

2023年度
入学試験問題集

2023
Admission Test Questions

学力評価試験（数学、英語）における出題について

【数学】

設問は、計算問題を中心に基礎的な理解を求める問題を幅広い分野から出題します。問題は教科書の例題や練習問題にあるような基本事項を問う出題が多くなっています。正確な計算力と計算過程をきちんと書く習慣をつけておくことが必要です。

【英語】

設問は、中学校で学習する内容を、対話、長文などの形式で、文法や読解（内容理解）に関する問題など幅広く出題します。学校での学習を確実に身につけておくことが重要です。

※本冊子は、2023年度入学試験問題の一部を掲載したものです。

2023年4月

国際高等専門学校 入試センター

Content of the academic ability evaluation (mathematics and English)

[Mathematics]

Questions will be asked from a wide range of fields, focusing on calculation problems and requiring basic understanding. Many of the questions are based on the basic items found in textbook examples of Japanese junior high school and practice problems. It is necessary to have the ability to calculate accurately and to get into the habit of writing down the calculation process.

[English]

Questions are based on the content studied in Japanese junior high schools, in the form of dialogues and paragraphs, with a wide range of grammar and reading (content comprehension) questions. It is important to ensure that you have mastered what you have learned at school.

* This booklet contains some of the questions for the 2023 Admission Test.

April 2023,

Admissions Center

International College of Technology, Kanazawa

2 0 2 3 年度入学試験問題

学力評価試験（数学）

2023 Admission Test Questions

Academic ability evaluation (Mathematics)

1 次の問いに答えよ.

Answer the following questions.

(1) $-3^2 \div \frac{6}{5} - \frac{7}{2}$ を計算しなさい.

Calculate the value of $-3^2 \div \frac{6}{5} - \frac{7}{2}$

(2) $-\frac{a+b}{2} + \frac{5a+3b}{4}$ を計算しなさい.

Simplify the expression $-\frac{a+b}{2} + \frac{5a+3b}{4}$

(3) $(-2x^3y)^3 \times 4xy^2 \div (-2xy)^2$ を計算しなさい.

Simplify the expression $(-2x^3y)^3 \times 4xy^2 \div (-2xy)^2$

(4) $\sqrt{32} - \sqrt{45} - 3\sqrt{2} + 7\sqrt{5}$ を計算しなさい.

Calculate the value of $\sqrt{32} - \sqrt{45} - 3\sqrt{2} + 7\sqrt{5}$

(5) $\sqrt{98} \times \sqrt{27}$ を計算しなさい.

Calculate the value of $\sqrt{98} \times \sqrt{27}$

(6) $\frac{14}{\sqrt{7}}$ の分母を有理化しなさい.

Simplify the expression $\frac{14}{\sqrt{7}}$ such that the denominator contains no root.

(7) 数 $-1, -\frac{6}{5}, -\frac{3}{2}$ の大小を不等号を使って表しなさい.

Use inequality signs to line up the numbers $-1, -\frac{6}{5}, -\frac{3}{2}$

(8) 数 $\frac{21}{5}, \sqrt{15}, 4$ の大小を不等号を使って表しなさい.

Use inequality signs to line up the numbers $\frac{21}{5}, \sqrt{15}, 4$

(9) 半径が r cm, 中心角が a° のおうぎ形の弧の長さが l cm であるとき、 r を a と l を用いて表しなさい.

A sector of a circle has a radius " r " cm, a central angle " a° " and an arc length " l " cm.
Express the value of " r " in terms of " a " and " l ".

(10) $(a-5)^2 - (a+4)^2$ を計算しなさい.

Simplify the expression $(a-5)^2 - (a+4)^2$

(11) $A=2x-3y$, $B=x+y$ のとき, $3(2A-B)-2(A-2B)$ を計算し, x と y で表しなさい.

If $A=2x-3y$ and $B=x+y$, express $3(2A-B)-2(A-2B)$ in terms of x and y .

2 次の式を因数分解しなさい.

Factorize the following expressions.

(1) $4xy^3 + 6x^3y^2 - 3x^2y^4$

(2) $x^2 - 11x + 24$

(3) $a^2 - 4b^2$

(4) $(x+2)^2 + 6(x+2) + 5$

3 次の方程式を解きなさい.

