

Science Nonfiction?

Fact

Smart clothes, smart wear or e-textiles are clothing items that have been made better by adding technology or gadgets* to add functionality beyond that of the traditional use.

1 Look at the pictures of different future and current technologies. Match them to the descriptions.

- | | |
|------------------------------|----------------------------------|
| 1. Bendy phones | 4. Human colonies on Mars |
| 2. Clever learning robots | 5. Self-flying vehicles |
| 3. Mind-controlled computers | 6. Virtual meetings with avatars |

2 Use the adjectives in the box to compare the technologies in Activity 1.

beneficial environmentally friendly expensive
 necessary technically feasible* useful



3 Compare your ideas with two other students.

4 Work in groups. Discuss the questions.

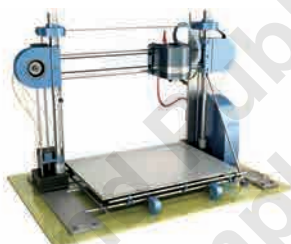
How will future cities be different from contemporary cities? How will they deal with transportation, security, shopping, buildings, energy and food production?

5 Go to page 133 and compare your answers.



1 Label each picture using a technology in the box. Then explain what you know about them.

cloud-based technology 3D printing graphene mobile devices



Listening Tip

To identify opinions, listen for key words and phrases like *think, believe, in my view / opinion* that introduce someone's point of view.

2 Listen to the presentations and match the technologies in Activity 1 to the speakers.

Expert	Technology
Rohit Patel	
Carol Peterson	
Jun Lai	
Victoria Torres	

3 Listen to the presentations again and fill in each blank with a phrase in the box.

certain in my view in our opinion it's obvious
not sure sure think tremendously important

- I believe that 3D printing will be _____ in the future.
- I am _____ 3D printing will be the most important technology, but it will have an enormous impact.
- I _____ the cloud will be the most important technology in the future.
- I am _____ cloud technology will help businesses raise* productivity, efficiency and flexibility.
- I am _____ that mobile technology will benefit* large numbers of poor people.
- _____ that tablet technology will grow in the future.
- _____, graphene will be tremendously important in the future.
- _____, graphene will be like steel in the Industrial Revolution.

Listening and Speaking

4 Read the statements. Use the phrases in Activity 3 to agree or disagree with them and explain why.

1. Students won't use paper books in school.
2. Cities will be greener and cleaner.
3. People will use smartphones for information, networking and entertainment.
4. Science will eliminate many diseases and illnesses.
5. No one will go to the movies or concerts; everyone will download movies and music.

5 Work in pairs. Read the text and discuss your opinion. Use the phrases in Activity 3.

Language Tip

When you are expressing a personal opinion, you can use expressions such as *in my experience*; *as far as I'm concerned*; *in my opinion / view*; and *personally, I'm sure / convinced that*.

In your opinion, will the future be better or worse? Why?



"I'm very **pessimistic** about the future. Humans are destroying all the planet's resources, and I believe things will get **worse**. Global warming is increasing, and we continue to destroy rain forests for agricultural purposes. I am pretty sure the demand for

products and resources will continue to cause huge problems to the environment."

-Stacy Livermore, environmental expert

"Human ingenuity and new technology will help us solve the problems we have with resources. I am certain we can use technology to produce more energy from scarce resources and reduce damages to the environment.



This is already happening in certain cities where electric transportation has reduced contamination, and recycling is combating waste. I'm **optimistic** about the future."

-Ian Robert Matthews, president of the Matthews-Price Foundation for Environmental Technology

Your Glossary

pessimistic _____

worse _____

optimistic _____

1 Read the sentences and questions and give your opinion about each.

1. People won't go to offices to work. They'll work from home.
2. Everybody will speak a common language.
3. The weather on the planet will change in a few years.
4. Will scientists find cures for all diseases?
5. The world population will decrease in the coming years.
6. What will the next social media trend* be?

2 Study the sentences in Activity 1 and complete the language box.

Future with Will

We can use the future with *will* to talk about *suggestions / predictions*.

