UNIT 9

Let Me Explain

Model Presentation 9

CD-46

"Preparing for Electroplating"

Let's practice the following presentation.

Slide 1

1

Preparing for Electroplating

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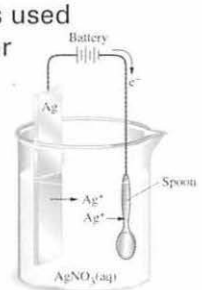
Opening—Greeting
Good evening. I'm Hisashi Fujino. I'm from Tozai University.

Slide 2

2

Introduction ①

- Electroplating is used for decoration or protection.



Introduction (1)
Electroplating is a useful process with many practical applications. It may be used for decoration or protection.

Slide 3

3

Introduction ②

Before electroplating

- Surface preparation is essential for a high-quality product.
- How is it done?

Introduction (2)
Before electroplating, the surface of the material must be prepared correctly. Investing time and effort in preparation produces a much higher-quality product. Now I'll tell you how this is done.

Slide 4

4

Why cleaning is needed

- Dust, metal shavings or an oil film may be present on the surface of the machinery.
- These parts must be cleaned carefully before they are put into the electrolyte solution.

Body (1)
The parts that a factory electroplates come from the machining department of a supplier. It is very likely that dust, metal shavings or an oil film are present. These parts must be cleaned carefully before they are put into the electrolyte solution.

Slide 5

5

How to clean

Step 1. Ultrasonic process

Most of the metal bits that remain after drilling or stamping are shaken off.

Body (2)

The substrate is cleaned in two steps. In the first step, an ultrasonic process shakes off most of the metal bits that may have remained after drilling or stamping.

Slide 6

6

How to clean

Step 2. Special chemical bath

Any oil that remains on the surface is emulsified and washed away.

Body (3)

In the second step, the substrate is placed into a special chemical bath. Any oil that remains on the surface is emulsified and washed away.

Slide 7

7

Conclusion

- The surface cleaning or preparation should be done properly.
- Otherwise, the electroplating will not be of a high quality.

Conclusion

The part is now ready to be electroplated. The electroplating will not be of a high quality if the surface cleaning or preparation is not done properly.

Closing—Thanks

Thank you for your attention.

NOTES

electroplating「電気メッキ」 **machining department**「機械加工部門」 **supplier**「供給業者」 **metal shavings**「金属の削りくず」 **oil film**「油膜」 **electrolyte solution**「電解質溶液」 **substrate**「基板」 **ultrasonic**「超音波の」 **shake off**「取り除く」 **chemical bath**「化学溶液」 **emulsify**「乳化する」

 **Useful Words & Phrases**

■ Giving Explanations

Explanations can be organized in many different ways. Your goal is to help your audience understand a concept better than when you began your explanation. Use of the organizing structure types below will help you to present an explanation.

	Organization structure	Example
1	Chronological order	Past → present → future
2	Step-by-step instruction	Introduction → step 1 → step 2 . . . → conclusion
3	Pro and con (For and against)	All points in favor → all points opposed → conclusion
4	Cause and effect	Context → cause → effect (or context → effect → cause)
5	Increasing effect	Local → regional → national → global
6	Scientific method	Purpose → methodology → results → recommendations
7	Problem / solution	Problem → solution → call to action
8	General explanation	Statement → more info → examples → restatement

Exercise A

Put the following sentences 1 to 6 in order to make a logical a paragraph.

1. A negative electrode in an electrolyte solution will attract positive ions; a positive electrode will attract negative ions. The process that uses this phenomenon is "electrolysis."
2. In conclusion, I would like to emphasize that electrolysis is essential for modern production.
3. Aluminum does not exist in nature in its free state; currently, electrolysis is the method that can most economically extract the metal.
4. A soluble compound is one that dissolves in water. When a soluble compound dissolves and forms ions, the solution can carry electric currents. These solutions are called "electrolytes."
5. Here are some examples: 1) industrial production of chemicals, 2) extraction of metals from natural ores, 3) purification of metal elements like copper and 4) application of a thin metal surface to items (electroplating).
6. Electrolysis has many uses, especially in industry.

□ → □ → □ → □ → □ → □

Exercise B

Fill in the blanks in the chart to show the structure of the paragraph.

