


Future friendly?

8

- **Grammar** Future forms
- **Vocabulary** Word building – prefixes and suffixes
- **Everyday English** Arranging to meet
- **Reading** The boy who built a fusion reactor
- **Listening** Keeping the lights on
- **Writing** Writing for talking (2)




‘Forget the past – the future will give you plenty to worry about.’

George Allen Sr.

?

- 1 Look at the photo. What year do you think it is? Who do you think is doing the best work?
- 2 Read the quote. What worries you about the future of the world? What gives you hope?

 Watch the video introduction

 Use your **Workbook** for self study

 Go online for more practice and to *Check your Progress*

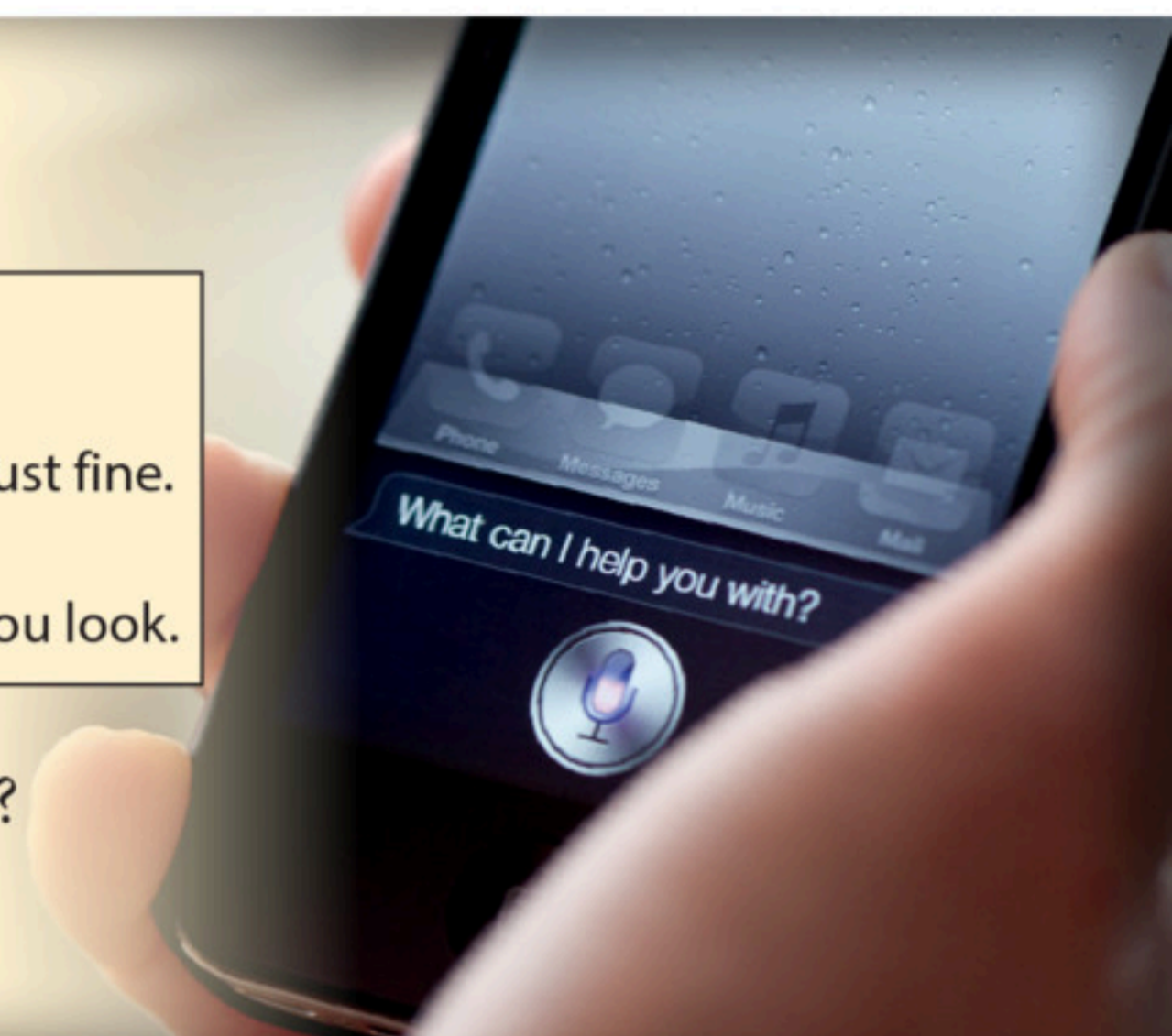
Grammar Future forms

STARTER

- 1 Siri is the intelligent assistant you can ask things on Apple devices. Match the questions people have asked Siri with the answers she has given.

