次の一・四の問題に答えなさい。

一、次の①～⑤の、傍線部分の漢字は誤っています。正しく書き改めなさい。

① いまだに真逆はわからない。
② 用事を住ませてから遊ぶ。
③ 明外元気のようだ。
④ 健康に満意しましょう。
⑤ 精進年月日を調べる。

利 俗 回 観 問
聴 属 階 診 解
効 足 開 関 説
気 族 改 視 溶

薬きいて痛みが消えた。
次の①～⑤の、傍線部分の漢字の読みを、それぞれひらかたで書きなさい。

一網打尽

他を圧倒する

ままとめて捕える

神経を集中する

四、
次の①～⑤の四字熟語の意味として最も適当なものをお、それぞれ下から選び、記号で答えなさい。

① 田引水
② 朝三暮四
③ 明鏡止水
④ 意見が一致する
⑤ 人生はほかならない

参考にする

互いに助け合う

本質を理解しない

一瞬のうちに

欠点がない

くだらない

う　言動が伴わない

五、

事務を執る。

健康かな成長を見守る。

円くなって座る。

痛みを緩和する。

本望を遂げる。
【図解】図解1. 図解2. 図解3.

図解1

図解2

図解3
誠二はだまって立ち上がった。彼の友達はかやが騒ぎだした。
中にはこんな声もまじっていた。そら見ろい、あの
通り誠ちゃんが負けるんだよ。誠ちゃんの友さんがわざとさっそきは負けてやったんだよ。誠ちゃんが泣くといけないか
ら、そうだとも。一回で止めとけよかったのに、勝ったもんだから騒にして、またやったらこの始末。アハハハー。誠
はだまてこの話し声がしてならなかった。兄の方を見た。兄は
D
喜んでいるようだ。
(3) 诚二は兄の喜んでいる様子を見てもチッとも嬉しくはならなかった。
(4) 自分にだまされて勝て喜んでいる兄を見てますます頼みがいの
ない兄だというなさけない思いがしてきた。ああ、負けねばよかった。
また勝っていればよかった。
(5) 诚二は後悔の念に満ちた心を持って部屋の姿
から空を見上げた。どんより曇った灰色の空は低く大地をつつんでいた。
風もなかった。誠二は深い後悔の念
に
在った。誠二の肩をたくもがある。信ちゃんであった。
誠二のたった一人のホントの友達の信ちゃんであった。信ちゃんは
快活に「今も勝負、ありゃあ君がわざと負けたのじゃないかな」と言った。そして自分をホントに知ってくれる人は信ちゃんであると思った。信ちゃん君は、ちゃんと、トシキユヱな声を上げて、ハハハ笑った。信ちゃん君は、こうやって、自分のことを赤恥をかかせまいと思って、負けたんだよね、そうだろう、と叫ぶように言った。信ちゃん君は、それに対して「そうで」と言うこと。

問題一、空欄

注1・トシキユヱ：調子はずれなさ。

（太宰治『角力』より。一部加筆。）
2014
Mathematics Entrance Examination

申請番号

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.
受験票, 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。定期, 電卓は使用
できない。

- Do not open this booklet until the proctor says, “Begin.”
始めの合団があるまで、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。

- Figures are not necessarily drawn to scale.
問題文中の図は必ずしも正確に書かれていない。

- Both this booklet and the answer sheet will be collected after the examination.
試験終了後、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 (高等部)
1. Simplify the given expressions as much as possible.

(1) \( -1 + 16 \div 3 + 1 \)

(2) \( (-2a^3b)^3 \div 12a^6b^2 \times (-3ab^2)^2 \)

(3) \( \frac{b-a}{6} - \frac{2a+b}{3} + \frac{3a-b}{2} \)

(4) \( \left( -\frac{2}{3}\right)^3 \left( \frac{5}{7}\right) - \left( \frac{4}{9}\right) \left( -\frac{5}{11}\right) \)

2. Solve the following equations.

(1) \( | -4 + 2x + \frac{1}{\frac{1}{-3}}(x - 1) | = 2 \)

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

(3) \( (-2)^3x + (-5)^2x = (9 - 2)x \)

(4) \( 0.375(x - 0.25) + 0.175 = 0.8 \)
3. To buy a car in March, 5% of sales tax to the fixed price and an additional shipping cost of 1,300 dollars are needed. To buy a car in April, 8% of sales tax to the fixed price and an additional shipping cost of 2,500 dollars are needed. If the total cost for buying the car whose fixed price is $x$ dollars in March and the total cost for buying the same car with 1,500 dollars discount from the fixed price in April are the same, what is the value of $x$?

