国語
試験問題

注意

一
試験の準備
問題冊子、筆記具、消しゴム等以外のものは置いてはいけません。

二
指示があるまでは、問題冊子を開いてはいけません。

三
配布物は問題冊子一部と解答用紙三枚です。確かめてから始めてください。

四
解答時間は六十分間です。

五
印刷に不鮮明な部分がなかったら、声を出さずに手をあげなさい。

六
解答は注意事項に従って、解答用紙に記入しなさい。

七
問題の内容についての質問にはいつでもお答えします。

八
すべて監督者の指示に従って静かに受験しなさい。

九
問題は回収します。持ち帰ってはいけません。

受験番号

氏名
旅行案内記の類をあけて見ると、あるいは海浜、あるいは山間の湖水、あるいは温泉といったように、
旅に見えて行くべき所がさまざまにあるそうである。

……

旅行の部分を
少ない持って行くと、各温泉の水質や効能、周辺の名所旧跡を発見して読む。

どうするか……まるでこの年に読むように考え、どこを読むかわからない。

旅行がしたくなると同時に最初から説をぶっ

C
偶然に読んだ詩編か小説かの中である感興に打たれたような場所

て行く所をきめてしまう。【D】

巣をくいていて、それが自分を隠し耳をおおう。それがためにせっかくわざわざ出かけて来た自分

【③】しかし前の安全な方法に必ず短所がある。読んだ案内書や聞いた人の話が、いつまでも頭の中に

巣をくいていて、それが自分の目を隠し耳をおおう。それがためにせっかくわざわざ出かけて来た自分

自身は言わば行李の中におきこめられたような形になり、結局案内記や話した人が湯にはいったり

見物したり楽ししたりすると同じような事になる。こういうふうになりたがる恐怖がある。もちろん

【④】しかしそれでも、わざわざ出て来たかいがないと考える人もいる。結局案内記や話した人が湯にはいったり

巣をくいていて、それが自分の目を隠し耳をおおう。それがためにせっかくわざわざ出かけて来た自分

で見て自分の足で踏んでも、その見える景色、踏む大地と自分とが直接にぴったり触れ合う時のみ感じ得

これらは案内書や教えた人の罪ではない。
かいていないものを掘り出す機会がある。

形勝：風景のすぐれていないこと。また、その土地。
オーソリティ：権威。
観察：さいころ。
アカデミック：純粋に学問的なこと。
感興：興味を感じること。面白がること。また、その興味。
ヘロドッカス：異端。
享楽：快楽にふれり楽しむこと。

問題一、空欄
A  D

に入る適当な語句を、次から選び、記号で答えなさい。

問題二、傍線部「これ」のさす部分を「こと」に続く形で文中より二十字以内で抜き出しなさい。句読点は含みません。

問題三、問題文中に次の文章を補うとすると、どこが適当か。文中の
(①) から選び、記号で答えなさい。

(寺田 寅彦「案内者」によらる)
2012
Mathematics Entrance Examination
数学試験問題

Applicant Number 受検番号

Name (Print) 氏名 (Name in Kanji, if applicable)

• Put only your applicant identification card, pencils, mechanical pencils and erasers on the desk. Rulers and calculators are not allowed.
受検票、鉛筆、シャープペンシル、消しゴム以外の私物は机に置かないこと。定規、電卓は使用できない。

• Do not open this booklet until the proctor says, “begin.”
「始め」の合図があるまで、この問題冊子を開かないこと。

• All answers must be written in the designated columns on the answer sheet.
解答は、全て解答用紙の指定された解答欄に記入すること。

• You may use blank spaces in this booklet for your work.
この問題冊子の余白を計算等に使用してよい。

• Both this booklet and the answer sheet will be collected.
この問題冊子と、解答用紙をともに回収する。

• This booklet consists of 7 pages plus the cover.
この問題冊子は表紙を除いて、7ページである。

Keio Academy of New York
慶應義塾ニューヨーク学院
1. Simplify.

簡単にせよ。

(1) \[2a - b - \frac{4a - 3b}{2} - \frac{3a - b}{3}\]

(2) \[-3a - \frac{1}{2}(a + 3b) - \frac{a - b}{4}\]

(3) \[(-2a^2b)^3 \times \left(-\frac{b}{3a}\right)^2 \div (\frac{3}{2}a^2b)^2\]

(4) \[(-2a^2b^3) \div \left\{(3a^3b^5) \div (-6ab^4)^2\right\}\]
2. Solve for \(x\).