1 Are you human, Siri?	a Siri: When they figure out how to buy tickets.
2 What are you doing after work?	b Siri: Close enough, I'd say.
3 Where have I put my keys?	c Siri: As long as you keep me charged, we should be just fine.
4 When will pigs fly, Siri?	d Siri: What am I doing? I'm talking with you.
5 When is the world going to end?	e Siri: They'll probably be in the second-to-last place you look.

- 2 8.1 Listen and check. Do you think Siri is an example of 'artificial intelligence' (AI)?
- 3 Which question did she possibly misunderstand? Why?



'Go' artificial intelligence!

- 1 Read about **AlphaGo** below. What happened in 2016?

The AI program **AlphaGo** beat a human, **Lee Sedol**, at the ancient Chinese game of **Go** in 2016. It was a historic moment for artificial intelligence.



Lee Sedol
Professional Go player

"Robots ¹ _____ never understand the beauty of the game the same way that we humans do."

After his defeat, Lee said that he hadn't expected *AlphaGo* to play the game so perfectly.



Demis Hassabis
Creator of *AlphaGo*

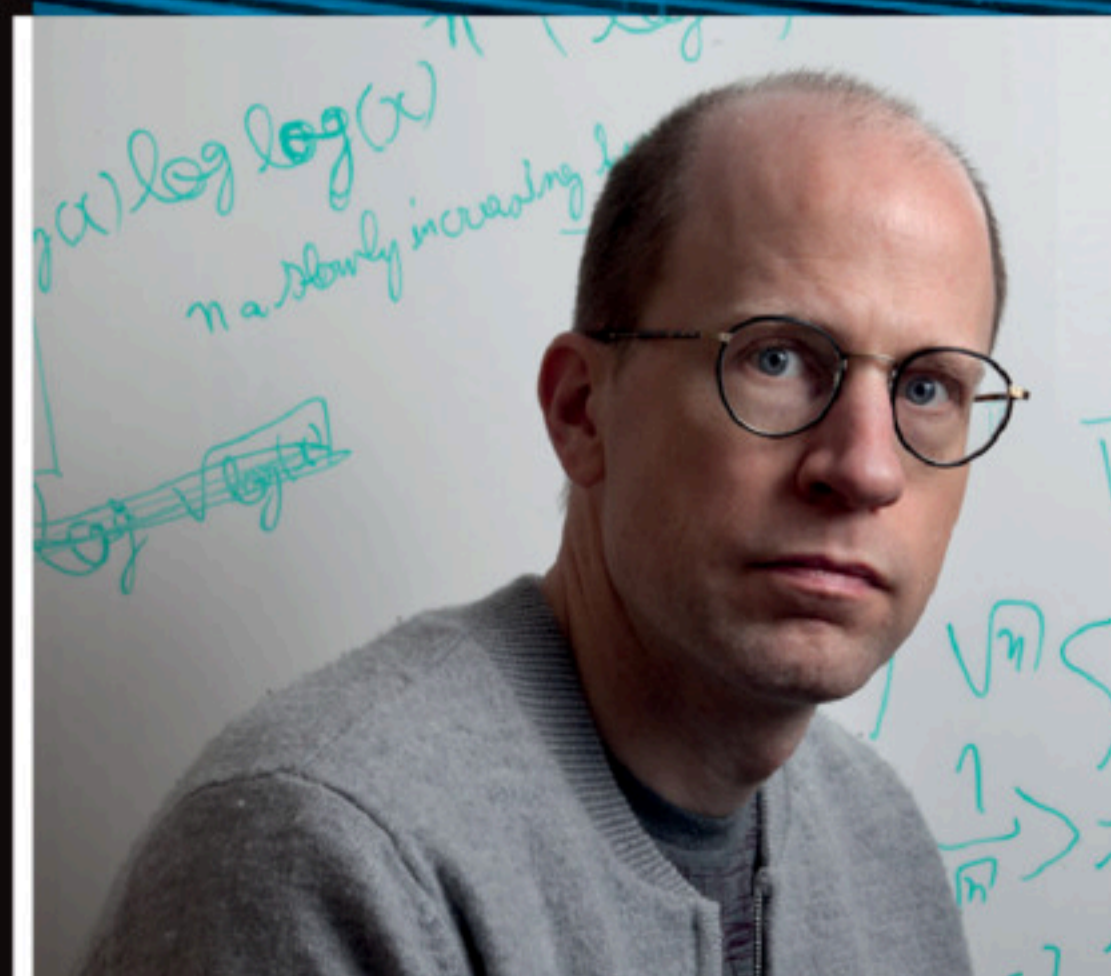
"It's very exciting to start imagining what it ² _____ be able to tackle next."