Introduction	What are electrolytes? What is electrolysis?
↓	
Statement	Electrolysis has [1]] [2]].
↓	
Examples	How is electrolysis used in industry?
↓	
Restatement (conclusion)	• Electrolysis is the most economical [3]] to extract aluminum. • Electrolysis is essential for [4]] [5]].

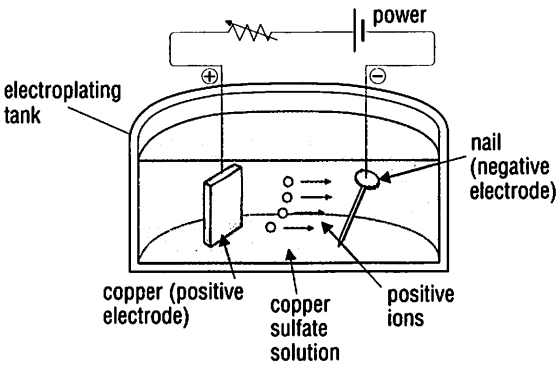
NOTES

electrode「電極」 **electrolyte**「電解液」 **electrolysis**「電気分解」 **ore**「鉱石」
free state「遊離状態」 **extract**「抽出する」 **soluble compound**「水溶性化合物」 **industry**「工業」

Language Skills

Listening Practice CD-47

The speaker will give an explanation of how to electroplate an iron nail. Listen to the presentation and fill in the following transcript.



Today I'd like to explain a simple experiment. The aim of the experiment was to use electrolysis to electroplate, or cover, an iron nail with a thin layer of copper. The materials used were 200 ml of 2-molar copper sulfate solution, a piece of copper, some accurate scales, two leads with alligator clips, some steel wool, a large iron nail and a 6-volt power supply. 1)_____, I cleaned the copper and the nail thoroughly with the steel wool. 2)_____ I recorded the mass of the nail and piece of copper. Once the items were ready to be used, I prepared the electroplating tank. The nail and the copper were 3)_____ into the copper sulfate solution. The copper was attached to the positive terminal and the nail to the negative terminal. Once everything was ready, the power was turned on—after making sure that the nail and copper were not touching. I waited for 30 minutes. Then I turned off the power and removed the nail and the copper. After they dried, I weighed them again and observed their appearances. The piece of copper 4)_____ less than it did originally. The iron nail became bluish in color and increased in weight. Based on this experiment, I 5)_____ that copper from the piece of copper traveled through the electrolyte solution and attached itself to the iron nail.

NOTES

molar「モル（濃度）の」 **copper sulfate solution**「硫酸銅溶液」 **alligator clip** = crocodile clip「わに口クリップ（金属体への電気接続の仮留めに使われる）」 **power supply**「電源」

Homework

Make an outline of the body and conclusion of this presentation. Use at least four slides.

Key: ① Materials/Equipment ② Method/Procedure ③ Results ④ Conclusion

Pronunciation Practice

Listen. Underline the stressed words. Can you understand how the sentences differ in meaning depending on the stress?

1. Today I'd like to explain a simple experiment.
2. Today I'd like to explain a simple experiment.
3. Today I'd like to explain a simple experiment.
4. Today I'd like to explain a simple experiment.
5. Today I'd like to explain a simple experiment.

UNIT 10 Make a Record

Model Presentation 10 CD-49

"Foucault's Experiment"

Let's practice the following presentation.

Slide 1

1

Foucault's Experiment

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Opening—Greeting
Good morning. My name is Masaru Ono.

Slide 2

2

Introduction

- Foucault's Pendulum
- How did Foucault try to show that the Earth rotates?

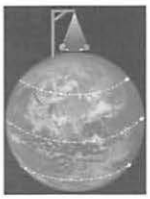
Introduction
Have you ever heard of Foucault's Pendulum? In the middle of the 19th century, Jean Foucault developed a way to show that the Earth is indeed spinning. Now I'd like to talk about his experiment.

Slide 3

3

Hypothesis ①

- If the Earth is rotating, the ground under the pendulum will move in a circular path.



Body (1)
Foucault understood that the rotation of the Earth could be demonstrated using a simple experiment at the North Pole. If the Earth is rotating, then the ground under the pendulum will move in a circular path.

Slide 4

4

Hypothesis ②

- If the Earth is not rotating, the ground under the pendulum will not move.

