

The Theme of the Passage Choose the theme of the passage.

1. Though GM food can be dangerous for our health and environment, genetic engineering may be necessary for us to increase food production.
2. As the world's population increases so fast, even GM foods will not be able to save millions of people from dying of hunger in the future.
3. There is a possibility of producing dangerous GM foods by genetic engineering, so we will have to stop studying it in the future.
4. Since the world's population will continue increasing, genetic engineering will be the best way to produce foods such as GM foods.

The Theme of Each Paragraph Choose the theme of each paragraph.

How genetic engineering came about		
1 Malthusianism	2 ()	3 ()

Genetic engineering and GM food	
<p><u>The significance of genetic engineering</u></p> <p>4 ()</p> <p>5 ()</p> <p><u>The advantages of genetic engineering</u></p> <p>6 ()</p> <p>7 Plants that can resist insects or diseases ()</p>	<p><u>The risks of genetic engineering</u></p> <p>8 The danger of changing the genes</p> <p>9 ()</p> <p>↳ 10 Six main worries</p> <p>11 ()</p>

12 () and genetic engineering

- A High-yielding plants B The increasing need C The decisive factor in solving the food problem
 D Concerns about GM food E The legal obligation for labeling on GM food F The prospects of GM food
 G The decrease in use of chemicals H The development in technology of food production
 I Limits of old technology

Reading Task I Choose the phrase that fills in the blank.

1. Malthus forecast that millions of people would die because of _____.
 a. war, disease, or natural disasters b. a shortage of food and water c. environmental pollution
2. Malthus thought _____ saved millions of people from dying of hunger.
 a. rapid increase of the world's population b. war, disease, or natural disasters c. people's death by hunger
2. _____ were introduced into farming in the 1960s.
 a. Machines and fertilizers b. Machines and new types of seed c. New types of seed and fertilizers
3. _____ is a new technology in food production.
 a. Giving fertilizers b. Genetic engineering c. Using chemicals to kill insects
4. For centuries, scientists and farmers have been improving their animals and plants by _____.
 a. improving their food supply b. putting the genes of one animal into another c. mating one type with another
6. Dr. Borlaug claims that in the 21st century _____.
 a. world food production will increase rapidly b. the world will need the technology of genetic engineering
 c. people in the developing world will eat better than now

5. Genetic engineering will help _____.
 a. increase food supply b. reduce the world population c. people develop the world
6. The International Rice Research Institute _____.
 a. is encouraging farmers to cut the use of chemicals. b. has created a rice plant that produces six tonnes per acre.
 c. is using genetic engineering to create a new rice plant.
9. A new rice plant created by using genetic engineering is expected to give _____ as much rice as present rice varieties.
 a. twice b. three times c. four times
7. Genetic engineering could _____.
 a. kill insects which cause plants to die b. develop plants which resist diseases
 c. develop plants which resist strong chemicals
8. Genetic engineering causes arguments relating to _____.
 a. present varieties of plants and animals b. transgenic plants and animals c. our environmental problems
9. GM food is often considered as unnatural _____.
 a. in Europe b. in America c. in Africa.
13. Scientists are worried _____.
 a. that the new types of GM food are called "Frankenstein Foods" b. about a tomato that has been engineered to last longer
 c. about the dangers caused by introducing new life forms to the environment
10. The health risks from the new food types _____.
 a. have already been indicated by various researches b. have been studied enough to assure safety
 c. have not been properly studied
15. GM products _____.
 a. could change DNA structures of other plants and animals b. could assure the long life of animals
 c. have been proven to be safe to human beings
11. Developed countries may have to use GM crops _____.
 a. to provide food for people in other countries b. to keep the prices of their farm exports down
 c. to increase farm production without using more water or land
17. In the developing world, especially in Africa, people may have to increase farm production _____.
 a. without putting special labels on GM food b. without any effect from genetic engineering
 c. without using more water or land
12. The arguments over genetic engineering and GM food _____.
 a. will come to an end soon b. still continue c. should be finished

Reading Task II Complete the summary of the passage using the words below.
 Change the form if necessary.

