{cases} x^2 + 4x - 5 \leq 0 \\ 3x - 4 > 5x + 2a \end{cases}$  を満たす整数がちょうど 3 個となるのは  $\boxed{\text{ア}} \leq a < \boxed{\text{イ}}$  のときである．

(6) 白球が 4 個，赤球が 6 個入っている袋の中から，A, B の 2 人が順に球を 1 個ずつ取り出す．ただし，取り出した球はもとに戻さないものとする．このとき，A が白球を取り出す確率は  $\frac{\boxed{\text{ウ}}}{\boxed{\text{エ}}}$  であり，2 人とも白球を取り出す確率は  $\frac{\boxed{\text{オ}}}{\boxed{\text{カキ}}}$  である．また，B が取り出した球が白球であることが分かっているとき，A が取り出した球も白球である確率は  $\frac{\boxed{\text{ク}}}{\boxed{\text{ケ}}}$  である．

(7)  $a$  を定数とする．関数  $f(x) = x^2 - 8x + a$  は  $x = \boxed{\text{コ}}$  のとき，最小値  $a - \boxed{\text{サシ}}$  をとる．  
また， $x$  が  $a \leq x \leq a + 1$  の範囲を動くときの  $f(x)$  の最小値を  $g(a)$  とすると， $g(a)$  は  $a = \frac{\boxed{\text{ス}}}{\boxed{\text{セ}}}$  のとき，最小値  $\frac{\boxed{\text{ソタチ}}}{\boxed{\text{ツ}}}$  をとる．

(〔第１面－数学〕の「２」の解答マーク欄で使用する欄は ツ までです．)

(以上，問題終了)







# 英 語



I . 次の (ア) ~ (オ) の下線の部分に入れる語句として、最も適切なものを選択肢から選びなさい。

(ア) It is important to keep any harmful bacteria \_\_\_\_\_ of this lab.

1. in
2. near
3. on
4. out

(イ) He has known about this problem \_\_\_\_\_ the project started.

1. at
2. during
3. from
4. since

(ウ) \_\_\_\_\_ happens when you push the red button?

1. How
2. What
3. Where
4. Why

(エ) Everyone \_\_\_\_\_ to see that all of the water was gone from the lake.

1. surprised
2. surprises
3. was surprised
4. was surprising

(オ) I'm thinking of having \_\_\_\_\_ chocolate or strawberry ice cream for dessert.

1. between
2. both
3. either
4. neither

(カ) My friend left the party \_\_\_\_\_ so much as saying goodbye.

1. as
2. by
3. until
4. without

(キ) \_\_\_\_\_ knows whether or not aliens exist.

1. All of us
2. Few of us
3. Nobody
4. We

(ク) We have nothing to worry \_\_\_\_\_ because we prepared well.

1. about
2. ahead
3. in
4. of

(ケ) Do you think AI will make our lives \_\_\_\_\_ than before?

1. easier
2. easy
3. more easier
4. much easy

(コ) A: Did you call Emily?

B: I tried, but I couldn't get \_\_\_\_\_ of her.

1. ahold
2. catch
3. hear
4. listen

II. A 次の (ア) ~ (オ) に入れる文として、最も適切なものを選択肢から選びなさい。選択肢は、一回しか使えません。

A: Can you help me with this? I'm trying to order a new USB memory stick online with this credit card.

B: Sure. What's the problem?

A: ( \_\_\_\_\_ ア \_\_\_\_\_ ) It says that my credit card isn't valid and that I need to enter a different number.

B: Did you enter all of the numbers correctly?

A: I tried three times and got the same message each time. My parents gave me this card just last week. ( \_\_\_\_\_ イ \_\_\_\_\_ )

B: Sometimes you need to call the company to activate the card before using it for the first time. ( \_\_\_\_\_ ウ \_\_\_\_\_ )

A: No, I didn't realize that I had to. Where is the phone number written?

B: With new cards, it's usually on a sticker on the front. ( \_\_\_\_\_ エ \_\_\_\_\_ )

A: I don't remember there being a sticker. My parents must have taken it off before giving it to me.

B: ( \_\_\_\_\_ オ \_\_\_\_\_ )

A: Oh yes, here it is! I'll give it a try now.

[選択肢]

1. Another store might be cheaper.
2. Did you do that yet?
3. I keep getting an error message.
4. Oh, it looks like you took it off already.
5. The file is too big.
6. They said it's new, so there shouldn't be any problem with it.
7. Well, the number might be on the back.
8. When did you try that?

II. B 次の(カ)～(コ)に入れる文として、最も適切なものを選択肢から選びなさい。選択肢は、一回しか使えません。

A: I'm excited about starting school next week! Do you know what we need to bring to our first day of classes?

B: I think it depends on the class. (カ) Others only require you to bring the textbook.

A: Oh no! That could be a problem for me. (キ) I've been too busy moving into my new apartment.

B: Didn't you get the list of items you need to have before school starts?

A: I don't think so. If it was sent to us by email, then I haven't seen it.