Body (2)
If, however, the Earth is not spinning, then the ground under the pendulum will not move.

Slide 5

5

Method ①

1. Set up a huge pendulum in Paris
2. Attached a large pointed weight to the end of a long cord

Body (3)
Foucault set up a huge pendulum in Paris. At the end of a long cord he attached a large, pointed weight.

Slide 6

6

Method ②

3. Scattered a thick layer of sand on the floor around the pendulum
4. As the pendulum swung back and forth, the weight traced its path in the sand.

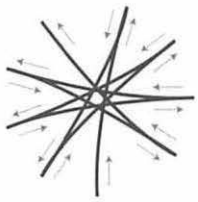
Body (4)
On the floor around the pendulum he scattered a thick layer of sand. **As** the pendulum swung back and forth, the weight traced its path in the sand.

Slide 7

7

Results

- After a few minutes, the pendulum's path in the sand did move.



Body (5)
After a few minutes, the pendulum's path in the sand did move.

Slide 8

8

Conclusion

- The Earth is moving.

.....

- Foucault's demonstration is still very popular around the world.

Conclusion
Foucault convinced people that the Earth is moving. Foucault's demonstration is still very popular and is seen in many museums around the world.

Closing—Thanks
Thank you for listening.

NOTES

Jean-Bernard-Léon Foucault（1819–68）フランスの物理学者でパリ天文台技師。1851年に地球の自転を証明する振子の実験を行った。**pendulum**「振り子」 **the North Pole**「北極」
set up「設置する」 **scatter**「まき散らす」 **trace**「なぞって描く」 **convince**「納得させる」

Useful Words & Phrases

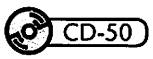
Transitional phrases move your presentation from topic to topic.

■ Timing of Actions/Events

Conjunctions, prepositions and transitional words or phrases can be used to describe or emphasize the timing of actions or events.

Usage	Conjunctions	Prepositions	Transitions/Phrases
Chronological	before, after	before, after, past*	first, then
Occurring together	while	during	at the same time
State/Condition	until	upon	as soon as

*Several words can function as prepositions or conjunctions, depending on how they are used.

Exercise A 

Make sentences from the following scrambled words and phrases. Begin the first word of each sentence with a capital letter.

1. produce / stops / will / it / vibrating / a guitar string / until / sound / .

2. away / after / be / put / your / sure / you / to / finish / using / it / equipment / .

3. the sun / view / is / from / during / an eclipse, / hidden / .

4. the fire, / we / discovering / the fire department / upon / called / .

5. hot glassware / when / in cold water / it / cleaning / do not / immerse / .

Now, work with a partner and check your answers. Take turns reading the sentences to each other.

Exercise B 

Listen. Then complete the sentences using these words:

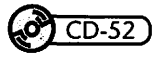
• after • as • as soon as • upon • when

Nearly all objects, [1]_____ hit or plucked, will vibrate. [2]_____ you drop a pencil on the floor, it will vibrate. [3]_____ being plucked, a guitar string will vibrate. [4]_____ the string vibrates, a sound wave is created. The sound may be musical or just noisy, depending on the frequency of the vibration.

[5]_____ you press a string on the neck of the guitar, the vibrating portion of the string is shortened. [6]_____ the length of the guitar string is shortened, the wavelength of the vibrating wave changes. [7]_____ the wavelength changes, the resulting musical sounds change as well.

NOTES

frequency of vibration「振動数」

Exercise C  CD-52

Listen. Fill in the transition words or phrases. You can use words or phrases from the tables on pages 52 and 64.

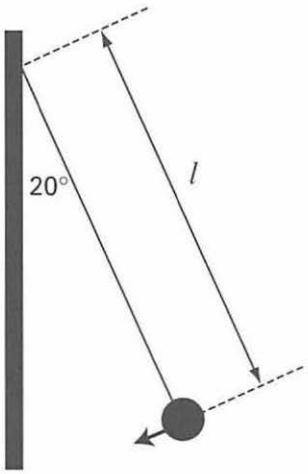
1. _____ _____, let's assume that a spaceship lands on a new planet.
2. _____ the astronauts land, they want to measure the gravity.
3. _____ they do anything, they check the equipment.
4. _____ doing that, they set up the equipment.
5. They _____ measure the distance from the top of the string to the top of the bob.
6. _____, they measure the distance from the top of the bob to its center.
7. _____ _____ _____ they do that, they calculate the total length of the pendulum.
8. _____ _____, they hold the bob 20° from the support and release it.
9. _____ _____, they record the time it takes for 100 swings.
10. _____ completing these measurements, they can calculate the gravity.