Hassabis thinks AI is still decades away from human level intelligence, but could soon help solve problems such as climate change and cancer.

- 2 8.2 Listen to why the AlphaGo game was so important and answer the questions.

- 1 How does *Go* compare to chess?
- 2 How was AlphaGo different from earlier computer programs?
- 3 What shocked AlphaGo's creators?

- 3 8.3 Listen and complete the different experts' views on AI and our future. Which people see AI as something to worry about? Whose opinions do you agree with?



Nick Bostrom
Philosopher

"Machine intelligence may be the last invention that humanity ³ _____ ever need to make."

Bostrom says that the machines ⁴ _____ then be better at inventing than we are. But he warns us that we must make sure they follow our preferences, not their own.

GRAMMAR SPOT

- Which predictions are most sure, a or b? Which are less sure?
 - AI *might* / *may* / *could* change our lives.
 - AI *will* / *is going to* change our lives.
- Which future form in the conversation below expresses ... ?
 - an intention
 - a spontaneous decision
 - an arrangement
 - a prediction

A I'm **speaking** at the conference tomorrow.
 B Are you going with David?
 A Yes. And I'm **going to speak** to him about his negative attitude while we're there.
 B Oh, he **won't listen** to what you say.
 A Well, I'll **speak** to his manager then.

Grammar reference 8.1–8.3 **p149**



Stephen Hawking Cosmologist

“Success in creating AI would be the biggest event in human history. Unfortunately, it⁵ _____ also be the last.”

Hawking worries that the development of artificial ‘superintelligence’⁶ _____ be the end of the human race.



Nigel Shadbolt AI Professor

“The danger is not artificial intelligence, it’s natural stupidity.”

Shadbolt agrees that AI machines⁷ _____ do things we don’t expect, but says they’re⁸ _____ take control unless we’re stupid enough to invite them to.

Kim Simmons AI Consultant

“AI can help us to focus on what humans are uniquely good at.”

AI⁹ _____ mean that more jobs are done by machines, but Simmons says they¹⁰ _____ be able to compete with us in creativity and human-to-human skills.



What do you think will happen?

- Work in groups. Ask questions about the future with *Do you think ... will ...*? Answer with *might*, *could*, *may*, or *will*.
 - intelligent machines / take over many of our jobs?
Do you think intelligent machines will take over many of our jobs?
Yes, I think they will, definitely. I don't think they will.
I'm not sure. They might take over some.
 - we / ever find a cure for cancer?
 - people / live for longer and longer?
 - the world's population / continue to grow?
 - robots / become a danger to humanity?
 - we / be able to prevent climate change?
 - new sources of energy / be found?
 - aliens / make contact with us one day?

Practice

Discussing grammar

- Work with a partner. Decide which is the correct verb form.
 - A *Are you driving* / *Could you drive* to France next week?
 B We're not sure. We *will* / *might* fly this time.
 - A *Won't you* / *Aren't you going to* take a jacket?
 B No, I'm not. The forecast said it's *going to* / *might* be very warm today.
 - A Do you fancy going to the cinema this evening?
 B Sorry, I'll *work* / *'m working* late tonight. How about tomorrow night? I'll *call* / *'m going to call* you.
 - A What *are you doing* / *will you do* Saturday night?
 B I'm not sure yet. I *will* / *may* go round to a friend's house to watch the football, or he *will* / *may* come round to mine.
 - A *Are you not going to have* / *May you not have* any wine?
 B No, I'll *drive* / *'m driving* everyone home.
 - A Are you still having problems with your neighbours?
 B Yes, they've been getting worse. We're *going to* / *will* try and move.
 - A Oh no! 3–0 down at half-time!
 B Come on, you never know. I think we're *going to* / *could* still win.
 - A You're out every night! You *won't pass* / *aren't passing* those exams next month, you know!
 B I know. I *might* / *'ll* work harder nearer the time, I promise.