Malthus believed that the world's population was increasing too fast for the (1) of food. Technologies using machines and (2) increased food production in the past 150 years. But today we need a new way of (3) food to feed the world's growing population. Genetic engineering can be used to produce better plants and animals by changing their (4). It may improve our food supply and (5) the use of chemicals on the land. However, some consumers and scientists are (6) about the effects on human (7) and the environment. Nevertheless, we may have to (8) GM food in the near future, whether we like it or not.

eat supply health chemicals increase worry genes reduce

Reading Task III If the following sentence is correct, write T. If not, write F.

1. () Malthus believed that war, disease, and natural disasters made people die of hunger.
2. () Fertilizers have been developed to produce more harvests in the past 150 years.
3. () We didn't have ways to improve our animals and plants before genetic engineering was developed.
4. () Genetic engineering is a way of improving our food supply.
5. () If the world food production increases by 60 percent in 2030 as compared to 1990, even people in the developing countries can eat fully.
6. () According to the deputy director for international services at the International Rice Research Institute, the development of a new rice plant should be done as quickly as possible.
7. () Plants that can resist insects or diseases can be developed by genetic engineering.
8. () Genetic engineering has been accepted without concern.
9. () American consumers are more worried about GM foods than European consumers.
10. () GM products can be dangerous not only to human beings but also environment.
11. () Some food companies are not telling consumers whether or not their products have been genetically modified.
12. () Developed countries may need to use GM crops in the 21st century.
13. () We should stop eating GM food if we want to avoid seeing Thomas Malthus's view come true.
14. () We cannot avoid the age of genetic engineering.

Reading Task IV Read paragraph 1, 2, and 3, and answer the questions.

- 1 Thomas Malthus is one of the best-known economists in history. Malthus, an Englishman who died in 1834, developed the idea that the world's population was increasing too fast for the supply of food and water. Unless war, disease, or natural disasters reduced the population, Malthus believed that millions of people would die of hunger and the land would be used up. His idea became known as Malthusianism.
- 2 However, Malthus did not forecast the role of technology in increasing food. New ways of farming using machines greatly increased farm production in the past 150 years. In the 1960s, scientists developed new types of seed and introduced fertilizers to produce more rice, wheat, and other foods. Other chemicals were developed to protect crops from insects, animals, and other plants.
- 3 These techniques cannot add much more to food production, while the world's population has gone on growing. So now scientists are starting to look to a new technology to make another jump forward in food production. This is genetic engineering.

use up A Aを使い尽くす look to A Aに期待する, Aを当てにする

- 1 Fill in the blanks to complete the summary of paragraph 1, 2, and 3.
 1. A world famous economists Thomas Malthus was anxious about the rapid () of the world's population and believed that () war, diseases, or natural () reduced the population, millions of people would die of () and the () would be used up.
 2. In the past, new ways of farming using (), developing new types of (), introducing (), and developing () helped increase food.
 3. However, though these techniques cannot add much more to () production, the world's () has gone on growing. ()() is a new technology to solve this problem.
- 2 What is Malthusianism? Extract the main idea from the passage.
- 3 What are These techniques? There are four possible answers. Explain them in Japanese.
- 4 What does a new technology refer to?
- 5 Underline the part that indicates the answer to the following questions.
 - (1) What is Thomas Malthus known as?
 - (2) Can we expect more food by the techniques we've already had?

Reading Task V Read paragraph 4, 5, 6, and 7, and answer the questions.