Listening Practice

CD-53

Listen to a presenter explain how to measure gravity on a new planet. Fill in the following transcript.

Recently a spaceship traveled to a new planet. The astronauts wanted to measure the gravity of the new planet. This is the [1]_____ the astronauts used: a stand, some string, a small weight or bob, a stopwatch and a meter rule. First the astronauts [2]_____ the pendulum to the stand. Then they [3]_____ the distance, *l*, from the stand to the center of the bob, using the meter rule. Following that, they held the bob about 20° from the stand and released it. The time taken for 100 swings was measured and [4]_____. They [5]_____ this experiment three times with different pendulum lengths: 20 centimeters, 40 centimeters and 80 centimeters. The astronauts' results are shown in the table. The astronauts knew that $T = 2\pi \sqrt{l/g}$ where T is the time for one swing of the pendulum and *l* is the length of the pendulum. This formula can also be written as $g = 4\pi^2 l / T^2$. Using this formula, the astronauts calculated "g," the value of gravity, using the three values from the table. The average value of "g" was 2.74 m/s^2. In conclusion, the astronauts successfully used a simple pendulum to determine the force of gravity on the new planet.



Results:

l = length of pendulum	time for 100 swings	time for one swing = T
20 cm	167 secs	1.67 secs
40 cm	240 secs	2.4 secs
80 cm	340 secs	3.4 secs

Homework

Make an outline of the body and conclusion of this presentation. Use at least four slides.

Key: ① Equipment ② Results ③ Calculations ④ Conclusion

Pronunciation Practice CD-54

1. Listen and repeat. Pay special attention to the underlined parts.

Recently a space ship traveled to a new planet.

2. Read out the formulae below. CD-55

$T = 2\pi\sqrt{l/g}$ $g = 4\pi^2 l / T^2$

UNIT 11 Chances Are . . .

Model Presentation 11 CD-56

"Tomatoes on Mars?"

Let's practice the following presentation.

Slide 1

1

Tomatoes on Mars?

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Opening—Greeting
Good afternoon. I'm Saki Kuboyama.

Slide 2

2

Introduction

- The purpose of the experiment

To determine if tomato seeds will germinate after exposure to the harsh conditions of space

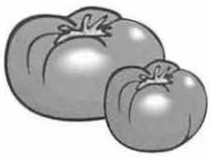
Introduction
Will plants be able to survive on Mars? The purpose of the experiment is to determine if tomato seeds **will** germinate after exposure to the harsh conditions of space.

Slide 3

3

Control group

- Group A
  Regular tomato seeds



Body (1)
We decided to use three different groups of tomato seeds. Group A seeds were regular tomato seeds. This was our control group.

Slide 4

4

Experimental group ①

- Group B
  Stored in Hokkaido during a cold, dry winter

—similar to the conditions aboard a spaceship

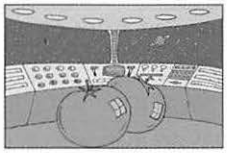
Body (2)
Group B seeds were stored in Hokkaido during a cold, dry winter. This would be similar to the conditions aboard a spaceship.

Slide 5

5

Experimental group ②

- Group C kept in a cold, oxygenless vacuum by the space agency —What would happen to the seeds with a leak in the spaceship?



Body (3)

Group C seeds were kept in a cold, oxygenless vacuum by the space agency. This represents what would happen to the seeds if there were a leak in the spaceship.

Slide 6

6

Results ①

- We planted the seeds in the same conditions.
- 90% of Type A germinated successfully.
- 85% of Type B did germinate at a fairly high rate.

Body (4)

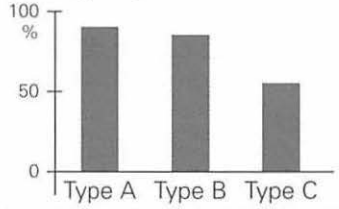
We then planted the seeds in the same conditions and waited. As we predicted, 90% of Type A germinated successfully, and 85% of Type B did germinate, surprisingly, at a fairly high rate.