This form of the future uses the modal auxiliary verb _____ and the infinitive. The negative form is made by using the modal auxiliary verb _____ and the adverb _____. The contracted negative form of the auxiliary is _____.

To make a question, move the auxiliary to the _____ of the statement and add a _____ at the end. To make an information question, write the *wh-* word _____ the auxiliary. Don't forget the _____ mark at the end.

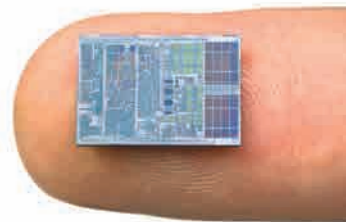


3 Unscramble the sentences. Give your opinion about each.

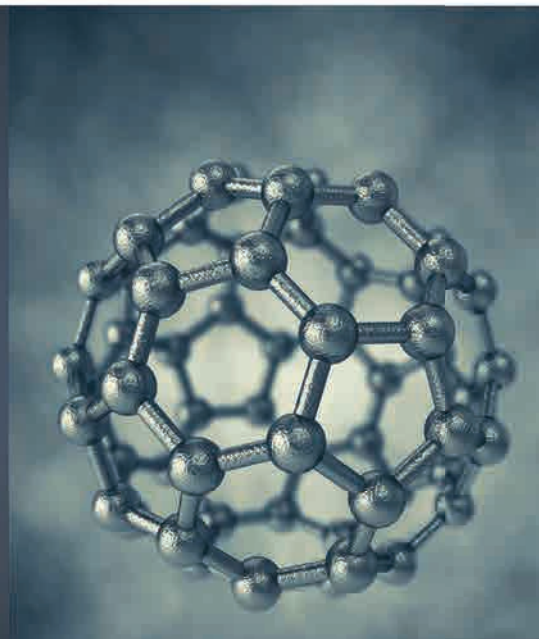
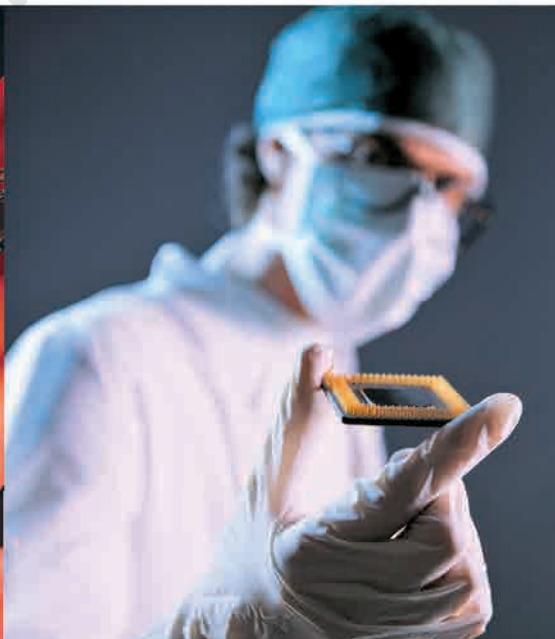
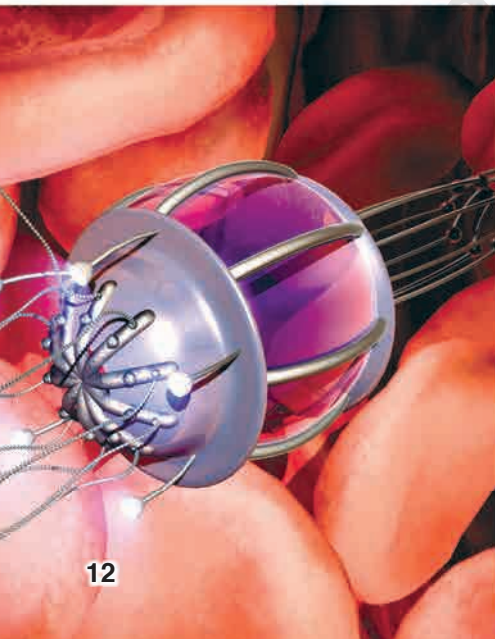
1. doctors / diseases / will / serious / treat / how / ?
2. universal electronic / will / translators / people / using / communicate
3. need / cancer patients / chemotherapy / won't / traditional
4. protect / you / climate-controlled / will / from / clothes / extreme weather
5. machines / read / people's minds / doctors / with / will / ?
6. expensive / gadgets / computer / be / won't

4 Complete the sentences so they are true for you.

1. In ten years, I think I will _____.
2. I'm not sure my family will _____ next year.
3. I definitely won't _____.
4. I believe science will _____.