- 4 Genetic engineering is a technology to change genes around by putting animal genes into plants, for example, or putting the genes of one animal into another. For centuries, scientists and farmers have found ways to improve their animals and plants. They mate one type of animal with another, or combine types of seed to produce a better plant. Genetic engineering, says Nobel-Prize winner Dr. Norman Borlaug, is simply a new way of improving our food supply.
- 5 Borlaug claims that the world will need this technology in the 21st century. "Projected population growth requires that world food production increase by nearly 60 percent in 2030, as compared to 1990," he says. If people in the developing world want to eat better than now, then food production will need to increase even more, Borlaug believes.
- 6 The International Rice Research Institute, based near the Philippines' capital city, Manila, is using genetic engineering to create a new rice plant. Researchers hope to create a plant that could give six tonnes of rice from one acre of land. Present rice varieties give two tonnes per acre. The deputy director for international services at the institute says, "This is a race against time."
- 7 A further benefit of genetic engineering could be to cut the use of chemicals on the land. Biotechnology companies are trying to develop plants that can resist insects or diseases. With such plants, the companies claim farmers may do less chemical spraying.

mate A with B AをBとをつがわせる, 交配する (as) compared to A Aと比較すると, Aと比べて

1 Fill in the blanks to complete the summary of paragraph 4, 5, 6, and 7.

4. Genetic engineering is a technology to change () around. It is a new way of improving our () supply.
5. In order to () the world with enough food in 2030, world food () needs to () by nearly 60 percent, as compared to 1990.
6. The International Rice Research Institute is using genetic engineering to create a new () plant, which produces () times more rice than the present type. This is a race against ().
7. Another benefit of genetic engineering is to cut the use of () on the (), so farmers may do less () spraying.

2 Answer an antonym of supply and increase. antonym = a word that has the opposite meaning of a certain word

supply increase

3 What does this technology refer to?

4 Fill in the blanks in the sentence below to explain

The researchers at The International Rice Research Institute hope to create a new plant that could give () () much rice per acre () present rice varieties.

5 What does mean? Answer in Japanese.

6 What are such plants? Explain in Japanese.

7 Underline the part that indicates the answer to the following questions.

(1) What is "genetic engineering"?

(2) What will happen if plants that can resist insects or diseases are developed?

Reading Task VI Read paragraph 8, 9, 10, 11, and 12, and answer the questions.

- 8 Genetic engineering doesn't stop there, however. It causes a lot of arguments, especially relating to transgenic plants and animals. Many environmentalists and general consumers are concerned about changing the genes of the food we eat.
- 9 In Europe, newspapers often refer to the new types of GM (Genetically Modified) food as "Frankenstein Foods." While American consumers seem to have few worries about a tomato that has been engineered to last longer in the shop, many Europeans feel that such tomatoes aren't natural. Scientists, too, are worried that the big biotechnology companies are introducing new life forms to the environment without considering the dangers.
- 10 An association in the U.K. has six main worries about GM products as follows:
 1. The Moral Issue: it is not right for humans to play with other life forms.
 2. Human Safety: the health risks from the new food types have not been properly studied.
 3. Environmental Safety: GM products could pass new DNA structures to other plants and animals.
 4. Animal Welfare: GM products given to animals can cause stress and early death.
 5. Ownership of DNA: the big GM products companies could end up owning life forms, which environmentalists believe is not right.
 6. Freedom of Choice: not all food companies are telling consumers whether or not their products have been genetically modified.
- 11 Governments in developed countries, especially in Europe and Australasia, have started to put special labeling on GM food. But in this century, these countries may have to use GM crops to keep the prices of their farm exports down. The biggest effect of genetic engineering will be in the developing world. Most seriously in Africa, farm production needs to increase without using more water or land.
- 12 So the arguments over genetic engineering and GM food continue. Whether we like it or not, though, the age of genetic engineering is here. And in the near future, we may have to eat GM foods to avoid seeing Thomas Malthus's view come true.

be concerned about A Aを心配している refer to A as B AをBと呼ぶ,言う as follows 次のとおり(に)
 play with A Aをもてあそぶ end up doing 最終的に~することになる keep down A Aを抑える,低く保つ