Slide 7

7

Results ②

- 55% of Type C germinated and grew at the same rate as the control group.



Body (5)

We were very surprised that 55% of the Type C seeds germinated and that they grew at the same rate as the control group.

Slide 8

8

Conclusion

- Space travel may not kill tomato seeds, despite the leak.
- More research in outer space is needed.

Conclusion

From these results we can conclude that space travel **may** not kill tomato seeds, despite the leak. However, more research is needed with seeds that have actually been stored in space.

Closing—Thanks

Thank you.

NOTES

determine if . . .「…かどうかを決定（判断）する」 **germinate**「芽を出す，成長する」
exposure「さらすこと」 **harsh**「過酷な」 **control group**「対照群（実験要件を加えないグループ）」
oxygenless「酸欠の，空気のない」 **leak**「漏れ」

Useful Words & Phrases

■ Useful expressions for explaining an experiment

When you present the results of an experiment, the useful expressions below can help you convey your ideas. Look at the following example sentences that explain an experiment in which drinking water was tested for the presence of sulfate.

	Scientific method order	Presentation wording
1	Explain purpose/goals	Our goal was to measure the amount of sulfate in the drinking water in our area.
2	Describe methodology	To do this, we used a test strip and a color chart.
3	Present your results	We found that there was an average of 100 parts per million of sulfate in the drinking water.
4	Interpret data	The data supports the conclusion that our drinking water does not contain a dangerous amount of sulfate.
5	Recommend future action	We recommend that testing of the drinking water be done on a regular basis.

NOTES

sulfate「硫酸塩（エステル）」

■ Stating Possibility

How to express the likelihood of something happening.

Probability	Example
100%	It is certain that X will occur.
	X will definitely occur.
80% +	There is a strong / high possibility that X will occur.
	The possibility / probability / likelihood that X will occur is high.
60% – 80%	It is likely / probable that X will occur.
	X will probably occur.
50% or unknown	X may / might occur.
	There is a possibility that X will occur.
	It is possible that X will occur.
5% – 20%	There is little possibility that X will occur.
	The possibility / probability / likelihood that X will occur is low / slight.
0%	There is no possibility that X will occur.
	X will not occur.

Note: More detail can be given by using these words: very, quite, rather, somewhat, not very, not at all.

Exercise A

For the stated percentages, complete the sentences.

1. 100% This seed [1]] definitely germinate.

2. 90% There is a very high [2]] that this seed will germinate.

3. 70% It is [3]] that this seed will germinate.

4. 55% It is probable that this seed will germinate.

5. 50% This seed [4]] germinate.

6. 30% The probability that this seed will germinate is [5]].

7. 10% There is very little possibility that this seed will germinate.

8. 0% This seed will [6]] germinate.

Now, listen and check your answers. CD-57

Exercise B

CD-58

An experiment is described below. Five scientists made predictions about the results. Listen and fill in the blanks on the next page.

Scientists are going to test three types of tomato seeds. They want to determine if the seeds could survive in the dry, cold atmosphere of the ISS. They also want to know if the seeds could survive if they were accidentally exposed to the oxygenless vacuum of space.

Three types of tomato seeds were used in this experiment.

- Type A seeds are ordinary tomato seeds. This is the control group.
- Type B seeds were stored in north Hokkaido for one winter. The cold, extremely dry climate there is similar to the environment on board the ISS.
- Type C seeds were exposed to a space-like environment that was very cold and lacked oxygen.

Predictions by five scientists:

Scientist A: Tomato seeds are very tough and are protected by a thick seed coat. Type B and Type C seeds are [1]_____ to be damaged and will definitely germinate in the same way as the control group, Type [2]_____.

Scientist B: Without oxygen, more than half of Type [3]_____ seeds are likely to be killed. There is a [4]_____ chance that the surviving seeds will be slower to germinate than those of the other groups.

Scientist C: There is a strong possibility that some of Type [5]_____ seeds will be killed. It is [6]_____ that the surviving seeds will germinate at a slightly slower rate than the control group.

Scientist D: It is [7]_____ that many seeds will be killed. However, some of Type [8]_____ seeds may be slower to germinate than Type A seeds.

Scientist E: It is almost [9]_____ that most of Type C seeds will be killed. It is very [10]_____ that the survivors will germinate at a very slow rate—much slower than that of the other groups.