8.4 Listen and check. Practise the conversations, paying attention to stress and intonation.

Go online for more grammar practice



Is a robot going to take my job?

- 1 **8.5** Work with a partner. Listen to four people talking about their jobs or career plans. Write what jobs they do. Put a tick or a cross if they think their job will be safe (✓) / not safe (✗) from intelligent machines.

1 Jessica

journalist

2 Rob

3 Derek

4 Hilary

- 2 **8.5** Listen again. What reasons do they give? Do you agree?

What do you think?

- 3 Choose *two* of these jobs and tell your partner how safe you think they'll be from robots. Then do the same for your job / career plan.

- gardener
- plumber
- cook
- hairdresser
- air traffic controller
- doctor
- teacher

I think / don't think ... will

- 4 Make sentences with *I think ... will* or *I don't think ... will* and the prompts in A. Then match them with a sentence in B.

I think my job will be safe. No robot could do it.
I don't think you'll ...

A	B
1 I / my job / safe	_____ The food wasn't great.
2 I don't / you / like that film	<u>1</u> No robot could do it.
3 I / you and Jo / get on well	_____ It's a bit too violent.
4 I don't / we / eat here again	_____ You have a lot in common.

- 8.6** Listen and check. What are the replies? Practise the lines with your partner, and give a reply.

I think my job will be safe. No robot could do it.

Yeah, I don't think you'll have a problem.

It's going to ...

- 5 Make sentences with *going to / not going to* and the prompts in C. Then match them with a sentence in D.

It's not going to rain. There isn't a cloud in the sky!

C	D
1 it / not / rain	_____ She's already been to a lawyer.
2 You / not / die	_____ It's 4-0 with ten minutes left.
3 Liverpool / win	_____ You've only got a cold.
4 She / get a divorce	<u>1</u> There isn't a cloud in the sky!

- 8.7** Listen and check. Practise the lines with your partner, and give a reply.

It's not going to rain. There isn't a cloud in the sky!

Ah, you never know. I'm still going to take my umbrella!