3月に車を購入する場合、定価に対する5%の税金と諸経費として定額1300ドルが必要となる。また、4月に車を購入する場合、定価に対する8%の税金と諸経費として定額2500ドルが必要となる。定価$x$ドルの車を3月に購入するときの総額と、定価から1500ドル値引きした同じ車を4月に購入するときの総額が一致したとき、$x$の値を求めよ。
4. Point P and point Q are 40 km apart. Abigail and Beckett competed from point P to point Q in the following way. Abigail ran the first $x$ km at 12 km/h, rode a bike for next $y$ km at 40 km/h, and ran another $x$ km at 8 km/h to arrive at point Q. Beckett ran the first $2x$ km at 10 km/h, and rode a bike for the remaining $y$ km at 36 km/h to arrive at point Q. Abigail and Beckett departed point P at the same time and arrived at point Q at the same time. Answer the following questions.

AbigailとBeckettの2人が地点Pから40 km離れた地点Qまで次のように競走了。Abigailは最初の$x$ kmを時速12 kmで走り、次の$y$ kmを時速40 kmで自転車をこぎ、残り$x$ kmを時速8 kmで走った。Beckettは最初の$2x$ kmを時速10 kmで走った後、残り$y$ kmを時速36 kmで自転車をこいだ。同時に地点Pから出発した2人は、同時に地点Qに到着した。このとき、次の間に答えよ。

(1) Find the values of $x$ and $y$.
$x$と$y$の値を求めよ。

(2) How many minutes did Abigail take to move from point P to point Q?
Abigailが地点Pを出発してから、地点Qに到着するまでにかかった時間は何分か。
5. Suppose that $x$ gallons per minute pour from pipe A, and $y$ gallons per minute pour from pipe B. Container C has a capacity of 300 gallons. It can be filled in 25 minutes by using both pipes at the same time. It can also be filled by using both pipes for the first 10 minutes, followed by using pipe A alone for the next 5 minutes, and then by using pipe B alone for the last 29 minutes. Find the values of $x$ and $y$.

每分 $x$ ガロンの割合で水が出る蛇口 A と, 毎分 $y$ ガロンの割合で水が出る蛇口 B がある。300 ガロンの水が入る容器 C を, 蛇口 A と蛇口 B の両方を用いると 25 分間で満水にできる。また, 蛇口 A と蛇口 B の両方を用いて 10 分間注水した後, 蛇口 A のみで 5 分間注水し, 最後に蛇口 B のみで 29 分間注水すると容器 C を満水にすることができる。このとき, $x$ と $y$ の値を求めよ。
6. The line $y = -\frac{1}{2}x + 4$ meets the $x$-axis, the $y$-axis and the line $y = \frac{1}{6}x$ at point A, B and C, respectively. Point D lies on the line $y = \frac{1}{6}x$ such that the area of $\triangle ACO$ is equal to the area of $\triangle BCD$ and the $x$ coordinate of point D is greater than the $x$ coordinate of point C. Answer the following questions.

$x$ 軸, $y$ 軸, 直線 $y = \frac{1}{6}x$ との交点がそれぞれ A, B, C である直線 $y = -\frac{1}{2}x + 4$ がある。

$\triangle ACO$ の面積と $\triangle BCD$ の面積が一致するように, 直線 $y = \frac{1}{6}x$ 上に点 D をとる。但し, 点 D の $x$ 座標は点 C の $x$ 座標より大きいとする。このとき, 次の間に答えよ。

(1) Find the coordinates of point A and D.

2 点 A, D の座標を求めよ。

(2) Find an equation of line BD.

直線 BD の式を求めよ。
7. The "Sanshokuki(Tri-color Flag)" of Keio Gijuku is shown below. The ratio of the length AB to the width AD is 2 : 3, and the width ratios of blue-red-blue stripes is AE : EF : FB = 1 : 1 : 1. Let S be the upper left point of the "Pen Mark", P is the foot of a perpendicular drawn from point S to line AD and Q is the foot of a perpendicular drawn from point S to line AB. It is known that AP : AD = 7 : 90, AQ : AB = 1 : 30 and the length of QR is \( \frac{4}{15} \) of the line AB. Answer the following questions.

(1) Find the ratio AR : RE.

AR : RE を求めよ。

(2) Find the area of "Sanshokuki(Tri-color Flag)" (rectangle ABCD) when QR = 4 cm.

ペンマークの高さ QR が 4 cm である場合、三色旗 (四角形 ABCD) の面積を求めよ。
8. Suppose that operations $x \oplus y$ and $x \ominus y$ are defined as follows:

\[ x \oplus y = x^2 + y, \quad x \ominus y = x - y^2. \]

Answer the following questions.