Language Skills

Listening Practice

CD-59

Listen to the questions and answers that followed a presentation on seed germination. As you listen, fill in the blanks.

Presenter: OK, that about wraps up my presentation. Are there any questions?

Listener (1): Could you summarize what is needed for germination?

Presenter: Yes. When the conditions are right, the seed is likely to germinate, or sprout. In general, seeds need very little heat and very little oxygen to

survive. Inside each seed is a very small plant that is just waiting to come out. Generally, the seed needs the proper [1)]_____ and moisture before it can [2)]_____.

Listener ②: How long can a seed remain dormant?

Presenter: Some seeds do not have a long life. For example, some maple seeds have a low [3)]_____ of germinating after just two weeks. Similarly, there is little possibility that chervil seeds will germinate unless they are planted within one year. On the other hand, celery, cabbage or cucumber seeds [4)]_____ germinate even after being dormant for 10 years or longer.

Listener ③: What are some of the things that reduce the probability of germination?

Presenter: Thank you for your question. The things that will generally lower the possibility of germination include gathering the seeds too [5)]_____ or keeping them at too high a temperature when they are stored.

Homework

Make Q & A slide sets for the topics above.

Key: ① Two things needed for germination ② Dormant period ③ Conditions

Pronunciation Practice CD-60

Listen to the following phrases useful in presentations. Repeat them, paying special attention to rhythm and intonation.

1. Good morning. Welcome to my presentation.
2. The main points I will be talking about are x, y and z.
3. Finally, let me say that I'll be happy to answer any questions at the end.
4. Let's look at this chart.
5. Now, I'd like to take any questions that you may have.
6. Are there any questions?
7. Thank you for your question.

UNIT 12

Charting Your Presentation

Model Presentation 12 CD-61

"The Stiffness Constant of a Spring"

Let's practice the following presentation.

Slide 1

1

The Stiffness Constant of a Spring

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Opening—Greeting
Hello. I'm Yuko Yoshida.

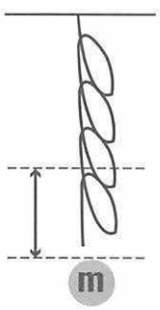
Slide 2

2

Introduction

- The aim

  Determine the stiffness constant of a spring

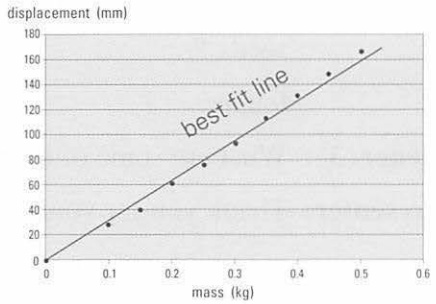


Introduction
Today I will explain an experiment using a spring. The aim was to determine its stiffness constant.

Slide 3

3

Results



Body (1)
The results were plotted on the graph. **The x-axis represents** mass, while **the y-axis represents** the distance the spring is displaced, or stretched. **As you can see**, x is proportional to y.

Slide 4

4

Calculations ①

k: stiffness constant
F: force of gravity
m: mass of the object
g: acceleration caused by gravity

Body (2)
From the results, we can calculate "k," the stiffness constant. According to Newton's Second Law, the force of gravity (F) on an object equals its mass (m) times the acceleration caused by gravity (g).

Slide 5

5

Calculations ②

F = mg
F = kd
k: stiffness constant
d: displacement

Body (3)
So, for a spring hanging from a stand with a mass attached, F equals m times g. The force can also be expressed as "F equals k times d," where "k" is the stiffness constant and "d" is the displacement.

Slide 6

6

Calculations ③

- All forces must be equal.
  if mg = kd, then d/m = g/k

Body (4)
For the end of the spring to be resting, all forces must be equal. Hence, "mg" must be equal to "kd." If mg equals kd, then d over m equals g over k.

Slide 7

7

Calculations ④

From the graph:
d/m = 0.3625
thus, g/k = 0.3625
therefore, k = 9.8 / 0.3625
thus, k = 27.03 kg/s^2

Body (5)
From the line of best fit in the graph, we already determined that d over m equals 0.3625. Thus, g over k equals 0.3625. Therefore, "k" equals 9.8 divided by 0.3625. Thus, k equals 27.03 kg/s^2.