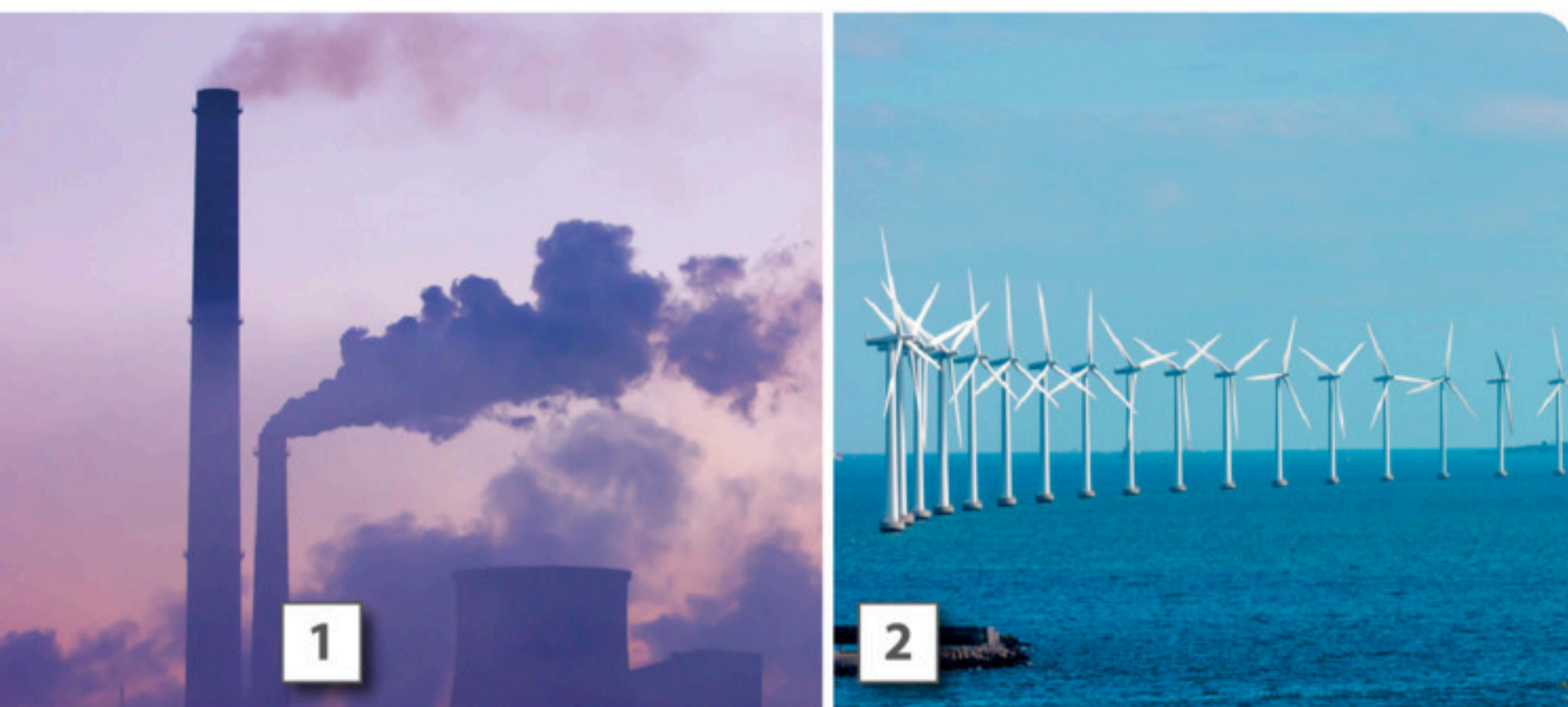
Talking about you

- 6 Make true sentences about *you*. Say them to each other in small groups.

- 1 I / go for a coffee after class
'I might go for a coffee after class.' 'I don't think I will.'
- 2 I / look for / another job
I'm not going to look for ...
- 3 I / eat out tonight
- 4 I / think / rain tomorrow
- 5 I / post ... on Facebook
- 6 I / go to ... for my holiday
- 7 I / buy / new ... soon
- 8 I / be very busy next ...

Listening and speaking How will we keep the lights on?

1 Work with a partner. Try to do the energy quiz.



ENERGY QUIZ

- Which of the photos show energy being produced by ...?
 - fossil fuels
 - a solar energy plant
 - an offshore wind farm
 - a nuclear fusion reactor
- Which country has the world's biggest offshore wind farm?
 - the UK
 - Japan
 - Argentina
- Which generates nearly half its electricity from wind power?
 - the US
 - Denmark
 - China
- Which country produces the most solar power?
 - Spain
 - Australia
 - Germany
- Enough solar energy reaches the Earth in one hour to power the whole world for ...
 - a week
 - a month
 - a year
- Which country has the biggest solar power plant?
 - India
 - the US
 - Brazil

2 8.8 Listen to a radio programme called *Brighter Futures*. The guest, Nicole Clarke, a professor in energy technology, talks about the future of energy. Check your answers to the quiz.

3 Work with a partner. Which questions can you answer?

- What will we have to do with most of our coal, oil, and gas?
- Why do some people not like wind farms?
- What is Denmark going to try and do by 2035?
- Germany leads the world in solar power. What does this show?
- What is the main problem with solar power?
- How many mirrors does the Ivanpah Solar Plant use?
- What temperature do you need to make fusion energy work?
- How is fusion energy different from the nuclear energy we use now?

8.8 Listen again and check / complete your answers.

What do you think?

- Do you find wind farms ugly or beautiful? What about solar panels on houses?
- Do you know about any other energy sources than the ones discussed in the programme?
- Why have governments not spent more money on research into alternatives to fossil fuels?
- You've been given responsibility for energy research. Which energy source are you going to spend most money on? Why?

SPOKEN ENGLISH *pretty*

- Look at how the word *pretty* is used.
 - 'Yes. Some people are **pretty negative** about wind farms.'
 - 'I'm **pretty sure** we could do it a lot sooner with more research.'
 - The adverb *pretty* is often used in informal, spoken English. It means the same as *quite* – 'not a lot', but 'more than a little'.
 - 'She's **pretty friendly**. I think you'll get on OK with her.'
 - 'The weather was **pretty bad**, but we still went for a walk.'
 - Work with a partner. Ask and answer the questions using *pretty* in the answer.
 - A Did your team win?
B No, but they played well, so they only lost 1–0.
 - A You haven't lost your passport, have you?
B No, I'm sure it's in my bag somewhere.
 - A Do you like skiing?
B Yes, I do, but I'm hopeless at it.
 - A What do you think of my English?
B I think it's good!
- 8.9 Listen and check. Is the stress on *pretty*, the adjective, or both? Practise again.