記号 $\oplus$, $\ominus$ の計算を次のように定める。

\[ x \oplus y = x^2 + y, \quad x \ominus y = x - y^2 \]

このとき, 次の間に答えよ。

(1) Find the value of $(3 \ominus 3) \oplus (8 \ominus 7)$.

$$(3 \ominus 3) \oplus (8 \ominus 7)$$ を計算せよ。

(2) Let $P_1 = x \oplus x$. Suppose that $P_2, P_3, \ldots$ are constructed as follows:

\[ P_2 = x \oplus P_1, \quad P_3 = x \ominus P_2, \ldots \]

By carrying out the construction, express $P_{20}$ in terms of $x$.

$P_1 = x \oplus x$ とする。$P_2 = x \oplus P_1, P_3 = x \ominus P_2, \ldots$ と同様に続けていくとき, $P_{20}$ を $x$ の式で表せ。
English Entrance Exam 2014

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 for Parts 1 and 2 (do not mark answers on your test booklet).
- For Part 3, write your essay on the lined paper provided.

Keio Academy of New York
Part 1: Grammar

Directions: For questions 1-15, choose the word or group of words that will complete each of the following sentences correctly. Mark the best answer on your answer sheet. Do not mark this page.

1. She _____________ studying Geography since September.
a) is  b) will be  c) has been  d) have been

2. Who are _____________ people over there?
a) that  b) they  c) these  d) those

3. I met her _____ front of the Science Building _________ 8:00.
a) in, at  b) in, on  c) on, in  d) on, for

4. I have never been _____________ than I am now.
a) happy  b) happier  c) happiest  d) more happy

5. I always forget _____________ my homework! I will get an F!
a) to do  b) doing  c) to have done  d) will do

6. We _____________ to the pool to practice swimming for the past few days.
   a) to go  b) are going  c) will be going  d) have been going

7. May I borrow _____? I must have left mine at home.
   a) one of your pen  b) one of your pens  c) one your pen  d) one your pens

8. There’s the man _____________ took your coat.
   a) which  b) whose  c) what  d) who

9. By the time Tom _____________ a parking space, he was late for the movie.
   a) was finding  b) was found  c) had found  d) finds

10. I don’t think we’ll need an umbrella this afternoon. The forecast is for _________ late tonight.
    a) a little rain  b) little rain  c) a few rain  d) few rain

11. I _____________ a new house and a new car if I won a million dollars.
    a) buy  b) would buy  c) have been buying  d) will have bought

12. There _____________ boys than girls in the class.
    a) is less  b) are less  c) is fewer  d) are fewer

13. Mary was twenty minutes late for work today. She _____________ stuck in traffic.
    a) might be  b) must be  c) had to be  d) must have been

14. Each of _____________ graduated from school and found a good job.
    a) their children has  b) their children have  c) their childrens have  d) their child has

15. Food _____ at a supermarket.
    a) can buy  b) has bought  c) can be bought  d) can be buying
Part 2: Reading Comprehension

Directions: For question 16-30, read each passage and answer the questions. Mark your answers on the answer sheet provided. Do NOT mark answers in this booklet.

Passage A:
A robot is a machine. Because it is a machine, it does not make mistakes. And it does not get tired. Robots are all around us. Some robots are used to make things like cars. Some robots are used to explore dangerous places. For example, robots can help explore volcanoes. Some robots are used to clean things. These robots can help vacuum your house. Some robots can even recognize words. They can be used to help answer telephone calls. Some robots look like humans. But most robots do not.

In the future, we will have even more robots. They will do things that we can’t do. Or they will do things that we don’t want to do. They will do things that are too dangerous for us. Robots will help us fight fires. They will help us fight wars. They will help us fight sickness. They will help us discover things. They will help make life better.

16. This passage is mainly about ____________________.
   a. how robots changed our lives.
   b. what kind of things robots can do, and may be able to do in the future.
   c. how many robots are needed in our lives.
   d. what kinds of robots there are in the world.

17. In paragraph 2, the word They refers to ________________.
   a. future
   b. robots
   c. we (people)
   d. telephone calls

18. What is NOT true about robots?
   a. Most robots look like humans.
   b. They will help us discover a new type of sickness.
   c. They can help us clean the house.
   d. Some robots can do what humans don’t want to do, or can’t do.

19. According to the passage, which of these might be a good use of a robot?
   a. To help make a sandwich.
   b. To help tie shoes.
   c. To exercise for you.
   d. To fight wars.