Find the unknown variables in each of the following equations.

(1) $\frac{2}{3}x - \frac{5}{2} = \frac{1}{2}x - 4$

(2) $4 : x = 6 : 10$

(3)
$$\begin{cases} 5x - 2y = -8 \\ 3x - 5y = -1 \end{cases}$$

(4) $x^2 - 2x - 35 = 0$

(5) $x^2 + 4x - 2 = 0$

4 2個のサイコロを同時に投げる. 出た目の差の絶対値が3以下になる確率を求めなさい.

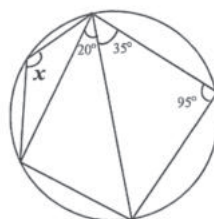
If two ordinary dice are thrown at the same time, what is the probability that the absolute value of the difference between the dice's values is less than or equal to 3?

5 y は x に反比例し, $x=6$ に対応する y の値が $y=9$ である. x の変域が $2 < x < 9$ であるとき, y の変域を求めなさい.

Suppose y is inversely proportional to x such that when $x=6$, $y=9$. If the range of x is $2 < x < 9$, find the range of values that y can take.

6 右の図の $\angle x$ の大きさを求めなさい.

Find $\angle x$ in the figure to the right.



- 7 2点 $A(-5, 2)$, $B(3, -4)$ の間の距離を求めなさい.

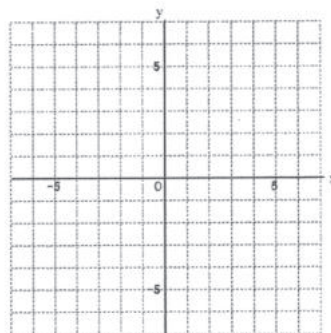
Find the distance between two points $A(-5, 2)$ and $B(3, -4)$.

- 8 次の問いに答えなさい.

Answer the following questions.

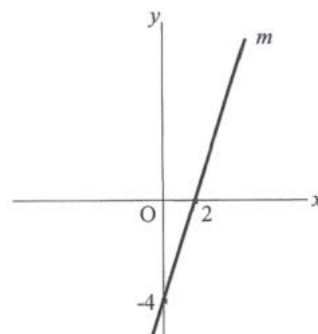
- (1) 1次関数 $y = -\frac{2}{3}x - 1$ のグラフをかきなさい.

Sketch the graph of the linear function $y = -\frac{2}{3}x - 1$.



- (2) 右の図の直線 m の式を求めなさい.

Find the equation of the line " m " in the figure to the right.

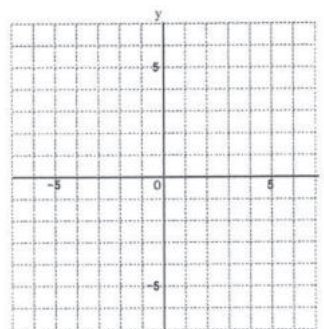


- (3) 方程式 $5x + 2y - 3 = 0$ のグラフに平行で、点 $(4, -3)$ を通る直線の式を求めなさい.

Find the equation of line which is parallel to the line $5x + 2y - 3 = 0$ and passes through the point $(4, -3)$.

- (4) 関数 $y = -\frac{3}{4}x^2$ のグラフをかきなさい.

Sketch the graph of the function $y = -\frac{3}{4}x^2$.



- (5) 関数 $y = \frac{1}{3}x^2$ について、 x の変域が $-6 \leq x \leq 3$ のときの y の変域を求めなさい.

For the function $y = \frac{1}{3}x^2$, find the range of values for y if the range of x is $-6 \leq x \leq 3$.

2 0 2 3 年度入学試験問題

学力評価試験（英語）

2023 Admission Test Questions

Academic ability evaluation (English)

I. () 内の語（句）を正しく並びかえなさい。

必要であれば、文頭に来る語は、最初の文字を大文字にしない。

Use the words and phrases in the parentheses to complete the sentences below correctly.

Change the first letter of the sentence to a capital letter, if necessary.

(1) I (sing / sleeping / started / the song / they / to / was / when).

(2) (before / finish / going / have / projects / students / their / to / will) on vacation.