Reading and vocabulary

Boy wonder – Taylor Wilson

- Look at the photos and captions about **Taylor Wilson**, and read the introduction. Answer the questions.
 - Why is he unusual?
 - What kind of person do you think he is?
 - What do you think his relationship with his parents is like?
 - What makes him nervous?
- Read the text and check your answers to the questions in 1.
- All these statements about Taylor Wilson are **true**. Find things in the text that show why they are true.
 - Taylor isn't an only child.
 - As a child he could concentrate on one thing for hours.
 - He's a very good public speaker.
 - His grandmother had a big influence on him.
 - His experiments haven't always gone well.
 - He worries about his health.
 - He wonders if his way of seeing things might change when he gets older.
 - Some important people have been impressed by his work.
 - Taylor doesn't always take his parents' advice.
 - Taylor isn't clever in all subjects.

- Match the adjectives in **A** and **B**. They are all from the text.

Adjectives with a similar meaning

A	B
happy articulate bright self-centred arrogant	smart selfish big-headed glad expressive

Adjectives with an opposite meaning

A	B
nervous shy unusual careless tolerant	closed-minded outgoing normal cautious confident

- Talk about yourself and people you know using the adjectives in exercise 4.

My brother's so big-headed – he's very self-centred.

What do you think?

- What do you think of Taylor? Would you like to meet him?
- What do you think it would be like to be his younger brother?
- Do you think Kenneth and Tiffany are good parents? Why/Why not?
- Would you like to have a child that is a genius? Why/Why not?

 **Watch** a video about the future of space exploration.



The boy who

He made his own nuclear fusion reactor at the age of 14. He's helped the US government fight nuclear terrorism, and at 21, he has plans to improve cancer treatment. Does anything make **Taylor Wilson** nervous? Yes ... asking a girl out.



'He doesn't understand the meaning of 'can't'.'

'He's not just smart – he's cool and articulate.'



built a fusion reactor

An unusual boy

Kenneth Wilson and his wife Tiffany always knew their first son, Taylor, was unusual. Wanting to be an astronaut at the age of nine seemed normal enough, but, 'whatever he was involved in, he went at it non-stop,' says his father.

Taylor wrote to astronauts, built his own rockets, and gave talks at school about space exploration. 'Everyone loved watching him,' his head teacher said, 'and when he was in the room, he just took control.' Some of his neighbours weren't so happy about the explosions next door when Taylor experimented with rocket fuels.

For his 10th birthday, Taylor's grandmother got him a book about a bright teenager who nearly caused a disaster by trying to build a nuclear reactor at home. 'Know what?' said Taylor. 'The things that kid was trying to do, I'm pretty sure I can actually do them.'

Not just for fun

It wasn't just for fun. Taylor's grandmother had cancer, and he realized cancer treatment could be improved if hospitals had small fusion reactors to make the necessary radioactive materials in. He learned all the physics and engineering he needed, and collected radioactive materials from gadgets. It made his parents nervous, and he knows he was lucky they were so tolerant. 'When I said I wanted to build a nuclear fusion reactor in the garage, I think most parents would say no.'

One day, Taylor's mother came into the garage and saw him looking at a pool of liquid on the floor.

'Tay, it's time for supper.'

'I think I'm going to have to clean this up first.'

'That's not the stuff you said would kill us if it broke open, is it?'

'I don't think so. Not instantly.'

His parents asked some university physicists to talk to Taylor. They told his parents that Taylor knew what he was doing. He says he's never careless about safety. 'I'm very cautious. I'm actually a bit of a hypochondriac.'

Fusion success

His reactor worked, and he became one of the few people in the world to achieve nuclear fusion. And of course, at 14, he was also the youngest. He thinks youth helps. 'Kids sometimes have an advantage when it comes to invention.' Older scientists might say 'it can't be done or you shouldn't even try it, whereas kids are not so closed-minded. I hope I never lose that.'



'When I said I wanted to build a nuclear fusion reactor in the garage, I think most parents would say no.'

Taylor received a \$100,000 two-year fellowship, on condition he didn't go to college and focused on his own projects. The fellowship has ended, but Wilson still isn't going to college. He's going to work on his inventions, and travel, and give talks. After Intel CEO Paul Otellini spoke to Taylor at a science fair, he said, 'All I could think was, "I am so glad that kid is on our side."'

The US government expressed interest in one of Taylor's inventions, which could help them in the fight against nuclear terrorism. He met the Under Secretary for Energy, who said, 'He's not just smart – he's cool and articulate. I think he may be the most amazing kid I've ever met.'

A big head?