- 1 Fill in the blanks to complete the summary of paragraph 8, 9, 10, 11, and 12.
8. However, many environmentalists and general () are concerned about () the genes of the () we eat.
9. European newspapers refer to the new types of GM food as "() Foods." Scientists are worried that new life forms are introduced to the () without considering the ().
10. Main worries about () products are: the () issue, human safety, () safety, () welfare, ownership of (), and freedom of choice.
11. Both () countries and developing countries need genetic engineering to get enough ().
12. The () over genetic engineering are still going on. Whether we like or not, we may have to eat () foods to () a lot of people dying of ().
- 2 What does there mean? Explain in Japanese.
- 3 What does such tomatoes refer to? Explain in Japanese.
- 4 The writer mentions six main worries about GM products in paragraph 10. Which worry does each of the following sentence explain? Choose the number.
- (a) By creating GM products, DNA structures that have never existed before may flow into the environment and affect other living things. ()
 (b) We have no right to claim other living things as our property. ()
 (c) If we eat GM products, it may raise the risk of contracting some kind of disease, such as cancer. ()
 (d) In some countries, companies are not required to label GM products as such. ()
 (e) Since we are not God, we should not create animals or plants that have never existed before. ()
 (f) If we use GM products to feed livestock such as cows and pigs, it may cause them to die early. ()
- 5 What does these countries refer to?
- 6 Explain Thomas Malthus's view in Japanese.
- 7 Underline the part that indicates the answer to the following questions.
- (1) Which people are worried about a tomato that has been engineered to last longer, American consumers or European consumers?
- (2) What have governments in developed countries started?
- (3) According to the writer's opinion, why will developed countries have to use GM crops in this century?

Grammar Check the grammar points.

p.84 I.2

Malthus, an Englishman カ who died in 1834, developed the idea 同格のカンマ

that the world's population was increasing too fast for the supply of food 同格の that 「～という…」 the ideaの内容を説明している and water. セ

文末に to keep up with を補い, too fast for the supply of food and water to keep up with と考えて訳す。too A to do 「あまりにも A でできない」の構文。

訳 マルサスは 1834 年に亡くなった英国人であるが、世界の人口があまりにも急速に増加しているので食糧と水の供給が追いつかないという考えを進展させた。

p.84 I.5

Unless セ war, disease, or natural disasters ～でない限り reduced the population, die of A A(が原因)で死ぬ

Malthus believed セ that ということ millions of people would die of hunger and the land would be used up. セ

訳 戦争、病気、あるいは自然災害によって人口が減少しない限り、何百万人もの人が餓死し、土地は使い尽くされるだろうとマルサスは信じていた。

p.85 I.8

"Projected population growth requires 「推定される人口の増加」 that world food production increase by nearly 60 percent in 2030, ということ

as compared to 1990," he says. ～と比較して

require は要求を表す動詞 後に続く that 節の中の動詞は原形 (または should + 原形) になる。したがって increases となっていないことに注目しよう (チャート 100)

訳 「推定される人口の増加から、世界の食糧生産は 1990 年と比較して、2030 年にはほぼ 60 パーセント増加することが必要である」と彼は言う。

p.86 I.5

In Europe, newspapers often refer to the new types of GM (Genetically Modified) food as "Frankenstein Foods."

refer to A as B 「A を B と呼ぶ」 離れている as に注意。「フランケンシュタイン食品」は、遺伝子組み換え食品に軽蔑と批判を込めた呼び方であり、「醜怪な食品」という含意がある。

訳 ヨーロッパでは、新しいタイプの GM(遺伝子組み換え)食品を新聞は「フランケンシュタイン食品」としばしば呼んでいる。

p.86 I.6

While American consumers seem to have few worries about a tomato カ that has been engineered to last longer in the shop, ～である一方、～だが

many Europeans feel セ that such tomatoes aren't natural. ということ

訳 アメリカの消費者は店で長持ちするように遺伝子を操作されたトマトについてほとんど心配していないように思われるが、ヨーロッパの多くの人たちはそのようなトマトは自然ではないと感じている。

p.87 I.1

Ownership of DNA: the big GM products companies could end up owning life forms, end up ~ ing 結局 ~ することになる

カ which [environmentalists believe] is not right.