(3) Studying in (exciting / in / is / more / much / New Zealand / studying / than) Japan.

(4) The engineer (be / designs / drone / fastest / invited / the / to / who / will) the ceremony.

II. 次の会話文の (1)~(5) に入る最も適切な表現を (a)~(j) から 1 つずつ選び、その記号を書きなさい。

Fill in the blanks (1) ~ (5) in the conversation below with the most appropriate expressions. Choose one answer for each blank from (a) ~ (j) in the box below. Write the appropriate letter (a) ~ (j) on the answer sheet.

Student: Excuse me.

Staff: Yes, can I help you?

Student: Yes. I want to take out this book from the library but I don't know how. (1)?

Staff: Of course. Let's go to the computer.

Student: OK, thank you. I've never used the library before.

Staff: Don't worry, it's really easy. (2). Then, click the box for the user ID.

Student: Right.

Staff: (3) your ID card with you?

Student: Yes. Just a moment. Let me take it out of my wallet. Here it is!

Staff: Good. Use the scanner and scan the barcode on the back of your ID card. Next, click the box for the book ID and scan the barcode on the book. (4).

Student: Great! That was easy.

Staff: Oh, and don't forget to click "OK" at the end.

Student: Got it.

Staff: By the way, sometimes this computer doesn't work. (5), just call the office and someone will come and help.

Student: All right. Thank you.

Staff: You're welcome.

(a) Can you show me	(b) Click on "borrowing" as the first step
(c) Do you have	(d) Do you need
(e) If there's a problem	(f) That's it
(g) There are lots more things to do	(h) What time does it open
(i) When it's working	(j) You need to choose "returning"

- III. 次の (1) ~ (8) に入る最も適切な語を (a) ~ (h) の中から選び、その記号を書きなさい。
Choose the most appropriate word for each blank (1) ~ (8) from (a) ~ (h) and write the letter on the answer sheet.

Social Media

These days, almost everyone has a smartphone. It is convenient to use a smartphone to do things such (1) searching for information, playing online games, and using social media. Social media is also called social networking sites (SNS).

Most of us use some social media to (2) with our family and friends. When we can't meet our friends, we can stay connected to (3) online. We can share photos and (4) very quickly with many people. Also, we can follow interesting people and topics.

However, have you thought about some of the problems that (5) because of social media? First, there are some (6) people who attack other people online, which can make other people feel sad. Second, social media sites are used by some people for many hours every day. If people spend too much time online, they will not get enough (7) or exercise, so social media can be bad for their health. Do you think that these problems can be fixed? Third, social media changes very quickly. In the future, using social media may be very (8) from today.

(a) angry	(b) as	(c) communicate	(d) different
(e) happen	(f) news	(g) sleep	(h) them

IV. 次の (1) ~ (12) に入る最も適切な語を (a) ~ (n) の中から選び、その記号を書きなさい。
ただし、必要のない単語が 2 語含まれています。

Choose the most appropriate word for each blank (1) ~ (12) from (a) ~ (n) and write the letter on the answer sheet. Note that two unused words are included in the choices.

Sound of Music

Do you enjoy listening to music? Is it a part of your daily life? You are not the only person (1) enjoys music. Many people like listening to it on their phones or on their computers (2) exercising or studying. However, the problem is that some people like to play their music (3). When they hear their favorite songs playing, they turn up the volume and make the music louder.

Your science teacher (4) say that when you make the music louder, the sounds are louder because the intensity (5) up. When the intensity rises, the sound travels faster and further through the air.

That said, (6) far can a sound go? If the intensity is low, then the sound is (7). A quiet sound does not travel very far, but a loud one can travel for hundreds of kilometers. For example, a car alarm can be (8) many meters away. That loud (9) can make it difficult for people to sleep.

You should be careful, too. Listening to very loud music is not (10). It can harm your hearing. People who work around loud sounds all day long must (11) their ears to protect them. Do not turn up the volume (12) much if you like to listen to music. Be kind to yourself and people around you.

(a) cover	(b) far	(c) goes	(d) healthy
(e) heard	(f) how	(g) loudly	(h) music
(i) noise	(j) too	(k) weak	(l) while
(m) who	(n) will		