Are his parents ever worried about Taylor becoming self-centred and arrogant? 'He's not being selfish, it's just that there's so much going on in his head,' says his sister. And if Taylor appears arrogant, it's because 'Taylor doesn't understand the meaning of "can't"', his father says. 'And when he does,' his mother adds, 'he doesn't listen.'

Taylor does think selfishness was a problem at first. 'I was exploring things because I was interested in them. It was fun, but in a way it was selfish too. Then it turned out that I was really good at it, and it became a responsibility. I realized I had the capability of doing things that could really change the world.'

He's confident his weaknesses will stop him getting too big-headed. He's not good at foreign languages or sport, and although this outgoing, expressive young man isn't the typical shy geek, he admits, 'What makes me nervous? Asking a girl for her number.'

Vocabulary and pronunciation

Word building – prefixes and suffixes

1 Look at the words in *italics* from the text on p85.

Taylor does think *selfishness* was a problem.
He went at things *non-stop*.

Which of the words uses a **prefix**? Which uses a **suffix**?

2 Read about prefixes and answer the questions.

Prefixes are used to change the meanings of words. Look at these words with prefixes.

prediction rechargeable multilingual disagree

Which means ...? *many before again*

Which is a negative prefix?

3 Work with a partner. Choose a negative prefix from the box to make words 1–10 mean the opposite.

un- in- im- il- dis- ir- mis-

- | | | | |
|------------|-------------------|--------------|-------|
| 1 possible | <i>impossible</i> | 6 appear | _____ |
| 2 patient | _____ | 7 regular | _____ |
| 3 lucky | _____ | 8 perfect | _____ |
| 4 spell | _____ | 9 formal | _____ |
| 5 legal | _____ | 10 conscious | _____ |

4 8.10 Listen to the lines and respond using one of the negative words from 3. Then compare your answers.

- 1 I'm going to stay awake for two weeks.
That's impossible!

5 Read about suffixes and answer the questions.

Suffixes are used to form different parts of speech.

What endings do you notice on these words?
What part of speech are they?

act action active actively activate

What part of speech are the words in the box? What are the different suffixes?

prediction	colourful	excitement
suitable	shorten	confidently
creative	kindness	automatically
imagination	educate	careless



6 Work in groups. Make new words with the base words, using the prefixes and/or suffixes. Which group in the class can make the most words?

Prefix	Base word	Suffix
un...	agree	...ness
im...	happy	...ment
re...	conscious	...ful
dis...	expense	...less
mis...	help	...able
in...	kind	...ive
	polite	
	success	
	understand	
	use	

7 Complete the sentences with a word from 6.

- Bob and Jan don't get on at all. They dis_____ about everything.
- Money can't buy you h_____ness.
- The sales assistant was very im_____. I told her manager how rude she'd been.
- Thanks for your advice – it was really h_____ful. I do appreciate all your k_____ness.
- My dad is u_____less at telling jokes. He always gets the ending wrong.
- I wasn't being un_____. I think you mis_____ what I said.
- Tim fell off his bike and hit his head. He was un_____ for 20 minutes.
- Most supermarkets now sell r_____able plastic bags.

Changing word stress

8 8.11 Listen to four short conversations. Write down the pairs of words with stress changes.

- 1 operate operation 3 _____
- 2 _____ _____ 4 _____

Practise the conversations.

Go online for more vocabulary practice

Everyday English Arranging to meet



- 1 8.12 Listen to two friends, Jeff and Kevin, arranging to meet over the weekend. Complete their diaries.

JEFF	22 Fri	23 Sat	24 Sun
Morning			
Afternoon			
Evening			

KEVIN	22 Fri	23 Sat	24 Sun
Morning			
Afternoon	finish work early		
Evening			

- 2 Why is Jeff in town? Why is it difficult to find a time to meet? Where and when do they finally agree to meet?

Making arrangements

- 3 8.12 Listen again to the conversation. Complete the lines with the exact words Jeff and Kevin use.
- I was _____ if we _____ meet?
 - What _____ Friday evening?
 - ... I _____ meet you late afternoon before the class.
 - _____ most of the afternoon, though.
 - So _____ Saturday evening? Does that work for you?
 - Well then, why _____ meet at the station?
 - _____ meet there and have breakfast. _____ we say half nine?
 - ... _____ we _____ it ten o'clock?