5 Work in pairs. Student one, do Pairwork 1; student two, do Pairwork 14.



1 Work in pairs. Look at the photos and describe each place.



Fact

According to the United Nations, 748 million people lack access to clean water, and 3 billion people do **not have access to** handwashing facilities where they live. Every year, 297,000 children of five years and below die due to gastrointestinal diseases related to the lack of clean water.

2 Look at the words and match them to the photos in Activity 1.

- | | | | |
|-------------------------------------|---------------------------------------|---|---------------------------------------|
| <input type="checkbox"/> allergens* | <input type="checkbox"/> anesthetic* | <input type="checkbox"/> chemotherapy* | <input type="checkbox"/> clean water |
| <input type="checkbox"/> crops* | <input type="checkbox"/> drugs | <input type="checkbox"/> ethanol* | <input type="checkbox"/> fertilizer* |
| <input type="checkbox"/> flooding* | <input type="checkbox"/> fossil fuel* | <input type="checkbox"/> gasoline | <input type="checkbox"/> illness* |
| <input type="checkbox"/> infections | <input type="checkbox"/> injections | <input type="checkbox"/> operating room | <input type="checkbox"/> patients |
| <input type="checkbox"/> pesticides | <input type="checkbox"/> pollution | <input type="checkbox"/> side effects* | <input type="checkbox"/> solar energy |

3 Look at the words in Activity 2 and classify them according to their connotation.

Positive	Neutral	Negative

4 Listen to the podcast and answer the questions.

1. What is the main cause of environmental and health problems according to Jack?
2. What options can replace the use of cars?
3. What are the two benefits of cycling and walking?
4. What is one result of buying too many things?
5. What reasons does Jack give for many health problems?
6. How can we solve these health problems?
7. Do you agree or disagree with Jack? Why?

5 Work in pairs. Student one, do Pairwork 5; student two, do Pairwork 9.

Reading Tip

You skim a text to get its overall meaning. Use the title or any pictures to find out more about it. It isn't necessary to read every sentence. Concentrate on key words like verbs and nouns.

1 Work in pairs. Discuss the questions.

Have you ever experienced side effects from medicine or treatments? What reactions did you have? Have you ever eaten genetically modified food? What kind? What did it taste like? What has been the most destructive natural disaster in your country? When did it happen?

2 Skim the article and indicate which paragraph is associated with the following opinions.

1. We should really reduce the amount of gasoline we use.
2. I think hospitals have to find better ways to treat illnesses.
3. Purifying water would make a huge difference in areas affected by natural disasters.
4. GMCs could help increase food production.

3 Read the article carefully and answer the questions.

1. What is one of the problems of chemotherapy?
2. Why are ingestible devices a good way to treat illnesses?
3. What is one drawback of using solar energy or wind power?
4. How have scientists changed cyanobacteria so that it produces fuel?
5. What are two advantages of GMCs?
6. What are two disadvantages of GMCs?
7. What inspired Michael Pritchard to invent his water purification system?
8. What are some benefits of Pritchard's invention?

The Risks and Benefits of Scientific Advancement

¹Many medical treatments produce unwelcome* side effects. Chemotherapy is a perfect example. But some **advances** could change the way doctors treat illnesses. For example, polymers can deliver* medicine to specific parts of the body and then dissolve. Instead of external injections, ingestible devices can be used to give patients the drugs they need in a less aggressive way. Many medical professionals would like to be able to deal with* illnesses without causing serious

problems because of the drugs they **prescribe** or the treatments they provide.