B: Actually, the school sent it to us last week in the mail. (ク)

A: I remember the envelope, and I have the handbook but not the list.

B: I can give you a copy of my list if you want. (ケ) For example, folders, pencils, textbooks . . .

A: That would be great. I already have most of those things. If I buy a laptop computer this weekend, then maybe I can be ready in time.

B: (コ) It's having a back-to-school sale.

A: OK, I will. Thank you!

[選択肢]

1. I haven't had the time to shop for a laptop computer yet.
2. I'm looking forward to that class.
3. It was in a large envelope with the school handbook.
4. Some teachers ask students to bring their laptop computers.
5. The ones with extra memory are better.
6. There are quite a few things you need to buy.
7. Those classrooms are pretty big.
8. You should check the local electronics shop.

Ⅲ. 次の英文は「滑走路の清掃」について述べたものです。(ア)～(オ)に入れる最も適切なものを選択肢から選びなさい。

There is a lot that goes into maintaining an airport. For passenger and aircraft safety, many things need to be (ア). Inside the airport, this may include things such as passenger screenings, facilities, and services. On the outside of the airport, factors such as service vehicles and wildlife on and around the runway are important things to think about. One such management issue directly affecting safety is how often the runway is cleaned.

Every time an airplane lands, each tire leaves about 0.7 kg of rubber on the runway. Some of the largest passenger airplanes have up to 22 tires, and that adds up to a lot of rubber. As the rubber builds up on the runway, it makes the surface smooth. The smoothed surface can create big (イ). As a plane lands, the friction created when the tires touch the runway helps to slow down the plane. On a smooth surface, the friction is reduced, and less friction makes it harder to slow down and control the airplane after landing. This is particularly dangerous in wet conditions.

The local climate can also influence the risk factor. Regions with warm, humid climates usually experience the riskiest conditions. The higher temperatures mean the runway itself is generally warmer, making it easy for rubber to be deposited. In addition, warm, humid regions also typically receive more rain. This (ウ) that the runway quickly becomes slippery.

To manage this problem, large international airports clean their runways up to five times per week, while smaller airports remove rubber from their runways at scheduled times throughout the year. It usually takes four hours to clean a runway, and this task is carried out at night when the runway is closed. For major airports which operate 24 hours a day, careful scheduling is required to (エ) the runways are kept safe.

One way to clean rubber off of the runway is to use an ultra-high-pressure water jetting system. This method uses spinning jets of water at pressures as high as 3,000,000 hPa. For comparison, most household water pressure is around 3,000 hPa. The runway cleaning system sprays the rubber from the runway and can also recover the wastewater and the rubber that has been removed. This waste can then be disposed of in an environmentally safe manner. (オ) cleaning systems create safe landing conditions for airplanes and are also friendly to the environment.

- |     |                            |                              |               |
|-----|----------------------------|------------------------------|---------------|
| (ア) | 1. apply<br>4. find        | 2. borrowing<br>5. operation | 3. considered |
| (イ) | 1. approach<br>4. problems | 2. intent<br>5. slippery     | 3. many       |
| (ウ) | 1. doubt<br>4. solved      | 2. effect<br>5. way          | 3. means      |
| (エ) | 1. able<br>4. look         | 2. be<br>5. navigate         | 3. ensure     |
| (オ) | 1. If<br>4. Thanks         | 2. Nearly<br>5. Type         | 3. Such       |



IV. 次の (ア) ~ (オ) のそれぞれの日本語の意味を表す英文になるように、各英文の空欄に語または句を最も適切な順番に並べた場合、3番目にくるものの番号を選びなさい。ただし、文頭にくるものも小文字で書いてあります。また、必要なコンマが省略されている場合もあります。[解答欄のカ〜コは使用しません。]

(ア) 本屋は数日以内に閉店する予定だ。

The bookstore \_\_\_\_\_ days.

- |             |           |              |
|-------------|-----------|--------------|
| 1. a few    | 2. is     | 3. scheduled |
| 4. to close | 5. within |              |

(イ) 彼のアドバイスは全部間違っていたので聞くべきではなかった。

I \_\_\_\_\_ advice since it was all wrong.

- |              |        |             |
|--------------|--------|-------------|
| 1. have      | 2. his | 3. listened |
| 4. shouldn't | 5. to  |             |

(ウ) 新しい考え方に触れると世界観が変わる。

When \_\_\_\_\_ our worldview changes.

- |        |            |              |
|--------|------------|--------------|
| 1. are | 2. exposed | 3. new ideas |
| 4. to  | 5. we      |              |

(エ) この音楽による癒しの効果から恩恵が得られます。

We \_\_\_\_\_ of this music.

- |            |                |           |
|------------|----------------|-----------|
| 1. benefit | 2. can         | 3. effect |
| 4. from    | 5. the healing |           |

(オ) 仕事の遅れを取り戻さないといけないよ。

You \_\_\_\_\_ your late work.

- |          |       |          |
|----------|-------|----------|
| 1. catch | 2. on | 3. ought |
| 4. to    | 5. up |          |

[以上、試験問題終了]







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