次の等式が成り立つような \(x\) の値を求めよ。

(1) \[-\frac{2}{3}(0.1x - 3) + \frac{3}{2}x = 4\]

(2) \[\frac{3x - \frac{11 - x}{2}}{2} = \frac{0.5x + 2}{5}\]
3. Suppose that the following two systems of equations \( 1 \) and \( 2 \) have the same pair of solutions for \( x \) and \( y \). Find the values of \( a \) and \( b \), coefficients in the system of equations. Also find the solution of the system of equations.

次の \( x \) と \( y \) についての連立方程式①と②が同じ解をもつとき、係数 \( a \)、\( b \) の値を求めよ。また、このときの解を求めよ。

\[
\begin{align*}
\text{①} & \quad \begin{cases} 
7x + 2y = 1 \\
ax + by = 3
\end{cases} \\
\text{②} & \quad \begin{cases} 
bx - ay = -4 \\
-3x + 2y = -9
\end{cases}
\end{align*}
\]
4. In a \( \triangle ABC \) with \( \angle C = 90^\circ \) shown below, the length of the side BC is \( a \) and the length of the side CA is \( b \). Points D, E and F are on the sides BC, AB and AC respectively, where all the length of CD, DE, EF and FC are \( x \). Answer the following questions.

\( \angle C = 90^\circ \) である下図のような直角三角形 \( \triangle ABC \) において、辺 \( BC \) の長さは \( a \)、辺 \( CA \) の長さは \( b \) である。点 D、E、F はそれぞれ辺 \( BC \)、\( AB \)、\( AC \) 上にあり、\( CD \)、\( DE \)、\( EF \)、\( FC \) の長さは全て \( x \) である。このとき次の問いに答えよ。

(1) Express areas of \( \triangle AEF \) and \( \triangle EBD \) in terms of \( a, b \) and \( x \).

\( \triangle AEF \) と \( \triangle EBD \) の面積を \( a, b, x \) を用いて表せ。

(2) Express \( x \) in terms of \( a \) and \( b \).

\( x \) を \( a, b \) を用いて表せ。
5. Suppose that there are two square shaped plates such that the vertices of one of them are at points A (3, 0), B (0, 3), C (-3, 0) and D (0, -3), and those of the other are at the points E (7, -1), F (4, 2), G (1, -1) and H (4, -4). Answer the following questions.

二つの正方形の板が、一つはその頂点が点 A (3, 0), B (0, 3), C (-3, 0), D (0, -3) の位置にあり、もう一つはその頂点が点 E (7, -1), F (4, 2), G (1, -1), H (4, -4) にあるとする。

(1) Find an equation of the line that goes through points A and B.

点 A と点 B を通る直線の方程式を求めよ。

(2) Find an equation of the line that goes through points D and A.

点 D と点 A を通る直線の方程式を求めよ。

(3) Find an equation of the line that goes through points F and G.

点 F と点 G を通る直線の方程式を求めよ。

(4) Find an equation of the line that goes through points G and H.

点 G と点 H を通る直線の方程式を求めよ。

(5) Find coordinates of the point at which line segments AB and FG intersect with each other.

線分 AB と線分 FG の交点の座標を求めよ。

(6) Find coordinates of the point at which line segments DA and GH intersect with each other.

線分 DA と線分 GH の交点の座標を求めよ。

(7) Find the area of the overlapping part of the two square plates.

この二つの正方形の板の重なった部分の面積を求めよ。
6. A point $P$ is inside a square $ABCD$, the length of each side of which is $a$. Answer the following questions.

点 $P$ が、辺の長さが $a$ の正方形の内部にあるとき、次の問いに答えよ。

(1) Shade the all possible locations of the point $P$ such that the area of $\triangle ABP$ is less than the area of $\triangle DCP$ and the area of $\triangle ABP$ is less than the area of $\triangle BCP$. Also find the area of the shaded part.

$\triangle ABP$ の面積が $\triangle DCP$ の面積より小さく、かつ、$\triangle ABP$ の面積が $\triangle BCP$ の面積より小さくなるようにするには点 $P$ がどこにあればよいか。このような点 $P$ の存在する部分に斜線を記入せよ。また斜線の部分の面積を求めよ。

(2) Shade the all possible locations of the point $P$ such that the area of $\triangle ABP$ is greater than the area of $\triangle DCP$ or the area of $\triangle ABP$ is less than the area of $\triangle BCP$. Also find the area of the shaded part.