関係代名詞の非制限用法に注意。先行詞は前半部分 (the big GM products ~ life forms) を指す。元の形は -, and environmentalists believe it is not right であり, it を主格の関係詞 which に置き換えている。

訳 DNA の所有権 : GM 製品の大企業が最終的に新しい生命体を所有することになりうるが、環境保護論者はそれは正しくないと感じている。

p.87 I.3

Freedom of Choice:

not all food companies are telling consumers whether or not their products have been genetically modified.

部分否定 not all ~

~かどうかということ

完了形 + 受動態

「すべての食品会社が~しているわけではない」

訳 選択の自由：自社製品が遺伝子を組み換えたものかどうかをすべての食品会社が消費者に告知しているわけではない。

p.87 I.13

Whether we like it or not, though, the age of genetic engineering is here.

譲歩を表す副詞節

ここでの though は挿入的に使われており、訳す際は「だが」と最初に訳すほうがよい。

「~であろうとそうでなかろうと」

訳 だが、好むと好まざるとにかかわらず、遺伝子工学の時代はすでにやってきている。

p.87 I.14

And in the near future, we may have to eat GM foods to avoid seeing Thomas Malthus's view come true.

avoid ~ ing 「~することを避ける」 ここでは目的を表す副詞的用法の不定詞

see

O 原形不定詞

「Oが~するのを見る」

訳 そして近い将来、トマス・マルサスの考えが現実のものとなるを見なくて済むように、われわれは GM 食品を食べざるを得なくなるかもしれない。

日本の遺伝子組み換え表示義務について EU と比較するとかなり緩いものになっている

1. 表示義務の範囲

EU では添加物も含む全ての遺伝子組み換え原料に表示義務を課しているが、日本では原材料の上位3品目のみでよい。さらに、上位3品目であっても重量が全体の5%以下であれば表示義務はない。

2. 混入の許容率

EU では非遺伝子組み換え原料に混入する遺伝子組み換え原料の比率が0.9%以上なら表示義務がある。日本では5%未満であれば表示義務はなく、逆に5%未満であれば「遺伝子組み換えでない」と表示できる(このような表示はEUだけでなくアメリカでも許されていない)。

3. その他

日本では醤油・食用油など(DNA やタンパク質の検出しにくいもの) / 飼料 / 畜産品(肉, 卵, 乳製品)には表示義務がない。さらに、日本ではレストランなどの外食産業での表示義務がない(EUにはどちらもある)。

Reading Aloud Read the passage aloud filling in the blanks.

Thomas Malthus / is one of the best-known economists / in history. / Malthus, / an Englishman / who died in 1834, / developed the idea / that the world's population / was () () () / for the () of food and water 【あまりにも急速に増加しているため食料と水の供給が追いつかない】. / () 【~しない限り】 war, disease, or natural disasters / reduced the population, / Malthus believed / that millions of people would () () () 【餓死する】 / and the land would () () () 【使い尽くされる】. / His idea became known / as Malthusianism. /

However, / Malthus did not () / the role of technology / () () food 【食料の増産における技術の役割を予測していなかった】. / New ways of farming using machines / greatly increased farm production / in the past 150 years. / In the 1960s, / scientists developed new types of seed / and introduced fertilizers / to produce more rice, / wheat, / and other foods. / Other chemicals were developed / to protect crops / from insects, / animals, / and other plants. /

These techniques cannot () much more / () food production 【食料生産をさらに大きく増加させることはできない】. / while the world's population has () () () 【ずっと増え続けている】. / So now scientists are starting to () () a new technology 【新しい技術が食料生産をもう一度飛躍させることを期待し始めている】 / to make another jump forward / in food production. / This is genetic engineering. /