20. Which of these statements correctly summarizes how the author of this passage feels about robots?
   a. Robots are old.
   b. Robots are confusing.
   c. Robots are helpful.
   d. Robots are dangerous.
Passage B:

A milkmaid was walking down the road, balancing on her head a bucket full of fresh, sweet milk. As she walked, she was busy daydreaming.

"Milk this rich," she thought, "will surely give plenty of cream. I'll churn the cream into fresh white butter, and I'll take the butter to the market. After I sell it, I'll buy a dozen eggs, and soon I'll have a dozen chickens running around in the yard. I'll sell the chickens for a good price, and with the money I'll buy myself a new dress - a green one with lace - to wear to the fair in the summer. And when the miller's son sees me in that dress, he'll beg to dance with me. But will I let him? Never! When he asks me, I'll just toss my head - like this!"

As the milkmaid tossed her head, her wooden bucket fell to the ground and split in two. And so the milkmaid had nothing - no dress, no chickens, no eggs, no butter, not even the milk she had to start with.

- From: Aesop's Fables

21. How did the milkmaid carry the milk?
   a. On her head.
   b. In both hands.
   c. On a balance beam.
   d. In her dream.

22. What is the first thing the milkmaid thinks she will get from the milk?
   a. A lot of money.
   b. A lot of cream.
   c. A lot of butter.
   d. A lot of eggs.

23. How is the milkmaid going to get chickens?
   a. By wearing a new, green dress.
   b. By churning the cream.
   c. By buying the eggs and which will become chickens.
   d. By buying the chickens with money she made from the eggs.

24. What happened to the milk?
   a. It split into two.
   b. It spilled all over the road.
   c. It was drunk by the milkmaid.
   d. It was churned into butter.

25. What is the moral (message) of the story?
   a. Don't balance milk on your head.
   b. Don't expect something before it happens.
   c. Always be careful when you want a new dress.
   d. Never give up.
Passage C:

Hibernation is one of the main adaptations that allow certain northern animals to survive long, cold winters. Hibernation is like a very deep sleep that allows animals to save their energy when there is little or no food available. The body functions of ‘true hibernators’ go through several changes while they are hibernating. Body temperature drops, and the heart rate slows. For example, a hibernating woodchuck’s body temperature drops by more than 30 degrees Celsius, and its heart rate slows from 80 to 4 beats per minute! Other true hibernators include the jumping mouse, the little brown bat, the eastern chipmunk, and several ground squirrels.

Other animals, such as the skunk and raccoon, are not considered true hibernators, as they wake up in the winter to feed, and their body functions do not change as much. Since they only sleep for a little bit at a time, the term dormancy is used to describe their behavior. The largest animals that hibernate are bears. Their heart rate may slow down from a usual 40–50 beats per minute to 8-12 beats per minute, but their body temperature changes very little, so they are able to wake up quickly.

Hibernating animals have a special substance in the blood called hibernation induction trigger, or HIT. This substance becomes active in the fall, when the days become cooler and shorter. When HIT becomes active, the animals start preparing for winter. Some animals store food so that they can eat when they wake up, and some animals eat a lot in late summer and fall to add excess fat to their bodies. This fat keeps them warmer and acts as a source of energy while they are sleeping. Some animals also make changes to the places where they will sleep, called dens. They add leaves and grasses to keep themselves warm.

26. This passage is mainly about ____________________.
   a. body temperature decrease.
   b. what happens when animals hibernate.
   c. why and how animals hibernate.
   d. how animals store food during winter.

27. According to the passage, one of the reasons why animals hibernate is because ____________________.
   a. they can be fat during the winter.
   b. they can save energy when there is not much food around them.
   c. they can sleep deeply.
   d. they can speed up the passage of winter.

28. Why are skunks and raccoons NOT considered hibernators?
   a. They wake up and eat during the winter.
   b. Their heart beat slows down to about 8-12 beats a minute.
   c. They store food so that they can eat when they wake up.
   d. They want to survive the long cold winters.

29. What is HIT?
   a. The kind of blood that gets the animals ready for winter.
   b. Action that the animals take when it becomes colder.
   c. A substance in the blood which helps animals get ready for winter.
   d. A substance in the blood which keeps animals’ bodies warm.

30. In the second paragraph, the word dormancy means ________________.
   a. preparing for winter
   b. substance
   c. a large animal
   d. light sleeping
Part 3: Writing

Directions: On a separate sheet, write an essay. Before you write, take a minute to think deeply about the topic. You may use the space below to plan your essay. You may agree or disagree with the topic. Your essay will be graded only on how well it is written. Start writing your essay on the lined paper. When you are finished, make sure to check your spelling and grammar.

Essay Topic: The Olympic Games are good for the world