²Most people would prefer alternatives to fossil fuels for their energy needs. We have to find cleaner types of renewable* energy for the future. Alternative forms of energy, such as solar and wind power, are still expensive, but there is another interesting option. Scientists in the U.S. are working with cyanobacteria, which use sunlight and carbon dioxide to



Reading and Writing

4 Work in groups. Discuss the questions.

Which of the scientific advances in the article will have the biggest impact on our lives? Why? What relationship is there between the advances and overpopulation in the world? What other global problems could be solved through scientific advances?

5 Write a summary of the article. Follow the instructions.

- Read the text and underline important information.
- Use *wh*- questions to determine main ideas.
- Keep your summary concise.
- Use your own words.
- Do not give your opinion.

produce energy. They have genetically modified the cyanobacteria to produce ethanol. Ethanol is normally obtained by fermenting corn, but this method could provide a cleaner and cheaper way of producing this important fuel.

³Genetically modified crops (GMCs) are controversial, but a lot of us could be eating even more genetically engineered food in the future. Experts say that, today, 60% to 70% of processed food in U.S. supermarkets has genetically modified ingredients. GMCs have increased pest and disease resistance, are more tolerant to drought* and can increase the food supply in poorer countries. Critics, however, say genetically modified science could introduce allergens and toxins in food, increase resistance to antibiotics, change the nutrition of crops and create "super" weeds*.

⁴Some scientific discoveries respond to situations caused by natural disasters. When the tsunami hit Southeast Asia in 2004, British water-treatment expert Michael Pritchard saw that the damage caused by this kind of disaster destroyed the systems that produced clean water. Water was everywhere, but no one could drink it. As a result, illness and disease spread* and water had to be brought in from outside the affected areas. This inspired Pritchard to invent a simple purification system using a very fine membrane and pump in a bottle, which filtered the dirty water and produced clean, **drinkable** water. It is a cheap, practical solution to a serious problem that will help people in areas affected by natural disasters.




Your Glossary

advances _____

prescribe _____

drinkable _____

- 1 Work in pairs. Make a list of things you could do on a Friday night.
- 2  Match the sentences in each column to complete the conversation. Then listen to check.



1. Hi, Carol. **Would you like to go to a movie tomorrow night?**
2. Oh, that's too bad. **You shouldn't work so much!**
3. Perfect! **Afterward, we could have dinner.** There's this new Italian restaurant nearby.
4. **I can meet you outside the theater at 7:00.** Does that work for you?
- a. I know. **But I could go on Thursday.**
- b. That sounds like a plan! See you Thursday!
- c. Oh, that sounds delicious!
- d. I would love to, Andy, but **I have to work late.**

Language Tip

Have to is used to say that something is required or necessary. Use the auxiliary *do-does / did* to make questions and *don't-doesn't / didn't* to make negatives. The negative form means: that it's not necessary to do something.

You *don't have to* wash the car. The car is clean.

He *didn't have to* get up early. He was on vacation.

Modal Auxiliary Verbs

Modal auxiliary verbs are used before the *past / base* forms of other verbs to add certain meanings to the main verbs of sentences.

An *affirmative / interrogative* statement is made up of subject + modal auxiliary verb + base form of verb + complement. In the negative form, the adverb *not* is used *before / after* the modal auxiliary verb. To make questions, the modal auxiliary verb is moved to the *end / beginning* of the statement and a question mark is added at the *beginning / end* of the statement.



Modal Auxiliary Verbs

4 Match the highlighted sentences in Activity 2 to the language functions.

- a possibility
 a recommendation

- an invitation
 an obligation

5 Read the e-mail and choose the correct modal auxiliary verbs.



Your Glossary

hope _____

 studies _____

 once _____

6 Work in pairs. Student one, do Pairwork 7; student two, do Pairwork 19.



1 Look at the photos of food businesses and discuss the questions.

Which of the food businesses would you prefer to start? What are the pros and cons of each option? Besides money, what else do you need to start your own business?