PRONUNCIATION

- 8.13 Listen and repeat the lines in exercise 3. Pay attention to the stress and intonation.
- Take turns to read the lines in exercise 3 aloud to a partner, and answer with a reply from the list below.
 - I'd love to, but I'm incredibly busy.
 - Let me see. Sorry, I can't do Friday evening.
 - No, that won't work for me.
 - That's no good, I'm afraid.
 - Sorry, Saturday evening's out for me.
 - Yeah, that's a great idea.
 - Sounds good to me! But half nine?
 - Fine, ten it is, then.

Roleplay

- 4 It's Friday evening. You want to meet a friend over the weekend. Fill in your diary. What are you doing this weekend? When are you free?

	SATURDAY	SUNDAY
Morning		
Afternoon		
Evening		

- 5 Find a partner. Make suggestions and arrange to meet.

Are you doing anything on Saturday morning?

I can't do Saturday morning. I'm ...

What about the afternoon?

Let me see ... No, that won't ...

I was wondering if you'd like to ...


When you have finished, tell the class when and where you're meeting.

**We're meeting on Sunday afternoon at 3.00.
We're going to ...**

Go online for more speaking practice

Writing Writing for talking (2)

Analysing a talk

- 1 What stories are in the news at the moment?
 - Are they national or international?
 - Are they about the environment, politics, crime, etc.?
 - Discuss any that concern you with the class.
- 2  8.14 Read and listen to a girl talking about a topic that concerns her.
 - 1 What is her cause for concern?
 - 2 Why does she have a personal interest?
 - 3 How did Craig use to be?
 - 4 What does research tell us about the addiction?
 - 5 Do most children become addicts?
 - 6 What concerns Dr Griffiths?
 - 7 What other concerns does the girl have?
- 3 Read the talk again and answer the questions.
 - 1 Look at the words that introduce each paragraph. Why are they used?
 - 2 Find examples of the speaker talking from her own experience.
 - 3 Find examples where she quotes research.
 - 4 How does the girl conclude her talk?

Preparing your talk

- 4 Choose a cause for concern from the topics you discussed in exercise 1. Make notes. Say why it concerns you and do some research.
- 5 Write a talk to give to your class, of 200–300 words. Use your notes and these guidelines to help.
 - 1 Introduce your topic
My cause for concern is ...
I want to talk about X because ...
 - 2 Give the reason why
Let me explain why.
Two years ago, ...
I've always been interested in ...
 - 3 List your research
Research shows that ...
A recent study found that ...
I read in the newspaper/heard in the news that ...
 - 4 Introduce new points
I have two more concerns.
Firstly, ..., secondly, ...
Another thing is ...
 - 5 Conclude
Finally, I'd like to say ...
Thank you all very much for listening to me.
Are there any questions?



My cause for concern

The thing I'm concerned about at the moment is the influence that video games may have on children.

Let me explain why. I've been reading lots of newspaper articles on the subject, and I also have a personal interest. You see, I have a younger brother, Craig, he's 13 years old, and I'm afraid he's becoming a video game addict. Just a few years ago, Craig had many interests; he played football, he was learning judo, he went out on his bike with his friends. He was a happy, fun-loving boy. Now he spends hours every day in front of a screen, in a virtual world, playing virtual games, usually violent ones, and he becomes really angry if our parents tell him to stop.

Research shows that children between the ages of two and five regularly play video games, and that by the age of eight, they spend an average of 25 minutes on them. It's much easier to find ways to play video games than it used to be, because of tablets and smartphones. This is not a problem for most children. However, by their early teens, a small minority have become addicts, playing for at least 30 hours a week. Dr Mark Griffiths of Nottingham Trent University, an expert in video game addiction, finds this figure worrying. He says that children may become so addicted that they stop doing homework, start playing truant, and even steal money in order to buy the games. It's likely that this addiction will only get worse with the coming of virtual reality headsets, which make the experience of getting completely lost in a virtual world even more powerful.

I have two more concerns. Firstly, I worry that the violence in the games could cause children to become more violent. My brother isn't violent, but he is certainly bad-tempered if he is stopped from playing. Secondly, I worry that sitting without exercise for so long is bad for your health. Craig often plays five hours a day, and some days his thumbs are really painful and he can't sleep because he is over-excited. His schoolwork is going from bad to worse.

Finally, Dr Griffiths says that more research is needed, but I don't need to read more research to conclude that video games cause problems. He should come and meet my brother. That's all the evidence he needs.

- 6 Practise reading your talk aloud first to yourself, then to a partner. Give your talk to the class. Answer any questions.

 **Go online** for more **writing practice**