Genetic engineering is a technology / to change genes around / by putting animal genes into plants, / for example, / or putting the genes of one animal / into another. / For centuries, / scientists and farmers have found ways / to improve their animals and plants. / They () one type of animal / () () 【ある種類の動物を別の種類とつがわせたり】. / or combine types of seed / to produce a better plant. /

Genetic engineering, / says Nobel-Prize winner / Dr. Norman Borlaug, / is simply a new way / of improving our food supply. /

Borlaug claims / that the world will need this technology / in the 21st century. / "() () () 【推定される人口の増加は】 requires / that world food production () 【増加する】 / by nearly 60 percent / in 2030, / () () () 1990 【1990年と比較して】.," / he says. / If people in the developing world / want to eat better than now, / then food production will need to increase / even more, / Borlaug believes. /

The International Rice Research Institute, / () () the Philippines' capital city, / Manila 【フィリピンの首都マニラ近郊に拠点がある】. / is using genetic engineering / to create a new rice plant. / Researchers hope to create a plant / that could give six tonnes of rice / from one acre of land. / Present rice varieties give / () () () () 【1エーカーあたり2トン】. / The deputy director for international services at the institute says, / "This is a () () () 【時間との競争】. " /

A () () of genetic engineering 【遺伝子工学のさらなる利点】 / could be to cut the use of chemicals / on the land. / Biotechnology companies are trying to develop plants / that can () () / or () 【昆虫や病気に強い植物】. / With such plants, / the companies claim / farmers may do () () () 【農薬の散布を今より少なくするかもしれない】. /

Genetic engineering doesn't stop there, / however. / It causes a lot of arguments, / especially relating to / transgenic plants / and animals. / Many environmentalists / and general consumers / () () () 【~を心配している】 changing the genes / of the food we eat. /

In Europe, / newspapers often () () the new types of GM (Genetically Modified) food / () "Frankenstein Foods 【新しいタイプのGM(遺伝子組み換え)食品を「フランケンシュタイン食品」としばしば呼ぶ】. " / While American consumers seem to () () () 【ほとんど心配していないように思われる】 / about a tomato / that has been engineered / to () () / in the shop 【店でより長持ちするように】. / many Europeans feel / that such tomatoes aren't natural. / Scientists, / too, / are worried / that the big biotechnology companies / are introducing new life forms / to the environment / without considering the dangers. /

An association in the U.K. / has six main worries / about GM products / () () 【次の通りである】. /

1. The Moral Issue: / it is not right / for humans to () () other life forms 【他の生命体をもてあそぶ】. /
2. Human Safety: / the health risks / from the new food types / have not been properly studied. /
3. Environmental Safety: / GM products could pass new DNA structures / to other plants / and animals. /
4. Animal Welfare: / GM products given to animals / can cause stress / and early death. /
5. Ownership of DNA: / the big GM products companies / could () () () life forms 【最終的に新しい生命体を所有することになりうる】. / which / environmentalists believe / is not right. /

6. Freedom of Choice: / () () food companies / are telling consumers / () () () their products () () genetically () 【自社製品が遺伝子を組み換えたものかどうかをすべての食品会社が消費者に告知しているわけではない】. / Governments in developed countries, / especially in Europe / and Australasia, / have started to () special () () GM food 【GM 食品に特定の品質表示を貼り付けることに着手している】. / But in this century, / these countries may have to use GM crops / to () the () of their farm () () 【自国の農産物の輸出価格を抑えるために】. / The biggest effect of genetic engineering / will be in the developing world. / Most seriously in Africa, / farm production needs to increase / without using more water or land. / So the arguments / over genetic engineering and GM food / continue. / () () () () () () 【好むと好まざるとに関わらず】. / though, / the age of genetic engineering / is here. / And in the near future, / we may have to eat GM foods / to () () / Thomas Malthus's view () () 【トマス・マルサスの考えが現実のものとなるのを見なくてすむように】. /

Idioms Fill in the blanks.