2 Watch the video. Circle True (T) or False (F) for each statement.

- | | | |
|--|---|---|
| 1. Francesca Evans runs a food business*. | T | F |
| 2. Francesca and Rani sell food in a restaurant. | T | F |
| 3. Her business is more expensive than a restaurant. | T | F |
| 4. There are four essential aspects to consider in a business. | T | F |
| 5. Prices should be reasonable. | T | F |
| 6. Location isn't important for a business | T | F |
| 7. A good location can provide convenience. | T | F |
| 8. Highly advanced technology is required to run a business. | T | F |

3 Watch the video again and take notes. Then use them to complete the summary.

Francesca Evans has her own _____ based in New York City. She decided to have a food _____, instead of a restaurant, because _____ and she can _____.

Francesca learned a guide known as the _____, which refer to _____ of any business.

The first P stands for* _____. One thing Francesca recommends is to ask yourself: _____.

_____ is the second P. Francesca states* that you should _____.

_____ is the third P. It refers to location. Before starting your operation, Francesca warns that you _____.

The final P stands for _____. Francesca says these materials should be _____.

Finally, Francesca suggests using _____ to run a business. She believes that having her own business _____.

Your Glossary

requirements _____

weddings _____

guests _____

4  Complete the words according to the definitions.

Watch the video again to correct your answers.

1. to manage your own company
r _____
2. services or goods
p _____
3. the cost to the consumer
p _____
4. good for competition
c _____
5. location
p _____
6. something used to advertise a product
p _____
7. a financial plan to operate a business
b _____
8. money earned through selling
i _____
9. money paid by a company
e _____

5 Value: Respect. Read the text and discuss the questions.

What three groups of people with special dietary needs are mentioned in the text? Where can these people find the food they can eat? How can we show respect for people's dietary requirements? If you invited someone over for dinner and, at the last minute, found out the person had special dietary needs, what would you do?

Many people have special dietary **requirements**. Between 10% and 15% of people in the world are vegetarians, but do they get the respect and attention they need? In many countries, there are now vegetarian restaurants. But on many occasions, like at business lunches, parties or **weddings**, there are no alternatives for vegetarians.

This problem is similar for diabetics or for people who are gluten intolerant. However, in their cases, many stores and supermarkets have special sections with sugar-free and gluten-free food. Keep in mind* that if you are inviting **guests** over to eat, you should check if they have any special dietary requirements beforehand* and make any necessary accommodations*.



1 Work in pairs. Discuss the questions.

Would you prefer to be an employee or run your own company? Explain why. What are the advantages and disadvantages of each option?

2 Read the e-mail and complete the table.

Strengths of Plan	Issues to Be Solved

https://www.mailservice.com/=shva1/inbox

To: cchristens@vquickmailz.com
 From: rcurtis@greatmailservices.com
 Subject: My Project

Dear Cherie,

Per our discussion, here is an **overview** of my mobile food business project.

I've always loved cooking, especially baking. I trained as a chef and worked in a restaurant, but I want to be independent and run my own company. My idea is to provide* customers with healthy food for breakfast, lunch and/or an afternoon snack. I've already started producing and selling boxed lunches and desserts and have established a small, but loyal, customer base. And the feedback has been very positive! I think I have quality products, but I don't really know much about my competition. Also, I want to expand the business, so I need volume.

My idea is to cook and bake from my home because that's what makes my food special. I can sell items from the truck I just bought. Right now, I am promoting the business with **brochures** and through the yellow pages*. Normally, I leave the brochures in offices, libraries and schools. However, I think I should try to find better promotion methods since the business is growing slowly.

I have two people who help me with the food preparation and one driver/cashier. They are all part-time but could become full-time if sales increase. Every month, I make a small profit*, but I don't have a clear idea of either my income or my expenses. My sister helps me with the bookkeeping*, but she is not a trained accountant. At the moment, I'm looking to hire one and have budgeted* \$2,500 per month for that person's salary. Finally, I don't know much about hygiene regulations, and I suppose I could have an inspection from the authorities **anytime**.

Please let me know any feedback you have. I would greatly appreciate it.

Sincerely,
 Roger

**Your Glossary**

overview _____

brochures _____

anytime _____

Set to Work

3 Look at the map and read the example report. Then brainstorm ideas to write two other similar reports.

Population: families, retired people, doctors, nurses.
Population Density: 4,200 per km².