Slide 8

8

Conclusion

- The stiffness constant of the spring = 27.03 kg/s^2

Conclusion
To conclude, our experiment has demonstrated that "k," or the stiffness constant of the spring, is 27.03 kg/s^2.

Closing—Thanks
Thank you.

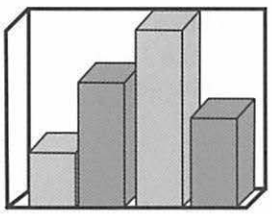
NOTES

stiffness constant of a spring「ばね（の弾性）定数」 **displacement**「変位」 **gravity**「重力」 **mass**「質量」 **acceleration**「加速度」 **displace**「動かす」 **mg x 1/m = kd x 1/m** → g = kd/m **g x 1/k = kd/m x 1/k** → g/k = d/m **best fit**「最良適合点」

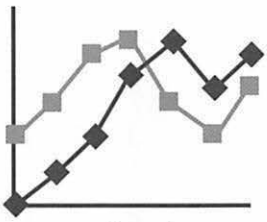
Useful Words & Phrases

■ Graphical Words

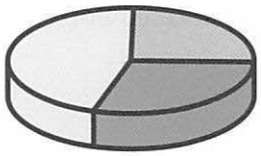
Charts and graphs are an excellent way to present the results of an experiment.



Bar chart



Graph



Pie chart

Exercise A CD-62

Listen and complete the sentences about the graph below.

1. The x- or horizontal axis shows time _____ in years.

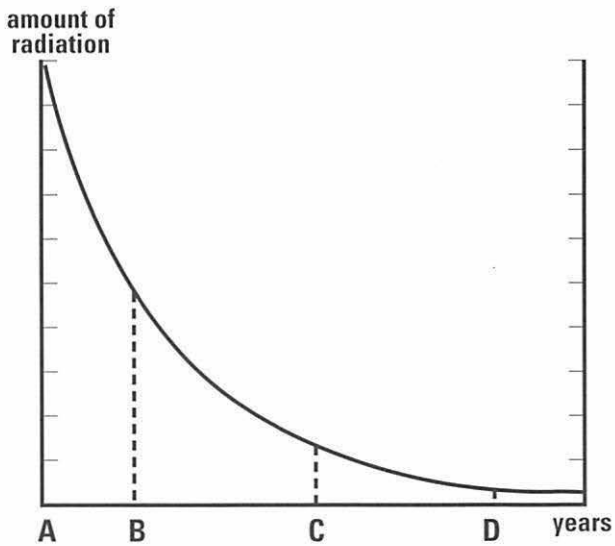
2. The y- or _____ axis represents the amount of radiation.

3. As you can see, the _____ of the line is very _____ between points A and B.

4. The line falls very _____ between points A and B.

5. The line falls less _____ between points B and C.

6. The line _____ to flatten out between points C and D.



NOTES . . . . . .

flatten out「横ばいになる」

Exercise B

CD-63

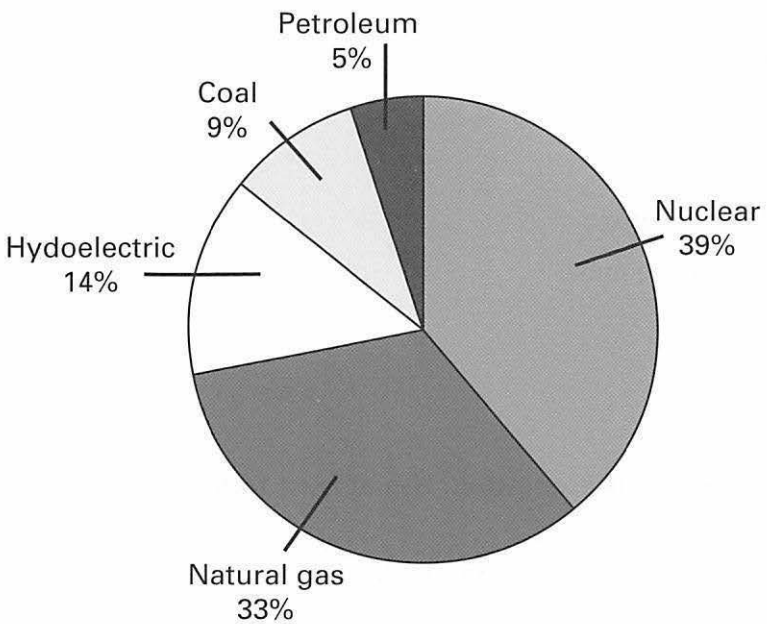
Look at the pie chart. Listen and make sentences from the following scrambled words and phrases.