Drill 1

- 私はテレビ(番組)がますます暴力的になっていくのが心配だ。
I'm () () growing violence on television.
- これまでにキツネは犬と交尾したことがあるのだろうか。
Do foxes ever () () dogs?
- 父のお気に入りの助言は次のものだ。ユーモアのセンスと批判精神をはぐくめ。
My father's favorite advice is () (): develop a sense of humor and a critical spirit.
- スープを作るのは残った野菜を使いきるのによい方法だ。
Making soup is a good way to () () leftover vegetables.
- 私は体重を低く保とうとしている。
I'm trying to () my weight ().
- りんごに比べてオレンジはビタミンCに富んでいる。
() () () apples, oranges are richer in vitamin C.
- 私たちはよく大阪のことを「食い倒れ」というが、これは大阪の人は食べ物にたくさんお金をかけるということである。
We often () () Osaka () "Kuidaore," which means that people in Osaka spend a lot of money on food.
- 会社の利益を上げるため彼らは新しい経営者に期待している。
They're () () the new manager to make the company profitable.
- 彼は会社員から出発したが、最後は大きな会社を運営するまでになった。
He started as an office worker, but () () running a big company.
- マッチをもてあそぶのはとても危険だ。
It is very dangerous to () () matches.

Drill 2

- 彼はぜんぜん勉強せず、その結果は次の通りであった。つまり、最終試験に落ち、留年したのだった。
He didn't study at all and the results were () (): he failed the final test and remained in the same grade.
- 最初は彼らはお互いに嫌いだったが、結果的には結婚した。
At first they hated each other, but they () () getting married.
- 農場主は常に生産物の価格の上昇を当てにしている。
Farmers always () () a rise in the prices of their products.
- 大統領はその問題について憂慮している。
The president () () deeply () () the issue.
- ほとんどすべての会社は社員の賃金を低くしておきたがる。
Almost all companies want to () () the wages of their workers.
- 電気のスイッチをもてあそぶのはやめなさい!
Stop () () the light switch!
- 私たちは朝食でバターを全部使ってしまった。
We () () all the butter at breakfast.
- 彼女はいつもベンのことを「あの色男」と呼んでいた。
She always () () Ben () "that handsome man".
- 雄(おす)の鳥が数羽の雌(めす)と交尾するのはきわめてふつうである。
It's quite common for male birds to () () several females.
- 家の建築費は10年前と比べるとはるかに高い。
The cost of building houses is far higher () () that of ten years ago.

Drill 3

- 弘はいつも親の援助を当てにしている。
Hiroshi always () () his parents for help.
- 受賞者は次の通りである。第3位はマンディー・ジョンソン、第2位は.....
The winners are () (): in third place, Mandy Johnson; in second place ...

23. 「ポマト」はジャガイモとトマトを交配させることで生み出される。
"Pomatoes" are produced by () potatoes () tomatoes.
24. 統計によると、押し込み事件は昨年と比較して20パーセント減少している。
Statistics show a 20% reduction in burglary () () () last year.
25. 誰がケチャップを全部使っちゃったの？
Who () () the ketchup?
26. 私がほとんど食事を取らないことを彼女は心配してくれている。
She () () () how little food I eat.
27. 彼らといつ食事に出かけようと、結局はいつも私が支払われている。
Whenever I go out to dinner with them, I always () () () the bill.
28. 塩はかつて「魔法の白い砂」と呼ばれていた。
Salt used to be () () () "magic white sand."
29. ボールで遊んでいる子猫を見て！ すごくかわいいよ！
Look at the kitten () () a ball! It's so cute!
30. われわれはコストを抑えておく必要がある。
We need to () () () .

Listening Practice Listen to the dialog and answer the questions.