$\triangle ABP$ の面積が $\triangle DCP$ の面積より大きいか、または、$\triangle ABP$ の面積が $\triangle BCP$ の面積より小さくなるようにするには点 $P$ がどこにあればよいか。このような点 $P$ の存在する部分に斜線を記入せよ。また斜線の部分の面積を求めよ。
7. Assume that you make a circle of radius $2r$ with a piece of wire and put it so that the center is at the origin. Also assume that you make a circular plate of radius $r$ with a piece of paper, put a mark at one point of its circular edge, and place the circular plate inside the circle made with wire so that the mark is at the point $(0, 2r)$ as shown below. Draw the path on the answer sheet that the mark makes when you roll the circular plate along the inside of the wire-made circle without sliding it until the mark comes to the point $(0, 2r)$ again. Also, express the distance traveled by the mark in terms of $r$.

半径 $2r$ の円を針金で作り、中心が原点にあるように固定する。さらに半径 $r$ の円板を厚紙で作り、その円周の一点に印（しるし）を付け、下図のように、その印が点 $(0, 2r)$ にあるように針金で作った円の内側に置く。さて、この円板を、印が再び元の位置 $(0, 2r)$ に来るまで、針金の円の内側を円周に沿ってすべらないように転がしたとき、この印が描く図形を解答欄に記入せよ。またこの印が動いた道のりの長さを $r$ で表せ。
Name________________________

Applicant number____________

English Entrance Exam 2012

Directions:

• Do not open this booklet until the test begins.
• Both the test booklet and answer sheet will be collected at the end of the test.
• Write on the answer sheet only except for Part 3.

Keio Academy of New York
Part 1: Grammar

Directions: For questions 1-13, choose the word or group of words that will complete each of the following sentences correctly. Fill in the bubble next to the letter of the correct answer on your answer sheet.

1. __________ Americans speak English, but some speak other languages, too.
   a) The Most          b) Most            c) Almost          d) Such

2. The baseball player __________ the ball with the bat.
   a) have hit         b) hitting          c) hits            d) hitted

3. My father __________ for the IBM Corporation for over 30 years now.
   a) worked          b) works           c) is working      d) has worked

4. We’re late. Please walk more________.
   a) quicker          b) quick           c) quickly        d) quickest

5. A: “The phone is ringing.”
   B: “_____ get it.”
   a) I’d              b) Who’ll          c) I’ll           d) Who’d

6. The more we study, __________.
   a) we learn more     b) the study we learn c) the more we learn d) the more we learning

7. I will go to the park after I __________ my homework.
   a) finished         b) will have finished c) will be finishing d) finish

8. Next spring, John __________ in New York for 20 years.
   a) will have living b) has been living c) is living d) will have been living

9. In general, I don’t like animals but I __________.
   a) dog              b) the dog         c) dogs           d) the dogs

10. Christmas is a time __________ Americans spend time with their families.
    a) which            b) when           c) that           d) who

11. Our teacher directed __________ finish page 52 in the textbook.
    a) to               b) all us students c) us             d) us to

12. My family always eats __________ at dinner time.
    a) many bread      b) much bread      c) a lot of bread d) much breads

13. Do you enjoy __________ to the movies?
    a. to go           b) going          c) go              d) to going to
Directions: For questions 14-17, choose the letter for the word or words that must be changed to make the sentence correct. There is only one answer for each question.

14. Few airports in the U.S. is as modern as that of Atlanta.
   a)         b)  c)   d)  

15. Buenos Aires is one of the cities that are noted for its busy highways.
   a)                   b)         c)            d)  

16. Although the body of the car has been reduced in size by 6 inches, there have been little
    a)   b)             c)          d)  
    change in the engine.

17. Having hit more homeruns than any other professional baseball players,
    a)        b)   c)   
    Oh Sadaharu’s record is famous.  
    d)
Part 2: Reading Comprehension

Directions: For questions 18-32, read each passage below, then answer the questions. Mark your answers on the answer sheet provided. Do not mark answers in this booklet.

Passage A:
Like many people, I prefer to skip breakfast. I am not a “morning person,” so it is very hard for me to wake up and then prepare breakfast. In addition, I do not like to eat breakfast because it makes me feel full the rest of the morning. With this uncomfortable feeling in my stomach, it is difficult for me to do my work well. Finally, I am very concerned about my health, so I avoid fatty kinds of breakfast foods, such as scrambled eggs, buttered toast, or fried sausage. Although others may not agree with my decision, I choose to skip breakfast most of the time.