a. Nuclear power stations [Japan's / electricity / of / 39% / provide].
b. This pie chart shows [generates / how / electricity / Japan].
c. The second [largest / gas / source / of / is / electricity / natural].
d. [hydroelectric / supplied / 14% / of / is / by / Japan's electricity] power stations.
e. As you can see, [consists / five / sections / the pie chart / of / different]: nuclear, natural gas, hydroelectric, coal and petroleum.

CD-64

Now, put the sentences in the correct places in the text below and take turns making a presentation. Use the visual aid below during your presentation. Point to the correct part of the pie chart while you are talking.

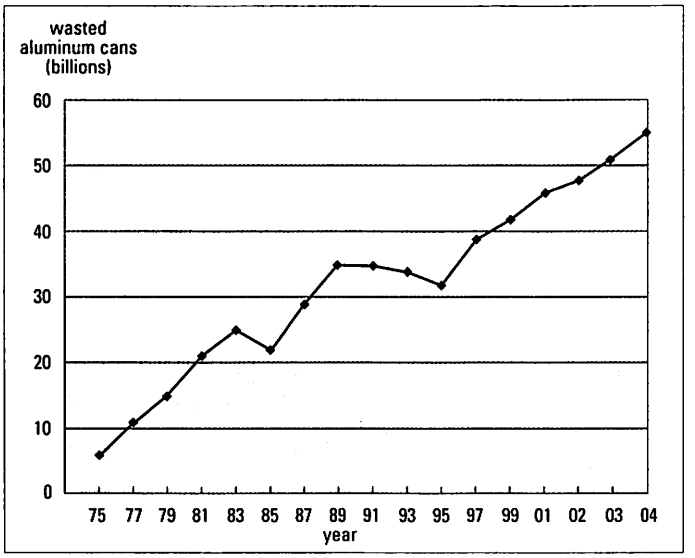
Hello. Today we are going to look at the various ways that Japan generates electricity. [1] Please look at the chart. [2] [3] [4] Power stations that burn natural gas provide one-third of Japan's needs. In fact, nuclear power stations and natural gas power stations together provide almost three-quarters of Japan's electricity. [5] And the remaining 14% is provided by power stations that use coal-fired or petroleum-fired turbines. Thank you for your attention.



Listening Practice CD-65

Listen to an environmental engineer talking about recycling in the U.S.A. While listening, look at the graph below. Then, fill in the following transcript.

How many of you had a soda drink this week? Today, I'd like to talk to you about aluminum can recycling in the U.S.A. In the past 30 years, the number of aluminum cans sold in the U.S.A. has increased greatly. There has been much talk of recycling, but each year we recycle fewer aluminum cans. Please look at the graph. The x-axis shows the years 1975 to 2004. The y-axis [1]_____ the numbers of cans in billions that are wasted. By this, I mean these cans are not recycled. As you can see, approximately 6 billion cans were wasted, or not recycled, in 1975. However, in 2004, that number had [2]_____ to 55 billion cans. [3]_____ 1983 and 1985, can wastage actually [4]_____. During that time, 56% of aluminum cans were recycled. Unfortunately, since 1986, wastage has increased steeply. Now, only 45% of aluminum cans are recycled. That means that Americans recycle [5]_____ than half of these cans. I'll finish today with a frightening figure. We waste over 800,000 tons of aluminum per year. That's 800,000 tons. I think that we can do better. In fact, we must do better.



Homework

Make an outline of this presentation. Use at least four slides.

Key: ① Introduction
② Recycling results from 1975 to 2004
③ Recycling percentage
④ Conclusion

Pronunciation Practice CD-66

Listen. Then, repeat the sentences with special attention to the number phrases.

1. In the past 30 years, the number of aluminum cans sold in the U.S.A. has increased greatly.
2. The x-axis shows the years 1975 to 2004.
3. During that time, 56% of aluminum cans were recycled.
4. Now, only 45% of aluminum cans are recycled.