1. a. Takumi does, but Misaki doesn't. b. Misaki does, but Takumi doesn't. c. Neither of them.
2. a. Price. b. Appearance. c. Freshness.
3. a. Where it's made. b. How it tastes. c. Whether it's GM or not.

Further Reading Read the passage and answer the questions.

As well as protecting crops from pests and disease (1)() genetic engineering, geneticists turned their attention to using the new biotechnology to improve the quality of plant products, or to make plants produce entirely new products. One example shows how medical technology has made (2)() of genetically (A) plants.

The life-threatening liver disease, hepatitis B, could soon be treated using genetically engineered bananas (A) to carry vaccines. Researchers at Cornell University, New York, have produced bananas which are able to make *antigens which are found in the hepatitis B virus. The *carrier bacterium is used to transfer the gene for the production of hepatitis B antigen from a virus into the bananas. Theoretically, it could provide a very cheap method of vaccinating populations of developing countries and could be extended to prevention of other diseases of this kind.

Food technology is an important field today in our world of giant supermarkets which have to store food in bulk. This is another area that is benefiting from *gene manipulation. The genetically (A) **Flavr Savr* tomato was one of the first fruits to demonstrate the wonders of genetic engineering to the public. Media coverage was widespread when the story broke that scientists had engineered a tomato that could last much longer than usual in a fresh and tasty condition. The scientific explanation sounds much (3)() dramatic than the many newspaper headlines and magazine reports that appeared in 1994.

The tomato has a gene inserted which switches off the production of the *enzyme which usually causes tomatoes to soften when they ripen. The (A) tomatoes are (3)() likely to be damaged when they are harvested and can remain longer on the plant to ripen naturally. They should therefore have an improved flavor as well as longer *shelf life.

ア. Geneticists seem to have an unlimited source of innovative ideas. In the late 1990s, cotton plants were (A) (4)() they produce fibers containing small pieces of plastic! Although the idea was tried in 1992 using a kind of plant, it was not until 1996 that the scope for cotton-plastic fiber was realized. This new type of fiber can be used to make fabric for ultrawarm clothes, carpets and *insulation. Researchers from an American company inserted two genes from a bacterium into the cotton plant. The bacterium normally makes a *biodegradable plastic which is an energy store, rather like (5)() in animals.

(成蹊大学)

* antigen = 抗原[生体は侵入してきた抗原に対して抗体を作る]

* carrier bacterium = 病原菌を運ぶためのバクテリア

* gene manipulation = 遺伝子操作

* *Flavr Savr* tomato = *Flavr Savr*という銘柄のトマト

* enzyme = 酵素

* shelf life = (食品などの)品質保持期間

* insulation = (電気・熱・音などの)絶縁

* biodegradable = 微生物によって無害な物質に分解しうる

1 . Choose the appropriate word for blanks(1) ~ (5).

- (1) a . over b . from c . through d . against
(2) a . out b . up c . fun d . use
(3) a . fewer b . more c . less d . least
(4) a . while b . so that c . even though d . since
(5) a . bone b . skin c . fat d . blood

2 . Choose one word to fill in the blank (A). Change the form if necessary.
modify / identify / classify / satisfy

3 . Put ア into Japanese.

4 . Choose the three correct sentences.

- a . Genetic engineering of plants has become more important than protecting crops.
b . Bananas genetically engineered at Cornell University may be used to protect peoples in developing countries against hepatitis B at small cost in the near future.
c . *Flavr Savr* tomato, a product of genetic engineering, can ripen more quickly.
d . Fabric made by cotton-plastic fiber can insulate heat, and can be eaten, if necessary.
e . Although the creation of *Flavr Savr* tomato was a breaking story, newspaper headlines were not as dramatic as scientists had expected.
f . A certain enzyme makes tomatoes soft when they ripen.
g . Genetic engineering is being used to make plants produce entirely new products.
h . The bacterium eats cotton seeds to produce a biodegradable plastic.