18. According to the author, ______________.
   a) a lot of people like eggs, toast, and sausage for breakfast
   b) a “morning person” is a person who wakes up early and prepares breakfast
   c) if you eat breakfast, you can do your work well
   d) skipping breakfast is good for your health

19. The word prefer means ____________.
   a) dislike
   b) choose
   c) do
   d) avoid

20. A reason the author does NOT mention in the passage is that she does not like________.
   a) to eat breakfast because she does not have any time
   b) fatty, oily kinds of food for breakfast
   c) to feel full in the morning
   d) to feel hungry when she does her job

21. It makes her feel uncomfortable when ______________.
   a) she eats sausages and eggs for breakfast
   b) she is concerned about her health
   c) she skips breakfast
   d) she feels full in the morning after eating breakfast

22. The title of this passage could be ____________.
   a) “What Kind of Breakfast Food People Should Eat”
   b) “The Good and Bad Sides of Skipping Breakfast”
   c) “Why People Skip Breakfast”
   d) “Why I don’t Like to Eat Breakfast”
I want to be a veterinarian when I grow up. Vets have the most interesting job. I think I would make a good one. I love animals, and animals seem to love me. I am also good at math and science. These skills will help me become a good vet.

Vets are like physicians. The only difference is that they treat animals, not people. They do the same things that other doctors do. They treat illnesses, give medicine and perform operations.

Most people think of a vet as a pet doctor who treats sick dogs and cats. Yet they do more than help pets that are sick. Farmers depend on them to keep their animals free of disease. An illness that spreads among farm animals can put a famer out of business.

Vets also help keep zoo animals healthy. Some help preserve endangered animals. Others do research. There are many different types of work that a vet can do.

23. This passage is mainly about__________.
   a) who can be good veterinarians
   b) farmers’ problems with animals diseases
   c) what kind of work a veterinarian does
   d) how veterinarians help endangered animals

24. The author wants to be a veterinarian because ____________.
   a) she is good at math and science.
   b) there are so many ways to help animals
   c) she wants to treat dogs and cats
   d) most people think vets are pet doctors

25. According to the author, vets are similar to physicians because__________.
   a) they love animals
   b) they have interesting jobs
   c) they have different ways to treat dogs and cats
   d) they treat illnesses and keep their patients healthy

26. The word physicians means ____________.
   a) doctors
   b) counselors
   c) teachers
   d) nurses

27. Looking at the entire passage, the next topic would probably be__________.
   a) what kind of school she will be going to after high school
   b) reasons why she likes English and Social Studies
   c) what sports club she belongs to
   d) why her dog’s name is Tama
Since ancient times, people have practiced the art of physiognomy; judging or reading people’s character based on how their face looks. The ancient Greeks compared the human face to the faces of various animals and birds, such as the eagle and the horse. They believed people shared certain character traits with the animals they resembled. A person with an equine, or horse-like, face was thought to be loyal, brave, and strict. A person with an aquiline, or an eagle-like, nose was believed to be bold and courageous, as well as arrogant and self-centered.

Physiognomists study such features as the shape of the head, the length and thickness of the neck, the color and thickness of the hair, and the shape or the nose, mouth, eyes, and chin. They believe that round-faced people are self confident. Prominent cheekbones show strength of character, while a pointed nose reveals curiosity. Heavy arched eyebrows belong to a decisive individual, while thin arched eyebrows signal a restless and active personality. Almond shaped eyes reveal an artistic nature. Round, soft eyes belong to dreamers. Downturned lips reveal a proud character, while a long, pointed chin indicates someone who likes to give orders.

28. The main idea of these paragraphs are ___________.
   a) how facial features can say a lot about a person’s characteristics
   b) how first impressions can make a difference
   c) what kind of facial characteristics can be studied
   d) why scientists study certain facial characteristics

29. According to the ancient Greeks, ________________.
   a) some people have faces like animals and it is considered lucky
   b) eagles and horses have similar shaped faces
   c) some people have mouths like eagles
   d) if a person looks like an animal, they may have similar characteristics

30. Physiognomists are scientists who study all of these except: __________.
   a) the shape of the heads
   b) a person’s characteristics from facial features
   c) a connection between animals and humans
   d) the art of loyalty

31. The word indicates means ____________.
   a) researches
   b) thinks
   c) connects
   d) shows

32. The type of characteristics that are NOT studied by physiognomists is how ____________.
   a) much curiosity a person has
   b) some people like to give orders
   c) fast a person can run
   d) proud a person is
Part 3: Essay Question

Directions: On a separate sheet, write a paragraph style essay. Before you write, take a minute to think deeply about the topic. You may use the space below to plan your essay. Start writing your essay on the lined paper. When you are finished, make sure to check your spelling and grammar.

*Essay Topic:* What do you hope you will be doing in 10 years? What kind of job and life do you think you will have? How can Keio Academy help you reach those goals?