Population: young professionals (20-30).
Population Density: 7,000 per km².



Population: students (5-20), teachers, staff.
Population Density: 5,500 per km².

4 Review each accountant candidate's profile. Discuss and determine the best option. Support your decision.

1



Matilda Williams. 28. Studied accounting at Yale. Worked as a junior accountant for the city of Boston for five years and as an accountant for Walmart for three years. Has excellent references. Would like to earn* around \$3,000 a month and receive health insurance*.

2



Henry Jacobs. 21. Studied business administration at the University of Colorado. Currently* an intern in the finance area at Organic Foods, a chain of health food stores and restaurants. Ambitious and energetic and wants more responsibility. Would like to earn around \$2,000 per month plus benefits.

3




Stacey Turner. 65. Studied finance at NYU and worked most of her career for McDonald's. Can handle* budgets, salaries and tax questions. Recently retired, but looking for a part-time position and would like to earn about \$2,600 per month. No benefits requested.

District: Financial
Population Density: 7,000/km²
Customer Profile: Mainly young professionals, ages 20–30. Work in fields like banking, commerce, IT. Hours are 8 a.m. to 5 p.m., Monday–Friday.
Competition: Local restaurants that offer expensive lunches. Coffee shops and stores with snacks. Some cheaper options nearby.
Transportation: Population takes the subway, the trolley or buses, or drives to work.
Market Potential: High. Most people eat lunch in the area where they work, have good salaries and can buy lunch every day.

5 Work in groups. Review all the information in the previous activities. Make a list of recommendations for Roger using the "Four P's" on page 18 as a guide.

6 Work in groups. Follow the instructions.

- Select a digital format to present all your findings to the class.
- Decide which ideas are the best for Roger.

1  **4 Listen to a radio host talking about eyewear technology. Fill in the blanks with the missing information.**

1. It _____ possible to have a computer in your glasses.
2. How _____ this technology _____?
3. The glasses _____ a miniature display for data in one of the lenses.
4. Eyewear technology _____ all the features of smartphones.
5. If users are driving or working, _____ eyewear technology _____ them?

2 Complete the sentences so they are true for you.

1. In five years, I will definitely _____.
2. In the future, I think schools will _____.
3. In my opinion, I don't believe science will _____.
4. Next summer, my family will _____.
5. Tomorrow, I won't _____.

3 Read the text and fill each blank using a word in the box.

drugs fossil illnesses infections purifying
side effects solar treatment water wind

Technology has an impact on every area of science. In medicine, the focus is on the preventive _____¹ of illnesses to avoid the _____² caused by more aggressive _____³. Production of _____⁴ fuels will gradually decrease, so we will need to look closely at the cost of cleaner alternatives like _____⁵ energy and _____⁶ power. Possibly the biggest problem for many people is access to clean _____⁷. Dirty water causes many preventable _____⁸ and _____⁹. Fortunately, today there are cheap and easy ways of _____¹⁰ water.

4 Read the text and circle the correct option for each blank.

Several years ago, letters and faxes took time to arrive, and people didn't expect immediate responses. Today, smartphones and computers provide us with messages, e-mails and calls instantaneously, and we often feel we _____¹ respond to senders right away. Experts say that this situation is stressful since we have forgotten how to disconnect from technology. In the case of work-related communications, we _____² probably respond to senders as soon as possible. However, with friends, we _____³ take our time in getting back to them, unless it's a serious matter. To avoid stress, the same experts believe we _____⁴ unplug from technology every now and then. In their opinion, this _____⁵ help us relax. Remember, you _____⁶ be connected 24/7!

- | | | |
|---------------------|------------|------------------|
| 1. a. would | b. have to | c. could |
| 2. a. shouldn't | b. should | c. don't have to |
| 3. a. could | b. would | c. shouldn't |
| 4. a. couldn't | b. would | c. should |
| 5. a. shouldn't | b. could | c. has to |
| 6. a. don't have to | b. should | c. could |

5 Unscramble the words and complete the hidden phrase.

purcdto
 1 5

ieprc
 6

tiemocipvet
 7

cepal
 13

niotorpom
 11 3

guebtd
 9 2

miecon
 12 4

xeses pne
 8 10 14

 y w
 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

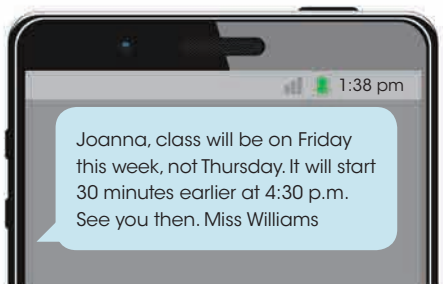
6 Look at the texts. What do they say? Circle the correct answer for each one.



- a. Parents need to reserve seats in advance.
- b. Parents shouldn't arrive late since the auditorium is small.
- c. Parents shouldn't attend the concert if they're going to be late.

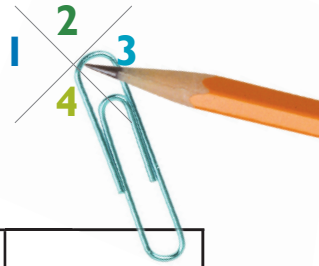


- a. You have to discard the medicine one month after opening the bottle.
- b. You have enough medicine for more than one month.
- c. You have to discard the unopened bottle of medicine after one month.



- a. Joanna's class won't be in the afternoon this week.
- b. Joanna's class will be on a different day at a different time.
- c. Joanna's class will be at the same time on a different day.

Instructions: Use the tip of a pencil to spin a paper clip. Advance the number of spaces and complete the task. All predictions and sentences with modal auxiliary verbs must be made using complete sentences. One-word answers are not valid. To finish, spin the correct number to land on the last square. Otherwise, lose a turn.



FINISH	What is your opinion of technology?	Are you optimistic or pessimistic about the future?	Define food truck.	What are the "Four P's"?	Use <i>don't have to</i> in a sentence.	Give an example of a special dietary requirement.			
START									
What is a bendy phone?	TIME TRAVELERS					How could drones help cities in the future?			
Wormhole to modal verbs.	Define price.				Who do you think will win this game?	Wormhole to the present. SPIN AGAIN.			
What is cloud technology?	What time do you have to get up during the week?				What will your partner wear to school tomorrow?	Name two alternative forms of energy.			
What are two advantages of mobile technology?	Recommend a cool app to your partner.				What will the weather be like this weekend?	What is one current problem with alternative energies?			
Explain what graphene is.	Which movie would you like to see next?				Who will be late to class tomorrow?	What are two disadvantages of GMCs?			
Name two possible applications of graphene.	What are side effects?				Predict who will win the Champions League this year.	What are two advantages of GMCs?			
What is wearable technology?	How could people live less stressful lives?				Recommend a restaurant to your partner.	Invite a friend to a party using <i>would</i> .			
Say three things you have to do every day.	Wormhole to the present. SPIN AGAIN.				What is a budget?	What are promotional materials?	Name one problem with chemotherapy.	Wormhole to see your future.	GO BACK 2 SPACES.

1 Work in pairs. Discuss the questions.

How do you react to criticism? Do you get upset? Do you answer back? Do you ignore the person? Is criticism good or bad? Explain.

2 ⁵ Listen to the conversation and answer the questions.

1. What problem are the employer and employee discussing?
2. What excuses does the employee give?
3. What does the employer say about the bus service?
4. How does the employee react to constructive criticism?

3 Read the constructive criticism tips. Listen to the conversation again and check (✓) the tips Ellie followed.



4 Add one extra tip to the list above.

Self-evaluation

	YES	NO	HELP
I can identify key words that express opinions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can effortlessly express my opinion in a conversation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can skim a text to get an overall meaning.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can write a focused, concise summary.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can express several language functions using modal auxiliary verbs and the simple future.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can recognize the connotations of vocabulary related to the environment and technology.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can explain about business administration and its related vocabulary.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can offer ideas and suggestions to start a business.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Three things I need to do to improve:
