

- 1 **SPEAK** Answer the survey questions. Then write two more questions about learning English. Swap with another pair and discuss.



- 1 Which aspects of English language learning do you find most interesting/difficult?
- 2 How do you envisage using English in the future?
- 3 How important do you think it is to aim for perfect English pronunciation?
- 4 What opportunities do you have to listen to native English speakers?
- 5 How do you usually deal with feedback you receive on your English?

- 2 How does each of the alternative forms in sentences 1–10 below change the meaning? Add an extra sentence for each alternative to make the context clear.

- 1 I stopped to check / checking my messages.
I stopped to check my messages. There weren't any, but I did get a couple of Facebook notifications.
I stopped checking my messages. I just couldn't deal with that level of stimulation.
- 2 The teacher taught / has taught / has been teaching us how to differentiate between the use of simple and continuous tenses.
- 3 If I hadn't watched the film last night, I wouldn't have been / wouldn't be so tired.
- 4 I wish I studied / had studied Spanish too.
- 5 We stayed at the first hotel, / first hotel which had a sea view.
- 6 Great! I'm going to see / I'll see you there at six thirty.
- 7 The writer is thought to live / to have lived in southern Italy.
- 8 I checked my essay / had my essay checked before handing it in.
- 9 I didn't need to hand in / needn't have handed in my homework this morning.
- 10 She complained that she was being / had been ignored in the decision-making process.

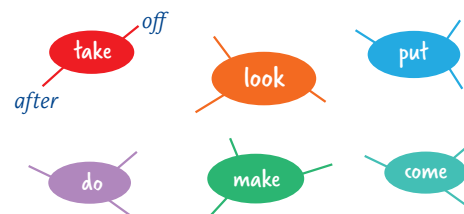
- 3 **SPEAK** Complete the sentences in your own words. Compare with a partner.

- 1 This time next week, I _____.
- 2 During the last holidays, I used _____.
- 3 Earlier today, I got a message from someone who _____.
- 4 A friend of mine recently told me that _____.
- 5 If I had the opportunity, I _____.
- 6 Yesterday evening, I was watching _____.

- 4 **SPEAK** Act out the conversations below.

- 1 You are going to a party. Ask if it's all right to bring a friend.
- 2 You need to take some time off work. Ask your boss.
- 3 Give your opinion on a recent controversial news item.
- 4 You agree or disagree with a friend's opinion on the news item in point 3 above.
- 5 You recently had a negative experience at a leisure centre. Complain to the manager.
- 6 You didn't manage to complete an assignment on time. Apologise to your teacher.

- 5 **SPEAK** Add prepositions to the mind maps to make phrasal verbs. Write an example sentence to show the meaning for each phrasal verb.



- 6 Read the blog post and find examples of features 1–7 below.

☰
🔍

I took part in the first round of an inter-school quiz yesterday. Quizzing is a passion of mine, and my college team was top of the league last term – but yesterday was a bitter disappointment – the worst result for our college team for ages. It all came down to the last question, which was about an English linguist, and his name was on the tip of my tongue, but could I remember it? Unfortunately – nope! We're out of the competition 😞

Olga S.

- 1 an idiom
- 2 a collocation
- 3 a relative clause
- 4 a comment adverb
- 5 a superlative adjective
- 6 a phrasal verb
- 7 a gerund

4 Starter

Extra classroom activities

- As a lead-in, ask students – *What do you learn when you learn a foreign language?* Then elicit answers, e.g. vocabulary, grammar, text comprehension, doing exam tasks, etc. Write the answers on the board. Ask students which of those aspects they find the most difficult / the easiest / the most boring, etc. If possible,

have a class vote on the most difficult and the easiest aspect of learning English.

- For exercise 5, to make the task more challenging, ask students to create two or three pairs of gapped sentences with different phrasal verbs but the same preposition missing. Students then exchange the sentences and complete them.

- For exercise 6, explain the names of the categories 1–7. Then ask students to provide their own examples, either before reading the post or as a follow-up to the activity.
- After exercise 8, ask how many elements on the list students mentioned at the beginning of the lesson during the lead-in. Ask students if they would change their vote looking at the new list.

7 SPEAK Read the two emails and discuss the differences in style.

Hi Kat,
I've just seen an advert for volunteers for a new research project on language learning. Looks fascinating and I might just apply! It's all to do with different learning styles. As you know, I speak both Polish and English pretty well because my mum's English and my dad's Polish, and I've always been interested in the way my brain deals with the two languages (as well as learning French at school!) The advert says it's happening at our local medical centre – the Waterside – and I'll need to spend about six hours there on Saturday 5th June and another three hours on Sunday 6th. Fancy applying too? Could be fun. I'm sending the link just in case. Whatever – I'll see you at college tomorrow and we can chat.
Ben x

Send

Dear Mr Barnes,
I am writing with reference to the advertisement you recently posted on my college website asking for volunteers for a research project on language learning that will be taking place over the weekend of the 5th and 6th June at the Waterside Medical Centre. I would like to apply. I am bilingual in Polish and English and have also studied French at school. I find the topic extremely interesting, and I am free the weekend in question. If you could send me the link to complete an application form, I will fill it in immediately. I look forward to participating in the project.
Yours sincerely,
Benjamin Holmes

Send

8 SPEAK Rate the aspects of learning English below from 1 (not at all important) to 5 (extremely important). You can add your own ideas. Give reasons for your answers. Then compare your answers.



So, what's important and why?

- | | |
|---|--|
| 1 opportunities for free discussion | |
| 2 opportunities for structured discussion / role-play | |
| 3 learning new idioms and colloquial phrases | |
| 4 using prepositions and phrasal verbs | |
| 5 learning and practising new grammatical structures | |
| 6 revising and recycling grammatical structures | |
| 7 expanding your vocabulary | |
| 8 authentic reading and listening tasks | |
| 9 exam practice tasks | |
| 10 learning new and interesting information | |

9 SPEAK Work in small groups. Discuss the question below.

What are the relative advantages and disadvantages of learning a language on your own and in a group?



Starter 5

Online teaching

- For exercise 3, ask students to do the task in breakout rooms.
- For exercise 5, create the mind maps before the lesson, using one of the available online tools, and display them on the screen for students to verify their ideas.

Extra practice

- Workbook pp4–5 and pp110–111
- Extra Grammar Practice, Student's Book pp146–147
- On-the-Go Practice 0.1, Student's App

For next lesson

Ask students to create a crossword puzzle in which the mystery word is CREATIVITY.

1

GET CREATIVE



1



2



3

Albert Einstein

(1879–1955) – a German physicist whose three main theories are: on quantum theory (light is a photon, or particle), on the existence of atoms and on relativity (length and time are not fixed and depend on the observer's frame of reference). He received the Nobel Prize in Physics in 1921.

Steve Jobs (1955–2011)

– a founder, chairman and CEO of Apple. The original Macintosh was a game changer – it gave users four times as much memory and allowed them to keep several major programs open simultaneously.

SPEAK Look at the photos and read the quote. Answer the questions.

Creativity is intelligence having fun.

Albert Einstein

(German-born theoretical physicist and Nobel Prize winner)

- What aspects of creativity do the pictures illustrate?
- What do you think the artist's intention was in picture 2? How effective is the artwork?
- Do you think there is a difference in the way artists, scientists and businessmen come up with new ideas? Why/Why not?
- How do you understand the quote? Do you agree with it? Do you think intelligence and creativity are closely connected?



- 2 Read the text. Do you use any of the strategies described in the text? What else helps you to come up with new ideas?

HOW TO BE MORE CREATIVE

GET TIRED!

A psychological study by Mareike Wieth and Rose Zacks found that the best ideas often **emerge** when you're feeling tired and that **daydreaming** promotes creativity. It has also been demonstrated that we are most productive at 2:55 pm, just after lunch, when we are feeling sleepy. So next time you **get stuck** or **your mind goes blank**, wait until you're tired – it may work for you!

GET MOVING!

The co-founder of Apple, Steve Jobs, loved taking long walks. They used to help him **dream up new ideas** for products. A Stanford University study found that walking can stimulate the brain and **boost creativity** by up to sixty percent. The study showed that walking is actually better for brainstorming and **exploring possibilities** than focused thinking. The most unlikely things can **trigger new ideas**, and when you're not consciously thinking about a problem, solutions can amazingly just **fall into place**.

GET VISUAL!

Carla Marie Williams was a teenager when she decided to focus on songwriting. She has **followed it through** to build a successful career, and she's written songs for many famous singers, including Beyoncé. When she **gets inspiration** for a song, she creates a mood board to visualise the ideas and emotions she wants to express. Carla has had highs and lows in her career, but one thing remains constant – she **sticks with it**.



1 Choose the correct options.



- Each group **brainstormed** / **drew** solutions to the problem and then chose one to present to the class.
- When you struggle to make an important decision, sometimes it's better to **imagine** / **use** your intuition rather than think too hard about it.
- I wasn't sure Tracy's idea was the best, but I **considered** / **suspended** judgment and just went along with it.
- Before writing the essay, I **identified** / **named** the pros and cons and then drew up a plan.
- It's important to analyse all the data carefully before **sketching** / **drawing** a conclusion.
- The inventor of the Internet could never have **brainstormed** / **predicted** all the effects it would have on society.
- There are many ways to approach this problem, and we should **consider** / **use** all the alternatives.

6 UNIT 1

Lesson 1.1 Vocabulary 1



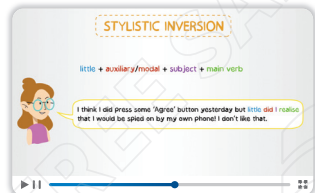
Documentary video:
Animating the City

Lesson 1.2 Grammar 1



Grammar animation:
Grammar Talk

Lesson 1.7 Grammar 2



Grammar animation:
Grammar Talk



▶ VIDEO 01
▶ VIDEO 02
▶ VIDEO 03

3 KEY WORDS Replace the underlined phrases in sentences 1–10 below with the correct forms of some of the highlighted words and phrases from the text in exercise 2.

- In the next fifteen years, people could have their brains zapped to make them more creative.
- Sometimes when I'm trying to get an idea for an essay, I can't think of a single thing.
- We were trying to come up with a new idea for the design, but suddenly we stopped making any progress, so we decided to take a break and go for a walk.
- Camilla dreamed of being an athlete and, unlike many others, she did what needed to be done to achieve it.
- You shouldn't spend so much time staring out of the window and thinking about stuff!
- My sister loves painting, and she's always thinking of new ideas for her art.
- Where do you acquire ideas for new songs?
- I thought Greg would give up trying to get into medical school, but he continued with it.
- During our debate, several interesting ideas came up.
- He was experiencing writer's block at the time, but a trip to the Scottish Highlands made him think of a new idea for a detective story.

4 Complete the sentences with the correct forms of the highlighted words and phrases from the text in exercise 2.

- New ideas and trends constantly emerge through the Internet and viral videos.
- Patrick's question in history class triggered a debate about the European Union.
- Has Max ever developed his crazy idea for a new invention and followed it through?
- If you let your mind wander, answers to a problem can just fall into place like magic.
- Charles Dickens dreamed up ideas for many of his best stories while he was walking.
- If you don't stick with it and practise every day, you'll never become a successful tennis player.
- The company held a meeting to explore possibilities for new products.
- We love working together because we get inspiration from each other and come up with great ideas.
- The teacher caught Lucy daydreaming when she was supposed to be doing her work.
- Going for a walk in the countryside is a good way to boost your creativity.

5 1.01 Listen to a podcast and answer the questions.

- What was worrying the speaker on the evening in question?
- How did she spend a large part of that evening?
- How did a nighttime event help her solve her problem?
- What is the main message of her account?

6 1.02 KEY WORDS Complete the text with the highlighted words below. Listen and check.

box • feet • flash • imagination • loud • train

The next time you find yourself **thinking out** ¹ loud, don't worry – you're not crazy. It's creative! Did you know that it may help you to **think outside the** ² box if you literally sit next to a cardboard container? And although 'to **think on your** ³ feet' means to make a quick decision, it has been demonstrated that people do better at solving word puzzles when they are lying down. It's important to boost your natural creativity – you never know when you may need a ⁴ flash **of inspiration**. If you're a complex thinker, practise expressing your thoughts in different ways so that others can **follow your** ⁵ train **of thought**. Learn to **capture people's** ⁶ imagination using something intriguing.

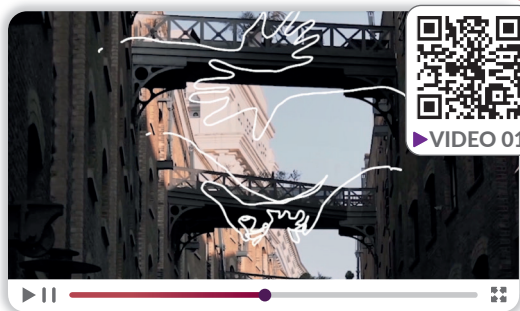
7 Match the highlighted idioms from the text in exercise 6 to definitions 1–6 below.

- flash of inspiration – a good idea that comes suddenly
- follow your train of thought – understand your thought process
- capture people's imagination – inspire people's thoughts
- thinking out loud – saying your thoughts
- think outside the box – have thoughts and ideas that are different to the mainstream
- think on your feet – decide something quickly

8 SPEAK Answer the questions.

- Which strategy in exercise 6 would you like to try? Why?
- Do you think some people are born more creative than others? Can creativity be learned? Give examples of people you know.
- How many different uses can you think of for an umbrella?

9 SPEAK Look at the video still and answer the questions.



- What's your reaction to how the artist has changed the photograph?
- Think of a photograph of your town or a place you know. What could an artist add to it?

FAST FINISHERS

Look back at exercise 5. What do you think the girl's story was about? Write an outline.

Exercise 3

- boost their creativity
- my mind goes blank
- got stuck
- followed it through
- daydreaming
- dreaming up new ideas
- get inspiration
- stuck with it
- emerged
- triggered a new idea

Exercise 5

Possible answers

- She hadn't begun writing a short story that was due the following day.
- She tried to find some inspiration and ideas, researching and brainstorming.
- A nightmare about running through a city gave her an idea for her story.
- The more you worry about something, the less success you'll have, especially when it comes to creativity. Relax and ideas will come out of the blue.

Extra classroom activities

- As a lead-in, students work in groups to create a mind map around the word CREATIVITY. After that, work on the definition of 'creativity' as a class.
- After exercise 4, students write their own sentences using three of the highlighted phrases in the text on p6. They compare their sentences in pairs.

Online teaching

- For exercise 6, use an online tool for creating word clouds. Before the activity, ask students to type

in 2–3 words they associate with the verb THINK. Then display the word cloud and discuss the results.

- For exercise 8, put students into breakout rooms.

Extra practice

- Workbook p6
- Video Worksheet 1 *Animating the City*, Workbook p102
- Photocopiable Worksheet 1, Teacher's Book p395
- Extra Practice Worksheet: Unit 1 Vocabulary, Teacher's Resource Centre

- On-the-Go Practice 1.1, Student's App

For next lesson

Ask students to do exercise 1 on page 8.

Testing

Vocabulary Short Test 1.1

Lesson materials

- Audio script, Teacher's Book p345
- Video script, Teacher's Book p366

The world's first skyscraper, according to Guinness World Records, was the ten-storey Home Insurance Building in Chicago, which was built in 1885 and measured 138 feet (42 metres). In the early years of the 20th century, many more skyscrapers appeared, mostly in the USA but also in other cities around the world. Famous examples from this period include the Flatiron Building (1902, 87 metres tall), the Chrysler Building (1930, 282 metres tall, 319 metres with the spire) and the Empire State Building (1931, 381 metres tall), which are all in New York City. Today, the world's tallest skyscrapers include the Burj Khalifa in Dubai, United Arab Emirates, which is 828 metres tall and has 163 floors, and Shanghai Tower in Shanghai, China, which is 632 metres tall.



VIDEO 02

- 1 **SPEAK** Have you ever been tricked? What did you learn from your mistake?
- 2 **1.03** Read and listen to the text and answer the questions.

- 1 Do you think J.D. McMahon should have been prosecuted for what he had done?
- 2 What did the investors learn from their mistake?



Wichita Falls in Texas is home to the 'world's littlest skyscraper'. In 1919, a local businessman called J.D. McMahon, who ^a **had been working** in the oil construction business, proposed building a skyscraper with new offices. By the time construction began, McMahon ^b **had been asking** various entrepreneurs for financial support for some time, and he ^c **had collected** \$200,000 from investors. However, as soon as the building began to take shape, the investors realised that McMahon ^d **had tricked** them. Instead of presenting plans for the building in feet (the standard measurement at the time), McMahon ^e **had used** inches (12 inches = 1 foot). The building, now a historic landmark, measures just 12 metres instead of 150 metres.

- 3 **VIDEO** Study the grammar table and complete it with examples a–e from the text in exercise 2.

Key Grammar

Past perfect simple and past perfect continuous

We use the **past perfect simple** to talk about a completed past action which happened before another action or point in time in the past, e.g.: ¹ **c/d/e**, ² **d/e/c**, ³ **e/c/d**.

We use the **past perfect continuous** to talk about an action that was happening up until another action or point in time in the past, e.g.: ⁴ **a/b**, ⁵ **b/a**.

We use **past perfect** tenses with these time expressions: *before, until, after, by the time*.

Grammar Reference >> 20 Irregular verbs >> 158–159

- 4 Choose the correct options.

- 1 The participants were starving because they hadn't **eaten** / *been eating* anything.
- 2 We were absolutely furious after the airline had **lost** / *been losing* our luggage.
- 3 Had you **been waiting** / *waited* long when I arrived?
- 4 Pauline didn't know the answer because she **hadn't listened** / *(hadn't been listening)*.
- 5 Dave had already **sent** / *been sending* the money when he realised it was the wrong amount.
- 6 I **'d written** / *d been writing* a full page when I realised I **'d done** / *'d been doing* the wrong essay.

- 5 **VIDEO** Complete the sentences with the correct past perfect simple or continuous forms of the verbs from the box.

arrive build lose plan sing try work

- 1 Until being injured in a bus accident in 1925, Frida Kahlo **had planned / been planning** to study medicine.
- 2 Five-year-old Louis Braille didn't realise at first that he **had lost** his sight, and kept asking his parents why it was always dark.
- 3 In November 1887, Vincent van Gogh befriended Paul Gauguin, who **had** just **arrived** in Paris.
- 4 Grace Davies **had been singing** in bars and pubs since she was sixteen before she decided to follow through with her dreams and perform on *The X Factor UK*.
- 5 James Dyson **had been trying** to sell his revolutionary dual cyclone vacuum cleaner to different manufacturers for years when he decided to set up his own manufacturing company.
- 6 By the time he died in October 2011, Steve Jobs **had built** Apple into the world's most valuable company.
- 7 The pharmaceutical company Moderna **had been working** on mRNA vaccines for cancer and infectious diseases for more than a decade when the COVID-19 pandemic hit.

- 6 **VIDEO** Complete the sentences with your own ideas. Use the past perfect simple or continuous.

- 1 By the time I left home this morning, **I had lost my keys**.
- 2 Before I went to bed last night, **I had finished my homework**.
- 3 My parents **hadn't agreed** until I agreed.
- 4 I came up with a brilliant idea after **I had been thinking about it for days**.

#BRAINTEASER

The wife had hidden her best jewellery inside her freezer in a bag among all the frozen food. Because of a general power cut, the freezer had gone off. The friendly neighbour, who had a key in order to check on the place, had tried to be helpful by throwing out all the bad food and with it went the jewellery.

#BRAINTEASER

A couple went on holiday for three weeks. They carefully locked their house and had a neighbour check on the place while they were gone. When they returned, the wife was distressed to learn that, because of a power cut, she had lost all her best jewellery. She had hidden the jewellery in what she thought was a very safe place. She was not robbed. Her jewellery was lost by accident. What happened?



FAST FINISHERS

VIDEO Think of a time when someone tricked you or someone you know. Write four sentences about that situation using *before, until, after* and *by the time*.

Extra classroom activity

After exercise 2, have a class vote referring to the first question. Elicit arguments from students who answer 'yes' to the question and then from those who answer 'no'.

Online teaching

• For exercise 3, display the Grammar Box. Ask students to provide their own examples – write them in the chat box.

• For exercise 3, ask students to record themselves as they read out the sentences.

Extra practice

- Extra Grammar Practice, Student's Book p148
- Workbook p7 and p112
- Photocopiable Worksheet 2, Teacher's Book p396
- Extra Practice Worksheet: Unit 1 Grammar, Teacher's Resource Centre
- On-the-Go Practice 1.2, Student's App

For next lesson

Ask students to think about an invention that would make our lives easier.

Testing

Grammar Short Test 1.2

Lesson materials

- Grammar Reference, Student's Book p20
- Video script, Teacher's Book p366

Checking and clarifying information

1 **SPEAK** Answer the questions.

- What do you think the picture in exercise 2 shows? How useful do you find this invention?
- Think about things you have touched or used in the last five minutes. Which do you think was invented most recently?

2 Read the text. What can you do on the website in question? Choose two answers.

- Read about the best inventions of all time.
- Learn about recent inventions.
- Post about something you have invented.
- Suggest an invention that could be useful.

ANOTHER DAY, ANOTHER AMAZING NEW INVENTION!



Our website brings you some of the most incredible products and gadgets that today's clever brains have dreamed up. Some are so useful we cannot imagine having ever lived without them. Others are a tad crazy!

Check out our posts and tell us which inventions you think are the best and why. AND we want to know if you think there's a gap in the market for a new invention. What would YOU like to see invented? Send us your ideas. The weirder, the better! ☺

3 **1.04** Listen to a dialogue. Which invention does Lily like and why? Which invention would she like to see and why?4 **1.04** Study the Key Phrases box. Then listen to the dialogue again. Which Key Phrases did you hear?

Key Phrases

Checking and clarifying information

Checking information and confirming understanding

I'm not quite following here. ✓
 Am I right in thinking ...? ✓
 If I'm hearing correctly, ... ✓
 So, you're saying that ... ✓
 Let me get this straight. ✓
 You mean ... ✓
 The what? ✓
 Sorry, what was that ...?
 Ah, I'm with you now.
 That makes sense now.

Clarifying information and rephrasing

Let me put that another way.
 What I'm saying is ...
 Essentially, ... ✓
 Simply put, ...
 In a nutshell, ... ✓
 What it boils down to is that ...
 In other words, ... ✓
 What I mean is (that) ...

5 **1.05** **SPEAK** Translate into English. Use the Key Phrases. Then listen and check. Practise the dialogues in pairs.

- 1 X: Another invention is a robo bird. Other birds are really scared of it.

Y: Let me get this straight. (Niech to dobrze zrozumiem.) There's a bird that is robotic and it frightens other birds. Why?

X: In a nutshell (W skrócie), this robotic bird chases birds from airports so that they don't fly in front of the planes.

Y: Ah, I'm with you now (teraz rozumiem)!

- 2 X: Personally, I'd like to be able to buy an extra thumb.

Y: If I'm hearing correctly (Jeśli dobrze słyszę), you said an extra thumb?

X: What I mean is that (Chodzi mi o to, że) mine hurts after a lot of messaging. It would be good to attach an extra one, wouldn't it?

Y: In other words (Innymi słowy), you don't want a permanent extra thumb, just for occasional use?

X: Exactly. Just saying.

6 **SPEAK** Talk about inventions you would like to see. Think about:

- household gadgets,
- helping people with health problems,
- facilitating transport.

7 **SPEAK** Read the instructions and do the speaking task. Student A, look at page 156. Student B, look at page 157. Then change roles and do the task again.**FAST FINISHERS**

Imagine the website from exercise 2 is also asking for people's choice of the best invention of all time. Write a short post giving your opinion.



Go online and find out about an unusual recent invention. Describe it to the class.

The youngest inventor to have been granted a patent for invention was **Sam Houghton**. He created a sweeping device with two heads. When he was three, he saw his dad using two different tools while sweeping the back yard – one to brush leaves and one to pick up smaller objects. To make sweeping easier, he created one tool for both – he put two different brooms together with a rubber band.

Exercise 3

She likes the idea of a smart toothbrush because it reduces the time needed to brush your teeth to just three seconds. She would like someone to invent a device that would read books out loud because her eyes get tired when she does a lot of reading.

Extra classroom activities

- As a warm-up, write two quotes on the board. Ask students to say which appeals to them more. Elicit answers together with explanations.
Invention is the natural outcome of creative thinking. (SARK, i.e. Susan Ariel Rainbow Kennedy – author of self-help books)
Invention is a process – you don't get there overnight. (Louis Forman – entrepreneur and product development expert)

- After exercise 2, give students the list of inventions: *colour changing cars, foldable tech devices, home scales with health scan, a robotic pet*. Ask which they would like to read about on the website.

Online teaching

- For exercise 6, the task may be done individually, with students recording their speech.
- For exercise 7, put students into breakout rooms. After the time limit, ask stronger students

to model the dialogue for the whole class.

Extra practice

Workbook p8

For next lesson

Ask students to do exercise 1 on page 10. Write one synonym for each adjective in the box.

Lesson materials

- Model answer to exercise 7, Teacher's Resource Centre
- Audio script, Teacher's Book p345

1.4 Reading

A blog post about using AI in art



- 1 **SPEAK** Compare photos A and B. How do you think the different works of art have been created? In what ways might the people's experiences be different? Use the adjectives from the box.

abstract bizarre captivating emotional
exceptional powerful remarkable superb unique

- 2 **SPEAK** Look at photos A and B again and answer the questions.

- Which type of artwork would you have, or not have, in your bedroom? Why?
- Which experience shown in the photographs would you prefer to have? Why?
- Do you think digital art is as good as conventional art? Why/Why not?

- 3 **1.06** Look at the photos and the title of the text on page 11. What do you think the text will be about? Read the text quickly and check your ideas. How were the two pieces of art made?

- 4 **Read the article again and choose the correct options.**

- Why was the sale of the painting *Edmond de Belamy* historic?
 - It's the first painting ever created using a neural network.
 - It was the first AI portrait ever sold at auction.
 - C** Nobody had ever bought a similar portrait for so much money at an auction before.
 - No auction house had ever made free software to create art before.
- In the fourth paragraph, the writer implies that
 - A** new technology will create a new style of art.
 - AI will help humans to evolve further.
 - all artists will use AI in the future.
 - artistic creation will improve thanks to AI.
- Sougwen Chung's robotic arms are
 - controlled by the artist.
 - using their own movements.
 - copying the movements as she makes them.
 - D** working independently.
- According to the writer, one way of judging AI-produced art could be
 - the quality of the final work.
 - its growing popularity.
 - how different it is from conventional art.
 - D** what people are prepared to pay for it.

- 5 **Read the text again and complete the sentences.**

- In the title, the writer added a question mark because *he/she questions how intelligent or creative AI can be.*
- The writer believes that humans are unique in *being the only species able to make art.*
- Sougwen Chung is a Chinese-Canadian artist who *works with robotic arms to create art together.*
- The writer wonders* whether human-made and AI-made art are comparable.



- 6 **SPEAK KEY WORDS** Complete the questions with the correct forms of the highlighted collocations from the text on page 11. Then answer the questions.

- Can coming from a family of successful actors give someone a(n) *competitive edge* in getting roles? Give an example.
- Would you be able to remember what you were doing *at a given time* last week? Give an example.
- What *hot topics* are trending on social media at the moment?
- Do you think students benefit from being involved in *fierce debates*? Why/Why not?
- What *widespread speculation* is there at the moment about an upcoming film, series or video game?
- If you had the money, would you spend a(n) *substantial sum* on an artwork? Why/Why not?
- What would you say is one of the *crucial elements* of throwing a great party?
- Do you think AI artwork will inevitably continue to have a(n) *primitive finish + Students' own answers*? Why/Why not?

- 7 **SPEAK** Answer the questions.

- If you were organising an art exhibition at your school for charity, what sort of art would you include? Why?
- Some people say that art masterpieces should be available for the public to see, not in the hands of private collectors. Discuss arguments for and against the idea.

FAST FINISHERS

- Write a blog post to describe an art gallery, exhibition or artwork that you think people might enjoy, explaining why. It can be real or imaginary.**

Find out about an interesting digital art exhibition. Research the theme, the artists and the visitors' reactions. Share your findings with the class.

Extra classroom activities

- As a warm-up, write DIGITAL ART on the board. Ask students for a definition. Then encourage a debate about the liaison of art with technology. *Is a person who uses technology to create art still an artist?*
- For exercise 4, ask students to underline relevant sentences in the text to show where the answers to the questions are.

Online teaching

- For exercise 1, students read the text before the lesson. During online class, ask students to summarise the text with their own words before they do comprehension tasks.
- For exercise 7, put students into breakout rooms and then ask them to report their ideas to the class.

Extra practice

- Workbook p9
- Extra Practice Worksheet: Unit 1 Reading, Teacher's Resource Centre

For next lesson

Ask students to prepare a description of a memorable commercial (e.g. emotional / funny / annoying).



AI = ARTISTIC INTELLIGENCE?

MACHINE AND ARTIST COLLABORATE THROUGH AI

Judging by the number of comments, last week's post about art apps touched on a **hot topic** and definitely divided opinions. It generated a **fierce debate** after one reader brought up the question of whether these apps 'make art

5 easier' and therefore weaken the creative role of the artist. This week's post explores another aspect of technology used in art, artificial intelligence (AI).

10 A few days ago, I read about the sale of a very interesting painting at Christie's in New York. In late 2018, a portrait
15 called *Edmond de Belamy*, which had been created using a computer system called a neural network,



Edmond de Belamy, from La Famille de Belamy, 2018.

20 at auction. It was the work of a group of young artists from Paris called *Obvious*, and it made history by being the first time anyone had paid such a **substantial sum** for a painting like this.

The strange-looking figure was generated using a complex
25 algorithm based on work done by a nineteen-year-old AI genius, Robbie Barrat, who had been experimenting with neural networks. He had trained one to paint original landscapes and portraits using information from images that it had stored in its memory from WikiArt. Barrat had posted his
30 network online for anyone to use.

The idea that apps and AI can be used to create art is intriguing, as artistic creation is surely an essentially human activity. As far as we know, humans are the only species with the ability to create art and there is indeed **widespread**

35 **speculation** that this brought about a significant shift in human evolution, giving us a **competitive edge** over other species.

The use of technology available **at a given time** – brushes, paint, surfaces, etc. – is a **crucial element** in how new artistic
40 styles emerge. In the twenty-first century, the tool of choice for certain artists is AI – sophisticated, intelligent machines that enhance the artist's capabilities and, controlled by the artist, are capable of producing truly original creations.

Having decided to check out AI art further, I came across the
45 work of the Chinese-Canadian artist Sougwen Chung. In one memorable video, the artist is squatting on the floor drawing white lines on a square black canvas. Either side of her are two small robotic arms that draw lines along with her. The software controlling the arms had memorised Chung's gestures from
50 previous drawings and was able to make movements that reflected her style. Chung and her robots produced a set of improvised drawings using the artist's own movements and what the robots' AI system had learned about how she worked.

55 I had been watching the performance for a few minutes when I started to consider whether we can actually talk about artistic intelligence in machines. Is what the robotic arms do really a form of 'art'? Is it any good? The AI-generated portrait, *Edmond de Belamy*, is clearly an original work, though
60 criticised by some for its rather **primitive finish**. And surely if someone's willing to lay out that much money for a work of art, it must be considered good or valuable in some other way, at least by the person who bought it. So today's blog ends with another question: Will AI on its own ever be able to
65 dream up a masterpiece on a par with anything created by a human being? Should we even be thinking about making comparisons? Your thoughts please!

Artificial Intelligence, or **AI**, is the ability of computers to replicate human thought processes in order to perform a task. These processes include learning, reasoning and adapting in response to external factors. Research into AI started in the 1960s, soon after the first computers appeared, when the US Department of Defense began training computers to emulate human reasoning.

A **neural network** is computer software used for creating AI programs. It uses powerful algorithms to recognise patterns in data and organise it. It is constantly learning and adapting to new input. Neural networks emulate the problem-solving processes of the human brain and can be used to find solutions to complex real-life problems. AI today is widely used in many fields, including banking for credit card fraud detection, face- and voice-recognition software, medical diagnosis and computer search engines. Computers that can play chess, self-driving cars and virtual assistants like Siri or Alexa are all examples of AI. For specific tasks, some AI programs have reached the same level as human experts. However, to date, there are no programs that can match human creativity or understand and 'feel' human emotions.



Sougwen Chung collaborating with machines to paint on a flat canvas.

- 1 **SPEAK** Do you ever enjoy watching commercials? Why/Why not?

- 2 **1.07** Listen to three people answering the question from exercise 1. Match speakers 1–3 to statements a–d. There is one extra statement. Whose comment reflects your own opinion?

- a Advertisements often don't reflect reality.
b Advertisements can be entertaining and have their own merit.
c Advertisements can be misleading and on the edge of breaking the law with false claims.
d Advertisements serve no real purpose and encourage people to spend money unnecessarily.

1 d 2 b 3 a

- 3 **1.08** Read and listen to the blog post about art and advertising and answer the questions.

- 1 Why do people usually think art and advertising are different?
2 According to the writer, what sort of advertising can be considered 'art' and what cannot? Why?
3 How do advertisers use famous artists or artworks in commercials?

Andy Warhol (1928–1987)

– an American visual artist, film director and producer. The son of Slovakian immigrants, he was born in Pittsburgh and named Andrew Warhola. He was the first in the family to go to university, where he studied picture design. He was the leading artist of the movement called pop art. His most famous works include images of a Campbell's soup can and a photo of Marilyn Monroe.

Pop art – a movement in art which originated in the 1950s in the UK and the USA and came in opposition to fine arts, presenting popular and mass culture.

Exercise 3

- 1 Because art uses creativity to express and share ideas, whereas advertising relies on specific techniques aimed at persuading people to do something.
2 Advertising should not be considered art when it simply uses an image of a product and a relatively simple message. Clever adverts using a combination of artistic skills are art in themselves because they've really been created.
3 They use original works of art to support the advert's message or update them so that they work in the present day.



There's been a lot of fierce debate recently about whether advertising is art. Surely, they're different? Art uses a combination of skill and creativity to convey ideas, whereas advertising relies on **ingenious techniques** and **philosophical** tools to promote products or

services, urging us to part with our money. However, some adverts and commercials are cleverly **crafted** to use visuals and audio in a way that **sparks intrigue**, makes us curious and **nurtures an interest in** both the brand and the product. In my mind, this kind of advertising appeals to the viewers' conscious and subconscious minds, just as art does. It can **pull at our heartstrings** in the same way that art can, **encapsulating** many ideas to **make us think twice** about something we might not normally consider. In this way, advertising becomes art. It is this pairing of photos, illustrations, digital materials and in some cases famous artworks that can produce **legendary** campaigns. The adverts can be **static** pictures or **vibrant** videos with **haunting** voice-overs or earworm music and lyrics that hang around in our heads for days and weeks. Think gorilla playing the drums in a memorable advert from 2007 (BTW – a gorilla and chocolate?). In addition to this, there are the promotions that actively focus on artworks, whether 'borrowing the originals' to support the brand's message or adapting them to **target** the twenty-first century viewer. A famous home appliance brand uses images inspired by Matisse, as well as Andy Warhol and Salvador Dalí! Art has a home in advertising, and advertising has a home in art. After all, they are both about communication on many different levels. Have you got a favourite 'art' advert? Do tell!

Exercise 6

- Student A: 1 legendary
2 philosophical 3 crafted
4 vibrant 5 twice
Student B: 1 static
2 targeting 3 ingenious
4 intrigue 5 haunting

- 4 **KEY WORDS** Read the blog post in exercise 3 again and match the highlighted verbs and verb-noun collocations to definitions 1–6 below.

- 1 target – direct advertising or criticism at someone
2 nurture an interest in – make people curious about
3 spark intrigue – cause fascination
4 encapsulating – capturing the most important elements
5 make us think twice – encourage people to reconsider
6 pull at somebody's heartstrings – make people identify with something, produce feelings in them

- 5 **SPEAK KEY WORDS** Complete the gaps with the correct forms of the verbs from exercise 4. Then finish the sentences so that they are true for you. Discuss your answers and give details.

- 1 A teacher who nurtured my interest in a particular topic at school was ...
2 An advert that particularly targets under-tens is ...
3 A classic film that pulls at many people's heartstrings is ...
4 A book that encapsulates the emotional problems of a teenager is ...
5 A trailer for a recent film that sparked my interest was ...
6 A documentary that really made + Students' own answers me think twice was ...

- 6 **SPEAK KEY WORDS** Read the instructions and do the task. Student A, look at page 156. Student B, look at page 160.

- 7 **SPEAK** Answer the questions.

- 1 Some adverts seem to have little connection with the product. How effective do you think they are? Give an example.
2 Describe a legendary advert that you would consider 'art'. What has made it memorable?

FAST FINISHERS

Choose a modern-day product and think of/design an advertisement or commercial for it using a famous artwork.

Search the web to find images and/or videos from one of the campaigns mentioned in the lesson. Present them to the class along with the information about their history and creators.

Extra classroom activity

As a warm-up, ask students to think of a television advert which was very successful. Why did it work?

Online teaching

- For exercise 5, ask students to do the task as recorded homework.
- For exercise 7, put pairs of students into breakout rooms. Then ask one pair to do the task for the whole class.

Extra practice

- Workbook p10
- Photocopiable Worksheet 3, Teacher's Book p397
- Extra Practice Worksheet: Unit 1 Vocabulary, Teacher's Resource Centre
- On-the-Go Practice 1.5, Student's App

For next lesson

Ask students to answer the question: *What is the difference between patent and copyright?*

Testing

Vocabulary Short Test 1.5

Lesson materials

Audio script, Teacher's Book p345

A radio interview about copying ideas



1 **SPEAK** Look at the photos. What do you think these two objects might have in common?

2 **KEY WORDS** Match the highlighted words and phrases below to definitions 1–8.

cite your sources • **counterfeit** • **get credit for**
in the public domain • **infringe copyright**
intellectual property • **plagiarism** • **take out a patent**

- 1 intellectual property – inventions, artistic works, etc. that a person has the rights to
- 2 in the public domain – available for everyone to use
- 3 counterfeit – not original, designed to fool
- 4 get credit for – receive praise or reward for
- 5 take out a patent – get the official legal right to sell an invention for a certain length of time
- 6 infringe copyright – break the law regarding what belongs intellectually to someone else
- 7 plagiarism – the practice of copying someone else's written work and ideas illegally
- 8 cite your sources – say where you obtained information from

3 **1.09** Complete the sentences with the correct forms of the words and phrases from exercise 2. Then listen and check.

- 1 It's unethical for people to get credit for other people's work, don't you think? So, if you have a new idea, you need to take out a patent to prove that it was your original idea and not someone else's.
- 2 You can use music in your video as long as it's in the public domain. Otherwise it's illegal – you'd be infringing copyright.
- 3 Photographers often add a watermark to pictures they post online in order to protect their intellectual property.
- 4 There are strict rules about using other people's words or ideas, to avoid plagiarism. You should always cite your sources when passing on information.
- 5 There are a lot of counterfeit goods on the market, and if you buy something that turns out not to be genuine, you have the right to get your money back.

4 **1.10** Listen to a radio interview about copying products and answer the questions.

- 1 How does today's programme differ from the usual one?
- 2 Why does the interviewer mention students copying work?
- 3 When, according to Liam, does copying become a crime?
- 4 How was Marconi rewarded for his work on radio?
- 5 What similarities are there between the two games, *Monopoly* and *The Landlord's Game*?

5 **1.10** Listen again and choose the correct options.

- 1 What is important to the companies selling smart speakers?
 - A That they are as popular as other must-have gadgets.
 - B That they are produced by major tech manufacturers.
 - ☒ C That they encourage users to buy additional devices.
 - D That they cannot be copied easily.
- 2 Marconi couldn't get a patent for radio technology in the US because
 - A he already had one in Britain.
 - B it was Tesla's invention.
 - ☒ C Tesla already had the patent there.
 - D he didn't have the right contacts.
- 3 The guest expert mentions when Magie's game was patented in order to
 - ☒ A show that hers was the original idea.
 - B contrast it with recent versions of the game.
 - C stress that Darrow had developed *Monopoly* before Magie.
 - D point out that buying and selling property was important at that time.
- 4 What do the examples of the products in the podcast illustrate?
 - A How easy it is for inventors to copy other people's ideas.
 - ☒ B How inventors are often inspired by other people's work.
 - C How inventors never invent anything original.
 - D How marketing is more important than the original invention.

6 **1.11** Listen and write down the verbs, nouns and adjectives. Draw a stress mark /' / before the stressed syllable in each word. Notice the stress shift. Then listen again and repeat.

7 **SPEAK** Answer the questions.

- 1 Have you ever bought something you thought was original, but turned out to be fake? What was it?
- 2 How important do you think it is to have strict rules about intellectual property? Why?
- 3 Do you sometimes use online information to give you inspiration for your work? Give examples.

FAST FINISHERS

Design another version of the board game *Monopoly*. Think about your town or area, or a trending film or TV series.

A **patent** is something that a government gives to an inventor, granting him or her the right to prevent other people from copying the invention or using or selling it without the owner's permission. When an invention is patented, the invention is the property of the inventor. Patents cover how something works. Other kinds of things can be protected from copying by copyright laws, e.g. the design, a trademark, a song, a piece of art, a film or TV programme or a book. Copyright gives the person who created the work legal control over their work and prevents other people using it without their permission.

Radio patent controversy

– Nikola Tesla, who first demonstrated wireless communication in 1893, filed the US radio patent in 1897. At the same time, in England, Guglielmo Marconi was building a wireless device, too. Marconi's first patent application in the US was in 1900 and it was turned down. Nonetheless, his company, Marconi Wireless Telegraph Ltd. continued and on 12.12.1901 Marconi first transmitted signals across the Atlantic. Tesla commented: 'Marconi is a good fellow. Let him continue. He is using 17 of my patents.' In 1904, surprisingly, the US Patent Office gave Marconi a patent for the invention of radio. Marconi later won the Nobel Prize and Tesla sued his company for infringement. In 1943, the US Supreme Court finally overturned Marconi's patent in favour of Tesla.

Exercise 4

- 1 Today's topic is using other people's ideas for inspiration, as opposed to looking at completely innovative ideas.
- 2 As an example of something that is against the law.
- 3 When you do not cite your sources and claim something as your own work.
- 4 He received the Nobel Prize for physics.
- 5 Both use the idea of buying, selling and developing property represented on a board.

Extra classroom activity

After exercise 5, let students analyse the transcript on page 344 to verify their answers.

Online teaching

After exercise 2, display the Key Words without the definitions. Ask students for Polish translations of the phrases.

Extra practice

- Workbook p11
- Extra Practice Worksheet: Unit 1 Listening, Teacher's Resource Centre

For next lesson

Ask students to do exercise 1 on page 14.

Lesson materials

Audio script, Teacher's Book p345

Exercise 6

cre'ate, crea'tivity,
cre'ation, cre'ative
a'dapt, adap'tation
ex'periment, ex'periment,
exper'i'mental
o'riginate, 'origin, o'ri'ginal
re'semble, re'semblance
'stimulate, stimu'lation,
'stimulant

- 1 **SPEAK** Describe a situation in which you got completely engrossed in a creative process.
- 2 **1.12** Complete the text with sentences a–e below. There is one extra sentence. Listen and check. What do you think was in the envelope?
- There goes my creative weekend ...
 - Barely had she been painting for two minutes when she heard a knock on the door.
 - Little did Hannah know how the visit was going to change her life.
 - Not only was she curious, but she was also a little aggravated by the interruption.
 - No sooner had she finished her first drawing than she wanted to start on a new one.



It was Saturday morning and Hannah couldn't have been more excited. She intended to spend the whole weekend in her studio painting – something she hadn't been able to do for quite a while now. She felt a flash of inspiration and was ready to finally give vent to her creativity. She became completely engrossed in the process. ¹ e. And she knew exactly what she wanted now – oil on canvas. ² b. 'Who could it be?' she wondered. ³ d. She opened the door and saw an envelope on the doorstep. She looked inside the envelope and murmured, '4 a'.

- 3 **VIDEO 03** Study the grammar table and complete it with examples a–e from exercise 2.



VIDEO 03

Key Grammar

Stylistic inversion

In a formal or literary style, we can invert (= change) the order of the verb and the subject in a sentence for emphatic or dramatic effect.

In sentences with negative or limiting adverbials at the beginning, we change the usual word order to that used in questions (adverbial + auxiliary/modal + subject + main verb).

Adverbials that can be used in this way include:

- time adverbials: *never, rarely, seldom, hardly/barely/scarcely ... when, no sooner ... than*, e.g.: ¹ b/e, ² e/b.
- expressions with *not*: *not only ... but also, not until, not for a moment*, e.g. ³ d.
- little* (with negative meaning), e.g. ⁴ c.

When an adverb or an adverbial expression of place (*here, there, in the studio*, etc.) comes at the beginning of a sentence, the subject and verb are inverted. We do not add an auxiliary. We only use this type of inversion in sentences with the verb *be* or a verb of place/movement (*stand, go, come, fly*, etc.), e.g. ⁵ a. We do not use inversion if the subject is a pronoun, e.g.: *Here comes the groom. Here he comes.*

Grammar Reference >> 20

Irregular verbs >> 158–159

- 4 Choose the correct options. In some sentences, two options are correct.

- No sooner* / *Little* / *Not only* did we know that we would never meet again.
- Look up there! *Rarely* / *Never* / *Here* comes another kite!
- Hardly* / *No sooner* / *Only* had she gone to bed when her phone rang.
- Never* / *No sooner* / *Not* only did we text him, but we also called him several times.
- Little* / *Only* / *Not only* do they realise how difficult our situation is.
- Seldom* / *Hardly* / *No sooner* had we left than Mary said we needed to return.
- Not once* / *Barely* / *There* did the teachers question the plausibility of the student's explanations.

- 5 **VIDEO 03** Complete the second sentence so that it means the same as the first one.

- She had only just created a new product when she started developing another one.
No sooner *had she created a new product than she started developing another one.*
- They'd only just put out one fire when another one started somewhere else.
Hardly had they put out one fire when another one started somewhere else.
- I had just closed the front door when I realised what had happened.
Barely had I closed the front door when I realised what had happened.
- George had only been studying for a few minutes when he fell asleep.
Scarcely had George started studying when he fell asleep.
- I didn't stop thinking about the performance for one moment.
Not for a moment did I stop thinking about the performance.
- I hadn't even read one chapter of that book until yesterday.
Not until yesterday had I read one chapter of that book.
- These adverts use famous paintings and feature haunting music.
Not only do these adverts use famous paintings, (but) they also feature haunting music.
- The university doesn't even realise the extent of plagiarism.
Little does the university realise the extent of plagiarism.

- 6 **VIDEO 03** Finish the sentences and write them on a separate piece of paper. Then exchange your sentences with your partner and add one sentence before or after to create a context.

- Little did I know ...
- Barely had I finished ...
- There goes my ...
- Never have I heard ...

FAST FINISHERS

- VIDEO 03** Continue the story from exercise 2. Use stylistic inversion at least twice.

Extra classroom activity

As a warm-up, encourage a class discussion on the following topic: *If an artist doesn't create, is she/he being lazy or can we put it down to a creative dry spell?*

Online teaching

For exercise 5, ask students to write the correct sentences and send them to you in a private chat.

Extra practice

- Extra Grammar Practice, Student's Book p148
- Workbook p12 and p112
- Photocopiable Worksheet 4, Teacher's Book p398
- Extra Practice Worksheet: Unit 1 Grammar, Teacher's Resource Centre
- On-the-Go Practice 1.7, Student's App

Testing

Grammar Short Test 1.7

Lesson materials

- Grammar Reference, Student's Book p20
- Video script, Teacher's Book p366

- 1 **SPEAK** Have you ever made an expensive mistake? What happened?

- 2 **1.13** Read the **WATCH OUT** box and complete the sentences using the verbs in brackets and *do/does/did* for emphasis. Then listen to a conversation and check.

- I do like (like) your blog, but it does need (need) to be a little more original.
- Your blog does resemble (resemble) the one the teacher showed us a bit too much, don't you think?
- They did tell (tell) us about copying and plagiarism, remember?
- So, in other words, it does look (look) like I've just copied it.
- You do have to (have to) start somewhere!
- That definitely does make (make) sense.

WATCH OUT**Do/Does/Did for emphasis**

In the present simple and past simple, we can use *do/does/did* + infinitive in affirmative sentences to express emphasis. In speech, *do/does/did* is stressed.

Are you OK? You **do look** a little pale. Please lie down.

Dad hardly ever sees his old school friends now, but he **does write** to them.

I **did want** to tell you, but I was too afraid.

- 3 Complete the second sentence so that it means the same as the first one. Use the words in capitals.

- Almost everybody was in a brainstorming meeting, but I managed to talk to a few people. **MANAGE**
Almost everybody was in a brainstorming meeting, but I did manage to talk to a few people.
- After someone bought the painting at auction, they discovered it was a reproduction. **TIME**
By the time they discovered the painting was a reproduction, someone had bought it at auction.
- Decca Records rejected the Beatles, and then they became successful. **REJECTED**
Before the Beatles became successful, Decca Records (had) rejected them.
- You don't see many good quality campaigns these days. **SELDOM**
Seldom do you see good quality campaigns these days.
- At that point, five years had passed since Lucy had started to run that project. **BEEN**
At that point, Lucy had been running that project for five years.
- Helen copied my work and accused me of using her ideas. **ONLY**
Not only did Helen copy my work, but she also accused me of using her ideas.
- As soon as I went to bed, I realised I hadn't done my homework for the following day. **SOONER**
No sooner had I gone to bed than I realised I hadn't done my homework for the following day.
- Contrary to popular belief, the classic horror film *Rosemary's Baby* uses some special effects. **USE**
Contrary to popular belief, the classic horror film *Rosemary's Baby* does use some special effects.

- 4 Match the words from box A to the words from box B to make collocations. Then write three sentences with a collocation of your choice, leaving a gap where the phrase should be used. Exchange sentences with your partner and complete the gaps.

A explore get infringe spark
think trigger

B copyright ideas intrigue
possibilities stuck twice

- 5 Translate into English. Use the words from the box.

blank boost fierce nurture pull
trigger

- Before we found common ground, we (had) had a fierce debate (odbyliśmy zaciętką debatę).
- Not only did my mind go blank / My mind not only went blank (Nie tylko miałam pustkę w głowie), but I was also unable to say a word.
- Tom's presentation triggered many ideas (stała się źródłem wielu pomysłów) for further development.
- They decided to join the rescue mission only after we had pulled at their heartstrings (zagraliśmy na ich emocjach).
- What boosts your creativity (pobudza twoją kreatywność) the most?
- They did nurture some interest (żywili nieco zainteresowania) in the new campaign, but not much.

- 6 **SPEAK** Complete the questions with the correct words. Some letters are given. Then answer the questions.

- What do you do to s t i m u l a t e creativity?
- What would your maths teacher do if he/she caught you d a y d r e a m i n g?
- Do you ever think outside the b o x? Give an example.
- What do you think gives people a competitive e d g e on the job market these days? + Students' own answers

FAST FINISHERS

- Imagine you are preparing a speech about copying among bloggers. Write four sentences with stylistic inversion and two with *do/does/did* for emphasis that you might include in your speech.

Exercise 4

Possible answers

explore possibilities, get stuck, infringe copyright, spark intrigue, think twice, trigger ideas

+ Students' own answers

Decca Records – a British record label established in 1929, which produced albums of many famous artists, including the Rolling Stones, Annie Lennox and the Animals.

Rosemary's Baby – a famous horror film directed by Roman Polanski in 1968 with three Academy Awards nominations, starring Mia Farrow.

Extra classroom activity

As a warm-up, ask students to write five sentences in Polish with the vocabulary and structures from the unit. Then tell students to swap their sentences with their partners and translate the sentences into English.

Online teaching

- Use the Culture Notes from lessons 1–7 to prepare a few Kahoot questions. Play the game with the students as a warm-up.
- For exercise 6, allow students to discuss the questions in breakout rooms. You may ask students to choose one question, record their answer and send them to you as homework.

Extra practice

Workbook p13

For next lesson

Ask students to do exercise 1 on page 16.

Tayasui Sketches – an online application which allows users to draw in a realistic way. It offers realistic tools, e.g., a paintbrush, watercolour brush and oil pastels. It's popular among designers, illustrators, artists and general art lovers.

Exercise 3

Paragraph 1: what it is, who it is for and general opinion
Paragraph 2: main positive features
Paragraph 3: any negative features or disadvantages
Paragraph 4: summary and recommendation

Exercise 4

- 1 innovative, ingenious, intricate, appealing, critically acclaimed, outstanding, superb, phenomenal
- 2 impenetrable, overwhelming, far-fetched
- 3 Nonetheless, On the downside
- 4 First and foremost, What is more, Also
- 5 Overall

- 1 **SPEAK** Which of these creative apps do you find the most appealing: film-making, music-making or photo-editing? How do creative apps stimulate creativity?

- 2 Read the article and answer the questions.

- 1 What does the article review?
A drawing app called Tayasui Sketches.
- 2 What is the writer's overall opinion?
The writer likes the app a lot.
- 3 Would you like to download a tool like this? Why/Why not?

- 3 Read the review again and make notes about the main ideas in each paragraph.

Paragraph 1: Paragraph 2:
Paragraph 3: Paragraph 4:

- 4 Find features 1–5 below in the article from exercise 2.

- 1 Adjectives used to describe the app's positive features (highlighted in the text)
- 2 Adjectives used to describe the app's negative features (highlighted in the text)
- 3 Linking words and phrases of contrast
- 4 Linking words and phrases of addition
- 5 A phrase to summarise

Release your inner van Gogh ★★★★★

While there are many concerns about whether smart technology could possibly be about anything beyond consumption and entertainment, more and more **innovative** video, photography and music-making software is being produced that can actually stimulate the brain. These **ingenious** applications open up a whole range of new possibilities. Not only are they based on advanced professional software, but they also contain **intricate** editing features. People like me, who are truly into drawing, will find the free app *Tayasui Sketches* particularly **appealing**.

The app has been **critically acclaimed** by its users for a number of reasons. First and foremost, it has an **outstanding** range of tools – brushes, pencils, pens, shapes – that you can use in your drawings. What is more, all these tools are easily accessible through a well-designed interface. Nonetheless, what impressed me most was the incredible choice of colours and textures. Another **superb** feature is the online community of *Tayasui Sketches*, where artists publish their work.

On the downside, for people who are used to drawing on paper, the app may seem **impenetrable** at first. If you have no experience with using a similar tool, you may find the complexity of the app a little **overwhelming**. Also, the app's promise to help you become 'the next van Gogh' does appear rather **far-fetched**.

Overall, this app is a **phenomenal** way to boost your creativity, and it does seem well worth taking the time to learn to use all the different features. It is highly recommended to anyone, from beginners to experts, who is willing to open up their artistic creation to wider audiences.

- 5 Study the Key Phrases box and complete the sentences with one word in each gap.

- 1 This dress is *yet another* creation of the young Croatian designer. *It allows* you to learn a lot about his artistic interests and inspirations.
- 2 *What I found* particularly superficial was how the photographer presented the female subjects.
- 3 Due to the *impressive range* of editing features, the tool is *highly recommended to* professional designers.
- 4 Unfortunately, the film *may seem* too controversial for younger audiences.
- 5 *On the downside*, viewers without profound historical knowledge may not fully understand the message.

Key Phrases

A review

Introduction

(The album) is yet another creation of ...
Not only is it ..., but it also ...
People like me, who ..., will find ...

Positive features

One feature I really like is ...
... an impressive range of ...
... an incredible choice of ...
I found the ... incredibly useful/convincing/intriguing.
One brilliant/superb/brilliantly inventive feature that I absolutely love is ...
It allows you to ...
What I find/found particularly impressive/relevant/spectacular is/was ...

Negative features

It may seem a bit shocking/superficial/controversial.
It does appear rather far-fetched/misleading.
On the downside, ...
One major flaw of (the app) is ...

Summary and recommendation

Overall, ...
It is well worth taking the time to ...
I strongly recommend this ... to ...
It is highly recommended to ...

Extra classroom activities

- As a warm-up, ask students to answer the following question: *What is the most useful app on your mobile?* Have a class discussion. If possible, have a class vote on the most useful app.
- For exercise 2, before students read the text, ask the following questions: *Do you read app*

reviews? Why/Why not? Have you ever written an app review online?

- After exercise 5, ask students to choose three sentences and re-write them using different Key Phrases so that the meaning remains the same.
- After exercise 7, ask students to write four sentences with the Key Words.

Online teaching

For exercise 8, put students into breakout rooms to discuss the content of their reviews. They may do the activity in Polish.

Extra practice

Workbook p14

Lesson materials

Model answer to exercise 8, Teacher's Resource Centre

6 KEY WORDS Match the highlighted adjectives from the article in exercise 2 to definitions 1–8 below. Two definitions match more than one adjective.

- 1 far-fetched – very unlikely and difficult to believe
- 2 intricate – complex; containing many small details that work well together
- 3 appealing – interesting and attractive
- 4 critically acclaimed – praised by critics
- 5 impenetrable – impossible to understand
- 6 overwhelming – overbearing; making you feel confused and unsure how to react
- 7 innovative / ingenious – new, inventive and original
- 8 outstanding / phenomenal / superb – extremely good or impressive

7 Develop the sentences using the adjectives from exercise 6.

- 1 I found the interface really easy to use.
I found the interface particularly appealing as it was really easy to use.
- 2 This app really needs a companion website.
- 3 The thing I like about this app is the photo-editing tool.
- 4 It is great that you can interact with other users.
- 5 The quality of the video content really stands out.
- 6 The app turned out to be the real deal, even though at first its concept seemed extremely unlikely, or even crazy.

8 Write the following review excerpts. Use the Key Phrases and the adjectives from exercise 6. Write up to three sentences in each point.

- 1 the first three sentences in an article reviewing a virtual gallery
- 2 one reason why you didn't like an online tutorial
- 3 one positive feature of an electronic notebook
- 4 a final positive recommendation of a note-taking tool
- 5 one negative feature of a website with templates for writing essays
- 6 a reason why you want to review an app
- 7 discourage people from downloading a new operating system

9 SPEAK Think of a cultural event you have recently attended. Make a list of adjectives you could use to describe it. Then work in pairs and tell each other about the event, presenting its positive and negative aspects. Would you recommend it? Why/Why not?

10 Do the writing task. Follow the steps in the Writing Planner.

You have visited a photography exhibition on the theme of modern technologies in art. You liked the exhibition, but you had an impression that many of the photos resembled the work of another famous photographer. Write a review of the exhibition for a culture website. In your review, discuss the exhibition and express your opinion on plagiarism in art.

WRITING PLANNER

THINK

Think of the details of the exhibition: where it was held (e.g. at a contemporary art gallery), the target audience, the exhibits, your general opinion. Remember that it does not need to be a real event – you can make everything up.

PREPARE

- Come up with a title for your article.
- List the most important features of the exhibition (mainly positive, but you can also mention what you did not like about it).
- Form your opinion about plagiarism in art and think of appropriate vocabulary to express it.
- Organise your notes into four paragraphs:
 - 1 The details of the exhibition (When? Where? For whom?)
 - 2 Describe the main features and give your opinion of them.
 - 3 Describe any negative features or disadvantages.
 - 4 Summarise your opinion and say whether you recommend the exhibition.

WRITE

Write your review. Use your notes and the Key Phrases. Remember to use appropriate linking words and phrases of contrast and addition.

CHECK

- Read your article and answer the questions:
- Have you included and developed both parts of the instruction?
 - Have you varied the structure of sentences?
 - Have you checked your review for spelling mistakes?

FAST FINISHERS

Look at the highlighted adjectives in the article from exercise 2. Choose five positive and two negative adjectives and think of the best example from real life for each of them (app, game, film, video, art installation, artwork, etc.). For each example, mention the title and the creator's name.



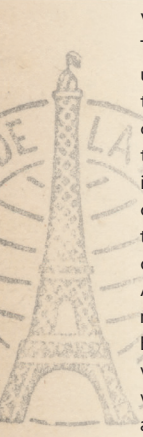
Exercise 7

Suggested answers

- 2 The app may seem overwhelming, therefore it really needs a companion website.
- 3 The thing I like about this app is its ingenious photo-editing tool.
- 4 One superb feature of the app is the tool for interacting with other users.
- 5 The quality of the video content has been critically acclaimed.
- 6 The app turned out to be outstanding, even though at first its concept seemed far-fetched, or even superficial.

VOCABULARY

1 Choose the correct options.



VICTOR LUSTIG is known as the man who sold the Eiffel Tower – twice. But how did he do it? In 1925, Lustig ¹ up the idea after reading an article in a newspaper about the terrible state of the famous tower. His plan involved convincing people that the Paris City Council had been ² the possibility of removing the iconic monument because it had become too expensive to maintain. He got a group of iron dealers together and ³ that he worked for the French government – he even made ⁴ government documents that ⁵ the real thing. One of the dealers, André Poisson, thought Lustig was ⁶ and paid him some money to secure the contract to pull down the Eiffel Tower. By the time it ⁷ that Poisson had been tricked, Lustig was on a train to Austria with his money. Although it wasn't a(n) ⁸ crime, Lustig got away with it the first time and so decided to try it again! The second time he was caught and sentenced to twenty years.

- | | |
|-----------------|---------------|
| 1 a dreamt | b emerged |
| c stimulated | d stuck |
| 2 a having | b exploring |
| c looking for | d searching |
| 3 a made | b pretended |
| c falsified | d inspired |
| 4 a original | b compatible |
| c genuine | d counterfeit |
| 5 a infringed | b cited |
| c resembled | d emerged |
| 6 a genuine | b outstanding |
| c daydreaming | d original |
| 7 a explored | b checked out |
| c emerged | d got stuck |
| 8 a plagiarised | b counterfeit |
| c haunting | d ingenious |

2 Complete the sentences with the adjectives from the box. There are two extra adjectives.

actual crucial fierce ingenious legendary
original stuck substantial

- The topic of artificial intelligence has stimulated a lot of fierce debate in class.
- The updated device doesn't resemble the original one at all.
- When you get stuck, you can always ask someone for help.
- Without these ingenious techniques, the whole campaign wouldn't have been so successful.
- The legendary bad boy of rock, Mick Jagger, has repeatedly said that he will not write an autobiography.
- Unfortunately, a(n) substantial proportion of this artist's work has been plagiarised.

GRAMMAR

3 Complete the sentences with the correct forms of the verbs in brackets. There may be more than one correct answer.

- Paul had been trying (try) really hard to generate some enthusiasm for the trip, but no one seemed interested.
- No sooner had I seen (I / see) Jonathan's drawing than I knew it was a replica.
- Little does/did Helen realise (Helen / realise) how serious the consequences of plagiarism may be.
- I had only been writing (only / write) for ten minutes when I got completely stuck.
- I couldn't believe my eyes when Hannah won the tenth game in a row, but it later turned out that she had been cheating / had cheated (cheat).
- Not only are you able (you / be able) to edit the uploaded videos, but you can also make your own.
- Nobody bothered to tell me what the board had decided (decide) to do.

4 Correct the mistakes in the sentences.

- By the end of the day, they'd been finishing the project. they'd finished
- The artist shared with the audience why he had been deciding to end his career. decided
- Hardly had they announced that the painting wasn't original then its price went down. when
- Look! Here come the artists' manager. comes
- Never I have seen a more impressive building. have I
- They had cooked for almost an hour, but dinner wasn't ready yet. had been cooking
- True, you did told me the short story had been plagiarised, but I just couldn't believe it. did tell

USE OF ENGLISH

1 2 3 4 5 6 7 8

5 Complete the second sentence with up to five words so that it means the same as the first one. Use the words in capitals.

- Ahmed was surprised that so many people were interested in his ideas. **INTEREST**
Ahmed was surprised that his ideas had generated / sparked so much interest.
- Emma was really angry because Martha was half an hour late. **HAD**
By the time Martha arrived, Emma had been waiting half an hour and was really angry.
- It took Heidi two years to take an award-winning photograph. **BEEN**
Before Heidi won the award, she had been taking photographs for two years.
- It started raining the moment we went outside. **HAD**
No sooner had we gone outside than it started raining.
- The show started at eight o'clock and we got there at 8:15. **ALREADY**
By the time we got there, the show had already started.

Extra practice

- Workbook Revision p15
- Workbook Matura Practice pp16–17
- Photocopiable Worksheet 5, Teacher's Book p399

For next lesson

Ask students to answer the following question:
How do we benefit from scientific discoveries and advancements in our everyday lives? Think about various branches, e.g. medicine, chemistry and physics, astronomy.

Testing

Unit 1 Test

Lesson materials

Model answers to exercise 7, Teacher's Resource Centre

READING

- 6  Read the article and match sentences A–E to gaps 1–4 in the text. There is one extra sentence.

- A The images included photos of planets in our solar system, DNA, humans and animals.
B It was not certain whether the Apollo 12 astronauts had left small artworks on the moon.
C Using those tools, he drew an orbital sunrise as the sun appeared from behind the Earth.
D In fact, artists have recently begun to claim their place in space.
E However, while it's hard to explain exactly why, these were never located on subsequent moon landings.

SPEAKING

- 7  Read the instructions and do the task. Then change roles and do the task again.

Uczeń A

W ramach dni otwartych w Twojej szkole przygotowujesz wystawę prac plastycznych najzdolniejszych uczniów. Omów z kolegą/koleżanką* z Walii (uczeń B) szczegóły wystawy. W rozmowie z uczniem B porusz następujące cztery kwestie:

temat wystawy

dobór prac

termin i miejsce wystawy

ceny biletów

Uczeń B

Jesteś w Komitecie organizacyjnym wystawy prac plastycznych przygotowywanej z okazji dni otwartych w Twojej szkole w Walii. Kolega/Koleżanka (uczeń A) chce omówić z Tobą szczegóły wystawy. W zależności od tego, jak potoczy się rozmowa, spróbuj włączyć do niej wszystkie lub wybrane punkty:

- poprosz ucznia A o uzasadnienie jakiejś kwestii,
- nie zgódź się z jedną z propozycji ucznia A tak, aby musiał zaproponować inne rozwiązanie,
- zaproponuj włączenie do akcji nauczycieli przedmiotów takich jak plastyka czy informatyka,
- zachęć ucznia A do wystawienia swoich prac.

Rozmowę rozpoczyna uczeń A.

A BRIEF HISTORY OF SPACE ART

In 1965, the Soviet cosmonaut Alexei Leonov became the first person to make a spacewalk, leaving the Voskhod 2 spacecraft to float in space for twelve minutes. He took a small box of coloured pencils with him, which he had attached to his wrist with an elastic band. ¹ C And just like that, the first work of art ever made in outer space was created.

Space exploration is considered to be strictly the territory of science, but since its beginnings, it seems that art has had a place on many space missions. According to some sources, four years after Leonov's spacewalk, Apollo 12 astronauts took tiny pieces of ceramic tiles with drawings by famous artists, including Andy Warhol, to the moon. ² E Two years later, the Apollo 15 crew caused some controversy when they placed a small aluminium sculpture, *Fallen Astronaut*, on the moon's surface, along with a plaque commemorating the fourteen astronauts who had died on previous missions. The members of the crew only revealed what they had done in a press conference after their return to Earth.

Later on, as scientists explored further, art became much more important on space missions because of its ability to communicate without language and the possibility that it could be found and understood by extraterrestrial life forms. In 1972 and 1973, NASA launched two probes called Pioneer 10 and 11 to explore Jupiter and Saturn. Both were fitted with small metal plaques with a diagram indicating the location of the Earth within the galaxy. The Voyager 1 and Voyager 2 probes, launched four years later, both carried a gold record containing some visuals, music and sounds from Earth. ³ A Among the pieces of music were Beethoven's Fifth Symphony and music from Peru, China and India. There were also recordings of rain, fire, animals and greetings in different languages.

Since then, the trend has continued and grown in strength. ⁴ D In 2014, the Japanese artist Makoto Azuma sent a bunch of flowers and a small tree to a height of thirty thousand metres above Earth using balloons. Four years after that, American artist Trevor Paglen launched a large reflective sculpture on a SpaceX rocket to 560 kilometres above the Earth's surface. Paglen hopes the project will change the way we see our place in the world.

*W całej serii *Impulse* zastosowano kolejność form męska/żeńską. Zachęcamy jednak do zapoznania się z tendencjami etykietałnymi współczesnej polszczyzny.

1.2 Past perfect simple and past perfect continuous

PAST PERFECT SIMPLE

Czas *past perfect simple* stosujemy do opisu przeszłych zdarzeń poprzedzających inne zdarzenia, np. *We **had been** to the local theme park several times before it closed down in 2020.*

Zdania w czasie *past perfect simple* tworzymy z użyciem czasownika posiłkowego *had* oraz formy *past participle* (dla wszystkich osób i liczb).

Affirmative	Negative
<i>I had bought souvenirs for everyone by the time Tom joined me at the shop.</i>	<i>We hadn't rented a bike on holiday before.</i>
Yes/No questions	Short answers
<i>Had she ever travelled by plane?</i>	<i>Yes, she had. / No, she hadn't.</i>
Wh- questions	Subject questions
<i>What had the kids eaten by the time their parents arrived?</i>	<i>Which composer had written six marches by age five?</i>

Określenia czasu typowe dla *past perfect simple* to m.in.: *by the time, by then, by (six o'clock/midnight/Friday/March/2001), ever, never, already, before, after.*

PAST PERFECT SIMPLE VS PAST PERFECT CONTINUOUS

Zarówno *past perfect simple*, jak i *past perfect continuous* odnoszą się do czynności poprzedzających inne przeszłe czynności.

Czasu *past perfect simple* użyjemy, by położyć nacisk na skutki danego zdarzenia, np. *Kyle **had sprained** his ankle a few weeks before, so he decided not to take part in the marathon.*

Czasu *past perfect continuous* użyjemy, by położyć nacisk na czas trwania danej czynności, np. *We **had been practising** the new song for a week before I finally managed to learn the lyrics by heart.*

PAST PERFECT CONTINUOUS

Czas *past perfect continuous* stosujemy do opisu czynności, które trwały do określonego momentu w przeszłości lub zakończyły się niedługo wcześniej, np.

*When she was finally taken to hospital, she **had been feeling** unwell for three days.*

Zdania w czasie *past perfect continuous* tworzymy za pomocą konstrukcji: *had + been + present participle*.

Affirmative	Negative
<i>I had been revising for two hours when Mum called me for dinner.</i>	<i>He decided to take a break although he hadn't been working on the report for long.</i>
Yes/No questions	Short answers
<i>Had they been queuing at the entrance since 5 am?</i>	<i>Yes, they had. / No, they hadn't.</i>
Wh- questions	Subject questions
<i>How long had you been waiting for us?</i>	<i>How many children had been playing outside since lunchtime?</i>

Określenia czasu typowe dla *past perfect continuous* to m.in.: *by the time, by then, by (nine o'clock/noon/Tuesday/July/2012), when, before, for, since.*

1.7 Stylistic inversion

Inwersję stosujemy, aby położyć nacisk na konkretny aspekt danej sytuacji i osiągnąć mocniejszy, bardziej dramatyczny efekt. Zamieniamy wówczas miejscami podmiot i orzeczenie, np. *Stuart put together the guest list and designed the invitations.* → *Not only did Stuart put together the guest list, but he also designed the invitations.* Takie użycie inwersji jest typowe dla stylu formalnego i literackiego.

Stosując inwersję, korzystamy z czasowników posiłkowych lub modalnych, np.: *I have* → *do I have*; *she has seen* → *has she seen*; *it rained* → *did it rain*; *they had been waiting* → *had they been waiting*; *I will be sitting* → *will I be sitting*; *we could lose* → *could we lose*.

UWAGA!

Czasownik *to be* w czasach *present simple* i *past simple* zachowuje się inaczej niż pozostałe czasowniki: *I am* → *am I*; *we were* → *were we*.

Inwersję stosujemy w następujących sytuacjach:

- z określnikami czasu, np. *never, rarely, seldom, hardly/barely/scarcely ... when, no sooner ... than*, np.:
*No sooner had we submitted our report **than** the power went off.*
*Barely had the ceremony begun **when** the bride's mother fainted.*
Never had I seen such incompetence.
Rarely am I praised by my superiors at work.
- z niektórymi wyrażeniami z *not*: *not only ..., but also, not until, not for a moment*, np.:
*Not only did the mayor implement a new recycling policy, **but** he **also** introduced fines for those breaking the rules.*

Not until we unpacked our suitcases did we realise that we were at the wrong hotel.

Not for a moment had we expected to achieve such outstanding results.

- ze słowem *little* w znaczeniu negatywnym, np.
Little did we know what the PM was hiding from the public.
- po określnikach miejsca *here* oraz *there* – wyłącznie z czasownikiem *to be* lub z czasownikami opisującymi położenie/ruch, np.: *stand, go, come*; w tej sytuacji w inwersji pomijamy czasownik posiłkowy:
Here stood the tallest tower in medieval Britain.
There sails the Azzam, the largest yacht ever built.

UWAGA!

Inwersję stosujemy również:

- po niektórych wyrażeniach z *only*, np.: *only when, only then, only after, only once, only in this way, only by + czasownik z końcówką -ing*:
Only in this way can this conflict be resolved peacefully.
Only by banning all plastic packaging will we reduce the amount of rubbish sent to landfills.
- po niektórych wyrażeniach z *no*: *under no circumstances, on no account, at no time*, np.:
At no time should the pupils be left unsupervised.
Under no circumstances can this information be made public.
- po *so/such ... that*, np.:
*So enraged were the party's supporters **that** they organised protests across the country.*
*Such was the happiness of the newlyweds **that** even the photographer shed a tear.*

- KEY WORDS

VOCABULARY 1

boost creativity	/ˌbuːst ˌkriːeɪˈtɪvəti/	pobudzać kreatywność
brainstorm solutions	/ˌbreɪnˌstɔːm səˈluːʃənz/	szukać rozwiązania za pomocą burzy mózgów
capture sb's imagination	/ˌkæptʃə ˌsæmbədɪz ɪˌmædʒɪˈneɪʃən/	działać na czyjąś wyobraźnię
co-founder	/ˌkoʊˈfaʊndə/	współzałożyciel
consciously	/ˌkɒnʃəsli/	świadomie
consider alternatives	/ˌkənˌsɪdə ˌɔːlˈtəːnətvz/	rozważyć opcje
daydream	/ˈdeɪˌdriːm/	śnić na jawie
draw conclusions	/ˌdruː kənˈkluːzənz/	wyciągać wnioski
dream up new ideas	/ˈdriːm ˌnp ˌnjuː aɪˈdɪəz/	snuć nowe pomysły
emerge	/ɪˈmɜːdʒ/	wyłaniać się
explore possibilities	/ɪkˈsplɔː ˌpɒsəˈbɪlətɪz/	odkrywać możliwości
fall into place	/ˌfɔːl ɪnˈtə ˈpleɪs/	układać się w logiczną całość
flash of inspiration	/ˌflæʃ əv ɪnˈspəˈreɪʃən/	przebłysk inspiracji
follow sb's train of thought	/ˌfɒləʊ ˌsæmbədɪz ˈtreɪn əv ˈθɔːt/	rozumieć czyjś tok myślenia
follow sth through	/ˌfɒləʊ ˌsæmθɪŋ ˈθruː/	doprowadzić coś do końca
get inspiration	/ˌget ɪnˈspəˈreɪʃən/	czerpać inspirację
get stuck	/ˌget ˈstʌk/	utknąć, zablokować się
your mind goes blank	/jə ˌmaɪnd ˌgəʊz ˈblæŋk/	masz pustkę w głowie
highs and lows	/ˌhaɪz ən ˈləʊz/	wzloty i upadki
let your mind wander	/ˌlet jə ˌmaɪnd ˈwɒndə/	błądzić myślami
productive	/prəˈdʌktɪv/	produktywny
remain constant	/rɪˈmeɪn ˈkɒnstənt/	być stałym, nie zmieniać się
stick with sth	/ˈstɪk wɪð ˌsæmθɪŋ/	trzymać się czegoś
stimulate the brain	/ˌstɪmjəleɪt ðə ˈbreɪn/	stymulować mózg
suspend judgment	/səˈspend ˈdʒʌdʒmənt/	wstrzymać się z wydaniem opinii
think on one's feet	/ˌθɪŋk ɒn ˈwʌnz ˈfiːt/	szybko podejmować decyzje
think out loud	/ˌθɪŋk aʊt ˈləʊd/	głośno myśleć
think outside the box	/ˌθɪŋk ˌaʊtˌsaɪd ðə ˈbɒks/	myśleć kreatywnie, niestandardowo
trigger new ideas	/ˌtrɪɡə ˌnjuː aɪˈdɪəz/	wyzwalać nowe pomysły
zap	/zæp/	porazić, np. prądem

GRAMMAR 1

befriend sb	/bɪˈfrend ˌsæmbədi/	zaprzyjaźnić się z kimś
measure	/ˈmeʒə/	mierzyć (mieć określone wymiary)
revolutionary	/ˌrevəˈluːʃənəri/	rewolucyjny
take shape	/ˌteɪk ˈʃeɪp/	nabierać kształtu

SPEAKING

a tad	/ə ˈtæd/	trochę
boil down to	/ˌbɔɪl ˈdaʊn tə/	sprowadzać się do
facilitate	/ˌfæˈsɪləteɪt/	ułatwić
gap in the market	/ˌɡæp ɪn ðə ˈmɑːkɪt/	luka na rynku
in a nutshell	/ɪn ə ˈnʌtʃəl/	w pigułce, w skrócie

READING

AI-generated	/ˌeɪ ˌaɪ ˈdʒenəreɪtɪd/	stworzony przez sztuczną inteligencję
at a given time	/ət ə ˌɡɪvən ˈtaɪm/	w danym momencie
be trending on social media	/ˌbi ˈtrendɪŋ ɒn ˌsəʊʃəl ˈmiːdiə/	być w modzie w mediach społecznościowych
bring sth up	/ˌbrɪŋ ˌsæmθɪŋ ˈʌp/	poruszyć temat czegoś
competitive edge	/ˌkæmpetətɪv ˈedʒ/	przewaga
crucial element	/ˌkruːʃəl ˈelɪmənt/	kluczowy element
enhance	/ɪn ˈhɔːns/	zwiększać, podnosić
evolve	/ɪˈvɒlv/	rozвивać się
fierce debate	/ˌfɪəs ˈdiːbət/	żarliwa dyskusja
historic	/hɪˈstɒrɪk/	historyczny (o dużym znaczeniu), wiekopomny
hot topic	/ˌhɒt ˈtɒpɪk/	gorący temat
inevitably	/ɪn ˈevɪtəbli/	nieuchronnie
lay out money	/ˌleɪ ˌaʊt ˈmʌni/	wydać pieniądze
neural network	/ˌnjuːrəl ˈnetˌwɜːk/	sieć neuronowa
on a par with	/ɒn ə ˈpɑː wɪð/	na tym samym poziomie, co
primitive finish	/ˌprɪmətɪv ˈfɪnɪʃ/	proste wykończenie
substantial sum	/səbˌstænʃəl ˈsʌm/	znacząca kwota
squat	/skwɒt/	siedzieć w kucki

upcoming	/ˌʌpˌkʌmɪŋ/	nadchodzący
widespread speculation	/ˌwaɪdˌspred ˌspekjuˈleɪʃən/	powszechne spekulacje

VOCABULARY 2

convey an idea	/ˌkənˌveɪ ən aɪˈdɪə/	wyrażać ideę
crafted	/ˌkrɑːftɪd/	przygotowany, stworzony
earworm music	/ˌiəwɜːm ˈmjuːzɪk/	melodia, która nie chce wyjść nam z głowy
encapsulate	/ɪnˈkæpsjəleɪt/	ujmować, zawierać
fast-forward through sth	/ˌfɑːstˈfɔːwəd θruː ˌsæmθɪŋ/	przewinąć coś
hang around in sb's head	/ˌhæŋ əˈraʊnd ɪn ˌsæmbədɪz ˈhed/	chodzić komuś po głowie
haunting	/ˈhɔːntɪŋ/	zapadający w pamięć
ingenious techniques	/ɪnˌdʒɪˈniəs teɪkˈniːks/	pomysłowe techniki
legendary	/ˌledʒəndəri/	legendarny
make sb think twice	/ˌmeɪk ˌsæmbədi ˌθɪŋk ˈtwɑːs/	sprawić, by ktoś dobrze się zastanowił
misleading	/ˌmɪsˈliːdɪŋ/	wprowadzający w błąd
nurture an interest in	/ˌnɜːtʃə ən ˈɪntrəst ɪn/	wzbudzać zainteresowanie czymś
philosophical	/ˌfɪləˈsɒfɪkəl/	filozoficzny
pull at sb's heartstrings	/ˌpʊl ət ˌsæmbədɪz ˈhɑːtˌstrɪŋz/	grać na czyichś uczuciach
spark intrigue	/ˌspɑːk ɪn ˈtriːg/	intrigować
static	/ˈstætɪk/	statyczny
subconscious	/ˌsʌbˈkɒnʃəs/	podświadomy
target	/ˈtɑːɡɪt/	kierować coś do kogoś
urge	/ɜːdʒ/	nakłaniać
vibrant	/ˈvaɪbrənt/	żywy, dynamiczny
voice-over	/ˈvɔɪsˌəʊvə/	głos lektora

LISTENING

cite one's sources	/saɪt wʌnz ˈsɔːsɪz/	podać źródła informacji
counterfeit (v, adj)	/ˈkaʊntəfɪt/	falszować; podrabiany, sfałszowany
genuine	/ˈdʒenjuɪn/	oryginalny
get credit for	/ˌget ˈkredɪt fə/	zdożyć uznanie za
in the public domain	/ɪn ðə ˌpʌblɪk dəʊˈmeɪn/	w domenie publicznej
infringe copyright	/ɪnˈfrɪndʒ ˈkɒpi raɪt/	naruszyć prawa autorskie
influential	/ɪnˈfluːənʃəl/	wpływowy
intellectual property	/ɪntəˌlektʃʊəl ˈprɒpəti/	własność intelektualna
make out	/ˌmeɪk ˈaʊt/	twierdzić, udawać
pass on	/ˌpɑːs ˈɒn/	przekazać, podać dalej
plagiarism	/ˈpleɪdʒəˌrɪzəm/	plagiat
take out a patent	/ˌteɪk ˌaʊt ə ˈpæʃənt/	uzyskać patent

GRAMMAR 2

aggravated	/ˈæɡrəˌveɪtɪd/	zdegenerowany
get engrossed in	/ˌget ɪnˈɡrɔːst ɪn/	wciągnąć się w coś
give vent to sth	/ˌɡɪv ˈvent tə ˌsæmθɪŋ/	dać czemuś upust
murmur	/ˈmɜːmə/	szeptać

USE OF ENGLISH

contrary to popular belief	/ˌkɒntrəri tə ˌpɒpjələ bɪˈliːf/	wbrew powszechnemu mniemaniu
find common ground	/ˌfaɪnd ˌkɒmən ˈɡraʊnd/	znaleźć wspólny język, znaleźć nić porozumienia

WRITING

appealing	/əˈpiːlɪŋ/	pociągający
critically acclaimed	/ˌkrɪtɪkli əˈkleɪmd/	chwalony, uznany
far-fetched	/ˌfɑːˈfetʃt/	naciągany, nieprzekonujący
impenetrable	/ɪmˈpenɪtrəbəl/	niezrozumiały
ingenious	/ɪnˈdʒɪˈniəs/	pomysłowy
innovative	/ɪˈnɒvətɪv/	innowacyjny
intricate	/ɪnˈtrɪkət/	zawity, skomplikowany
outstanding	/aʊtˈstændɪŋ/	wyróżniający się, wybitny
overwhelming	/ˌəʊvəˈwelmɪŋ/	przysłaniający
phenomenal	/fəˈnɒmɪnəl/	fenomenalny
superb	/soʊˈpsːb/	znakomity

REVISION

plaque	/ˈplɑːk/	płyta, tablica
pull down	/ˌpʊl ˈdaʊn/	zburzyć
reflective	/ɪnˈflekʃɪv/	odbłaskowy
subsequent	/ˈsʌbsɪkwənt/	okolejny, późniejszy
tile	/taɪl/	kafelki



2 SCIENCE MATTERS

Isaac Asimov (1920–1992) – an American writer and professor of biochemistry at the University of Boston. With more than 500 books, he was one of the top three science writers of his time (both fiction and non-fiction).

Bacteria – small, single-cell organisms, which are found almost everywhere on Earth. The human body is full of bacteria, and in fact is estimated to contain more bacterial cells than human cells. Most bacteria in the body are harmless, and some are even helpful. A relatively small number of species cause disease.

SPEAK Look at the photos and read the quote. Answer the questions.



The most exciting phrase to hear in science, the one that heralds new discoveries, is not 'Eureka!' but 'That's funny...'.

Isaac Asimov
(American biochemist and writer, 1920–1992)

- What aspects of science do the photographs represent? Which interests you the most? Why?
- Which photograph would you choose for a science poster for a primary school classroom? Why?
- What do you think the quote means? How far do you agree?



- 1 **SPEAK** How many different branches of science can you name in one minute?

biochemistry, ...



- 2 **SPEAK** Complete the statements with the correct forms of the verbs from the box. Do you agree with the statements? Why/Why not?

carry collect do draw follow keep make

- 1 No one keeps written records of test results these days.
- 2 It is really important to follow instructions when you're doing a scientific experiment.
- 3 All the most important scientific discoveries have already been made.
- 4 Carrying out scientific research is a relatively quick and straightforward job.
- 5 Scientists should never draw conclusions before collecting and analysing evidence.

- 3 Read the text. How has research science changed in recent years?

SHIFTING TIMESCALES

Research scientists are often pictured carefully **scrutinising** bacteria under a microscope or analysing a blood sample in a test tube. But although scientists do use these basic **procedures** for **conducting research**, this image does not reflect the great complexity of their work.

Originally, scientific research involved collaboration over many years to suggest hypotheses, test theories, **collate evidence**, plan and **execute experiments** and publish the conclusions. Take, for example, finding new drugs or vaccines to help combat diseases and illnesses. From the initial, exciting **major breakthroughs** to actually bringing the drugs to the market, there are enormous **obstacles** to **overcome**, the final stage being human trials. Having **demonstrated the possibility** of using the drug to treat a certain condition, scientists then need to **process** huge amounts of **data** from **diverse sources** before the drug is **deemed safe** for use. This involves the collaboration of scientists from various **fields of study**, which is why the whole process used to take many, many years. However, recent times have seen this normal timescale speeded up dramatically as a result of **global collaboration**, motivation, **adopting** different **approaches**, as well as vast improvements in equipment and technology. Here in the third decade of the twenty-first century, the science fast-forward button has been pressed.

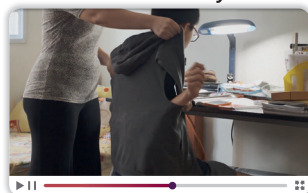


22 UNIT 2



▶ VIDEO 04
▶ VIDEO 05
▶ VIDEO 06
▶ VIDEO 07

Lesson 2.1 Vocabulary 1



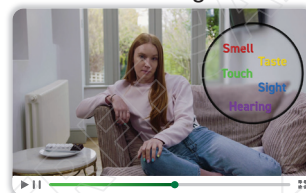
Documentary video:
E-Body

Lesson 2.2 Grammar 1 Lesson 2.7 Grammar 2



Grammar animation:
Grammar Talk

Lesson 2.4 Reading



Vlog:
Multisensory Perception

4 KEY WORDS

Replace the underlined words with the correct forms of some of the highlighted words and phrases from exercise 3.

- The research was done in the Mojave Desert. *conducted*
- The animals were closely watched on camera. *scrutinised*
- The site of the explosion was isolated until it was decided that there was no danger. *deemed safe*
- We gathered proof to show that our theories were correct. *collated evidence*
- It will probably take several hours to check through the information. *process the data*
- The Chinese team used a way of thinking about the research which gave interesting results. *adopted an approach*
- Scientists in this subject area don't usually work in a laboratory. *field of study*
- These observations clearly show there is a chance that Einstein's ideas were incorrect. *demonstrate the possibility*
- The results are a(n) big discovery in medical research. *major breakthrough*
- This method of operating provides the most accurate outcomes. *procedure*
- Ellen's work gives facts and physical signs of changes in the behaviour of penguins. *provides evidence*
- Dr Muller took her information from a range of different places. *diverse sources*

5 1.14 KEY WORDS

Complete the text with the correct forms of the highlighted words and phrases from exercise 3. Then listen and check.

It was undeniably one of the major ¹ *breakthroughs* of the twentieth century. Since Alexander Fleming first ² *scrutinised* mould on bacteria and developed the first antibiotic, these drugs have saved countless lives. However, overuse of these medicines and the growth of resistance against them means that their effectiveness has shrunk, and scientists have been ³ *conducting* research for many decades to find replacements. They have ⁴ *processed* data obtained from ⁵ *diverse* sources, including soil, but no real answers have been found. Remarkably, recent studies have demonstrated the ⁶ *possibility* that new antibiotics could very well come from a surprising source – our own bodies. Our immune systems already fight bacteria, but it appears that enzymes from several areas of the body, including the digestive system, could be harnessed and modified to create new antibiotics. There are still a multitude of ⁷ *obstacles* to overcome before new drugs are ⁸ *deemed safe* to be used, but with potential global ⁹ *collaboration*, this could become a reality.

6 SPEAK

Think of three important research topics for scientists in the fields below. Then decide which topic should be prioritised in each category and why. Use the highlighted words and phrases from exercise 3.

electronics health the environment transport

7 KEY WORDS

Match highlighted words 1–6 and a–f to make collocations connected with science.

- | | |
|-----------------|-----------|
| 1 trial and b | a leap |
| 2 side f | b error |
| 3 light years e | c pig |
| 4 guinea c | d science |
| 5 quantum a | e ahead |
| 6 rocket d | f effects |

8

Complete the sentences with the correct forms of the highlighted collocations from exercise 7.

- In comparison to what we're used to, this new technology is *light years ahead*.
- The medication he's taking has some unpleasant *side effects*.
- The discovery of a new planet would mean a *quantum leap* for astronomy.
- Our experiments involve a lot of *trial and error* – we're learning from our mistakes.
- Fixing a printer is not *rocket science* – it's not that you need special knowledge to do it!
- They used a group of students as *guinea pigs* in their telepathy experiments.

9 1.15 Listen to a conversation and choose the correct option.

Which is not true according to the girl?

- Children with sensory issues benefit from robot toys.
- Pet robots help patients overcome different obstacles.
- Neuroscientists are no longer conducting research into ways of de-stressing people.



Alexander Fleming (1881–1955) discovered penicillin by accident, in 1928. He noticed that mould on a plate killed some colonies of bacteria. Penicillin started the antibiotic age. Before its introduction, there was no effective treatment for infections such as pneumonia. Hospitals were full of people with blood poisoning contracted from a cut or a scratch, and doctors could do little for them but wait and hope.

10 SPEAK

Look at the video still. It shows a boy who has autism and can be overstimulated by sight and sound. Describe the video still and answer the questions.



- How do you think the boy is feeling? Why?
- What uses of wearable technology have you heard of?
- How important is hugging and being hugged?

FAST FINISHERS

Imagine you could meet any inventor or famous scientist from the past or present. Make a list of five questions you would ask him/her. Then make up and write down the scientist's possible answers to two of your questions.

Extra classroom activities

- As a lead-in, discuss the following with the students: *Are there any questions that science cannot answer? Is there anything left to discover?*
- After exercise 5, ask students to write one false and two true sentences about the text. They read each other their sentences in pairs and find their partner's false sentence.

Online teaching

- For exercise 6, allow students to do the activity in

pairs in breakout rooms and visit to check on their progress. After the time limit, ask stronger students to model the answers for the whole class.

- For exercise 10, play the video and ask students to write down three questions about the information they hear to ask to the class after they watch.

Extra practice

- Workbook p18
- Video Worksheet 2 *E-body*, Workbook p103
- Photocopiable Worksheet 6, Teacher's Book p400

- Extra Practice Worksheet: Unit 2 Vocabulary, Teacher's Resource Centre
- On-the-Go Practice 2.1, Student's App

For next lesson

Ask students to do exercise 1 on page 24.

Testing

Vocabulary Short Test 2.1

Lesson materials

- Audio script, Teacher's Book p346
- Video script, Teacher's Book p366

2.2 Grammar 1

Modals and alternatives to modals

1 **SPEAK** Discuss what scientists:

- should have done a long time ago,
- don't have to focus on anymore,
- might start working on in the near future.

2 1.16 Read the text and match the headings below to paragraphs 1–3. There is one extra heading. Then listen and check.

- Daydreaming
- Overstimulation
- Fidgeting
- Talking to yourself



THREE THINGS YOU MIGHT NEVER HAVE THOUGHT WERE GOOD FOR YOU

1 Fidgeting

^aWe're always told we are required to sit still. ^bHowever, sitting for long periods of time is bound to lead to serious health problems, such as heart disease. ^cScientists who carried out research at Michigan State University and the University of Michigan have succeeded in showing that stretching or wriggling may reduce the damaging effects of sitting for a long time.

2 Talking to yourself

The last time you lost your keys you were probably thinking, ^d'I'm sure I didn't leave them in my coat.' Or, 'Oh, no!' ^eI was supposed to always put them back in the key cabinet!' Or even, ^f'Is it possible that I dropped them?' ^gIn fact, saying the word 'keys' out loud is likely to help you find them. A study conducted at the University of Michigan suggests that thinking aloud makes it possible to get a picture of the object you need to find.

3 Daydreaming

^hWe are obliged to pay attention. ⁱWe aren't allowed to spend time thinking about pleasant things instead of focusing on what we're doing.' We've all heard this at some point in our lives, but mind-wandering may help you to be more creative, and it might even benefit motivation.

3 Study the grammar table and complete it with examples a–i from exercise 2.

4 Choose the correct options. If both are possible, choose both.

- 1 It was obliged / necessary to carry out a few more experiments, so we were required / meant to stay in the lab until the end of the day.
- 2 It's possible / prone that I didn't check the answers before I handed in my exam paper.
- 3 Imogen was supposed / required to get a scholarship for university, but something went wrong.
- 4 I don't know why I wasn't allowed / was forbidden to chew gum. It was actually meant / supposed to help me concentrate.
- 5 Kenny is likely / bound to be the last one to arrive, as always.
- 6 Scientific research says owning a dog is necessary / meant to be good for your health.

5 Rewrite the sentences using alternatives to modals.

- 1 You must have enjoyed the science museum visit.
- 2 Other scientists might take a different approach to the problem.
- 3 Paddy should have called me by now.
- 4 They don't have to follow the same procedure as us.
- 5 Helen needn't have been so frightened – it was only a small spider.
- 6 I can't go out this weekend.

6 What would you say to people who have these problems? Write 2–3 sentences for each situation using alternatives to modals.

- 1 I'm completely broke.
- 2 I never hand in my assignments on time.
- 3 I need to do research for my project, but I don't know how to get started.
- 4 My parents don't listen to me.

FAST FINISHERS

Imagine you are a pop star and you are supposed to write the lyrics to a song called *We are meant to be ...* Write the first four lines of the song.

Exercise 5

Possible answers

- 1 I'm sure you enjoyed the science museum visit.
- 2 It's possible that other scientists (will) take a different approach to the problem.
- 3 Paddy was meant to call / have called me by now.
- 4 There's no need for them to follow the same procedure as us.
- 5 It wasn't necessary for Helen to be so frightened – it was only a small spider.
- 6 I'm not allowed to go out this weekend.



▶ VIDEO 05

Key Grammar

Modals and alternatives to modals

Some modal verbs can be replaced with other verbs or phrases which express a particular modality. These modal alternatives can be used in various tenses, e.g. *You are/were/will be supposed to come on time.*

Modality	Modal verbs	Alternatives
obligation and necessity	have to/must/need to	It <u>was necessary</u> for all students <u>to</u> register a week in advance. ¹ <u>a/h</u> , ² <u>h/a</u>
no obligation or necessity	not have to/not need to	<u>There is no need to</u> read the whole document. <u>It was unnecessary to</u> involve the space agency.
advice and recommendation	should/ought to	We <u>are meant to</u> adopt a particular approach. ³ <u>e</u>
ability and willingness	can/be able to	The therapist <u>managed to</u> calm down the patient. ⁴ <u>c</u>
speculation	may/might/could/must/can't	The machine <u>is</u> very delicate and <u>prone to</u> break down. ⁵ <u>b/d/f/g</u> , ⁶ <u>g/b/d/f</u> , ⁷ <u>f/g/b/d</u> , ⁸ <u>d/f/g/b</u>
permission	can/could/may	<u>Are we allowed to</u> talk about the experiment in public? <u>You are permitted to</u> leave the room.
prohibition	mustn't/can't/couldn't	Tom <u>was forbidden to</u> publish his paper. ⁹ <u>i</u>

24 UNIT 2

Grammar Reference >> 36 Irregular verbs >> 158–159

Extra classroom activity

After exercise 3, students write two sentences, each referring to a different rule. Then they read the sentences aloud for other students to name the modality.

Online teaching

- For exercise 3, display the Key Grammar box on the screen and ask students to give their own examples to match the gaps.

- For exercise 5, ask students to send the sentences in the chat box.

Extra practice

- Extra Grammar Practice, Student's Book p149
- Workbook p19 and p113
- Photocopiable Worksheet 7, Teacher's Book p401
- Extra Practice Worksheet: Unit 2 Grammar, Teacher's Resource Centre
- On-the-Go Practice 2.2, Student's App

For next lesson

Ask students to make a list of situations when they will have to speak in public.

Testing

Grammar Short Test 2.2

Lesson materials

- Grammar Reference, Student's Book p36
- ▶ Video script, Teacher's Book p367

- 1 **SPEAK** Answer the survey questions.

- Are you happy with the length and quality of your sleep? Why/Why not?
- Do you regularly remember your dreams? If so, what sort of things do you dream about?
- Would you say that your sleep affects your general health and performance the following day? Why/Why not?

- 2 **SPEAK** Read the website advertisement. Would you consider going to one of the talks or signing up for a sleep study? Why/Why not?



**Do you love your sleep?
Do you feel you get enough –
or are you sleep-starved?**

We are setting up a series of **seminars and talks** about sleep, sleep myths and dream therapies.

Come along!

Or why not volunteer for one of our **sleep studies**?

There are options to take part in some in-house experiments where you stay over, or surveys, questionnaires and tests you can do at home. These will contribute to data being collected on sleep quality and its connection to memory.

Follow the **links** for more information.

- 3 **1.17** Listen to a conversation about the advertisement from exercise 2. What do the people agree on? What do they disagree about? *They agree that the speaker is a good writer and that analysing dreams symbolically is far-fetched/simplistic, but disagree about whether dreams have any real significance.*

- 4 **1.17** Study the Key Phrases box. Then listen to the conversation again. Which Key Phrases did you hear?

Key Phrases

Agreeing and disagreeing

Agreeing

Absolutely!
I'm totally with you on that! ✓
I've got to agree with you.
You can say that again.
You're definitely not wrong there.
You've got that right.
I couldn't agree more. ✓
Disagreeing
Sorry, but I just don't think it's right.
I'm sorry, I just don't agree with you here.
I'm afraid I (would) have to disagree with you on that.
I'm afraid I cannot completely agree.
Hmm, I'm afraid I'm not so sure. ✓
You really think so? ✓
Seriously? ✓
Sorry, I don't think it's for me. ✓
Quite the contrary. I would say ...

Partially agreeing

You're right, of course, but ...
I know that's true, but ... ✓
You've got a point, though ...
I agree in so far as ..., but ...
I guess you're right, though ...

- 5 **Read the comments on an article about the value of keeping a dream journal. Complete the comments using the Key Phrases. Do you agree with either poster? Why?**



Olly05

Having read the article, I'm afraid I cannot ¹ completely agree. While I agree in ² so far as reading about old dreams can be fascinating, just as the entries in any diary can be, I would ³ have to disagree with the writer's opinion that it can help us understand issues we have or help with our psychological well-being. Quite ⁴ the contrary, I would think re-reading about nightmares could be counterproductive.



Sleepyhead17

I've ⁵ got to agree with the author. Writing down your dreams as soon as you wake up is a great idea. Otherwise, they disappear really rapidly. I also think he's got it ⁶ right in saying that we can get inspiration from our dreams. Paul McCartney of The Beatles dreamed the melody for the famous song 'Yesterday' and wrote it down when he woke up. And when the author says we can learn a lot about our feelings from dreams – I couldn't agree ⁷ more! Dream on!

- 6 **SPEAK** Read the instructions and do the speaking task. Student A, look at page 156. Student B, look at page 160.

FAST FINISHERS

- Write a short blog post or an online review about your experience volunteering on the sleep study in exercise 2.**

Professionals can evaluate sleep quality through sleep studies and instruments such as the **Pittsburgh Sleep Quality Index (PSQI)**. The PSQI is a series of questions about sleep-related behaviours and is used in both clinical and research settings.

Extra classroom activities

- As a lead-in, have a short class survey on the quality of sleep. Ask students the following questions: *How long does it take you to fall asleep? How long are you asleep in bed? How often do you wake up during sleep? For how long? Do you have difficulty getting up in the morning or concentrating during the day? Do you doze off or find yourself napping frequently?* Students analyse each other's answers in pairs and speculate about the quality of sleep.

- After exercise 6, ask students to do the task again in different pairs.

Online teaching

- For exercise 3, display the Key Phrases on the screen. Ask one volunteer to read them aloud. Ask students to recall which phrases were used in the dialogue.
- For exercise 5, say one or two sentences to each individual student and ask them to react using the Key Phrases.

Extra practice
Workbook p20

For next lesson

Ask students to think of a future development they are afraid of.

Lesson materials

- Model answer to exercise 6, Teacher's Resource Centre
- Audio script, Teacher's Book p346

Exercise 2

- Our senses are linked at birth, and although we lose the majority of these links, we do not lose them all. This accounts for examples of multisensory perception.
- Hearing colour, tasting sound, the colour red exacerbating pain and classical music improving the taste of chocolate.
- She asks for readers' experiences of multisensory perception.
+ Students' own answers

Exercise 3

the inability to feel pain, seeing far more colours than normal, a heightened sense of smell that can identify a disease



VIDEO 06

It is estimated that around four percent of the population have **synaesthesia**, a rare condition in which one sense is connected to another. One of the most common types is **grapheme-colour synaesthesia**, when letters and numbers are associated with a particular colour. Another type is **chromesthesia**, in which sound is associated with colour; musicians Pharrell Williams and Lady Gaga both claim to have it. Some scientists think that the artist van Gogh may have experienced synaesthesia because in letters to his brother, he described how sounds had colours and they say that the flowing brushstrokes in his paintings may reflect this. Some scientists link the condition with an exceptional ability to remember things and with creativity.

2.4 Reading

An article about supersenses



1 SPEAK Answer the questions.

- Which of your senses is the strongest/the weakest? How does it affect your everyday life?
- Do any sensory experiences bring back particular memories? Consider the things below.

sights smells sounds tastes things you touch

- Look at the pictures. Have you come across the term *synaesthesia* before? If yes, what does it mean? If no, guess what it might mean.

2 1.18 SPEAK Listen and check your ideas about synaesthesia in exercise 1. Then answer the questions.

- How do scientists explain synaesthesia?
- What examples does Kayla give of multisensory perception?
- What is Kayla's final question? Answer it.

3 1.19 Read the article on page 27 about people with rare medical conditions. Which 'supersenses' are mentioned?

4 WATCH OUT | SKILLS box. Then read the article again and match sentences A-E to gaps 1-4 in the text. There is one extra sentence.

- Clinicians studying the case believe she must have been born with four types of cone cells (cells that respond differently to light wavelengths) in her retina instead of the usual three.
- In addition to this, without the restriction of pain, people indulge in risky and dangerous behaviour.
- Years later, at a patients' support group, Joy picked up the same smell on others suffering from the same disease.
- After this kind of procedure, patients usually need strong painkillers, but doctors were astonished to find that their patient experienced little or no discomfort.
- On the contrary, such conditions have remained undiagnosed until serious symptoms emerge.

WATCH OUT | SKILLS

Links

When matching sentences to gaps, look for references in the text fragments preceding and following the gap. These could be words like *he, she, this* or *however, as a result*, etc. The sentence may also exemplify something stated before.

5 Read the article again and complete the sentences.

- Ashlyn's eye problem was bewildering because *she appeared to suffer from no pain / she didn't seem to feel any pain*.
- Insensitivity to pain is dangerous, as it can leave *(serious) health problems unidentified (and untreated)*.
- When attending *a patients' support group for Parkinson sufferers*, Joy noticed a smell she was familiar with.
- What the people described in the article have in common is that *they all have rare multisensory conditions*.

6 KEY WORDS Match the highlighted words and phrases from the article on page 27 to definitions 1-8 below.

- debilitating* – causing severe weakness
- in the dark* – unaware of something
- alleviate* – ease
- pay a visit* – go to see
- heightened* – extremely sensitive, increased
- came to light* – was identified/discovered
- progressive* – worsening
- came about* – happened

7 Complete the sentences with the correct forms of some of the highlighted words from the article.

- Some visually impaired people report a(n) *heightened* sense of hearing.
- After the accident, Tanya experienced *debilitating* pain and could hardly walk across the room for several weeks.
- Massage can *alleviate* sore muscles and promote relaxation.
- I have no idea, I am as much *in the dark* as everyone else.
- It recently *came to light* that research into the condition was halted because of the expense.

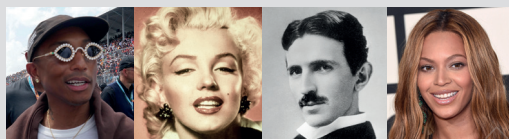
8 Answer the questions.

- How does a person benefit from a 'sensory superpower' – a particularly strong sense of touch, sight, hearing, smell or taste? Are there any disadvantages?
- Do you think humans can have a 'sixth sense'? What could it be?

FAST FINISHERS

Which of your senses do you value most? Think of three reasons.

Find information about someone famous who has/had a form of synaesthesia. Share your findings with the class.



Extra classroom activities

- As a lead-in, ask students the following questions:
Would you rather:
- *never listen to music or never watch a film?*
- *lose your sense of touch or your sense of smell?*
- *have an extra nose or an extra ear?*
- For exercise 3, after reading the text for the first time, ask students to summarise it in Polish.

- After exercise 8, ask students what information from the text they find the most interesting / surprising / shocking. Tell students to answer the question using at least one Key Word/Phrase from the text.

Online teaching

For exercise 8, put students into two groups in breakout rooms. Assign each group one topic. When they finish, put them back together and ask one person in the group to report the discussion.

Extra practice

- Workbook p21
- Extra Practice Worksheet: Unit 2 Reading, Teacher's Resource Centre

For next lesson

Ask students to do exercise 1 on page 28.

Lesson materials

Video script, Teacher's Book p367

SUPERSENSES HELPING US TO DISCOVER MORE

There's still so much within medical science that we don't understand, in particular related to the brain. But, with the help of some people with rare sensory conditions, scientists have made some important discoveries that could affect how such maladies are treated in the future.

When American Ashlyn Blocker was six months old, her parents observed a nasty inflammation in her left eye which, although distressing to look at, did not appear to be causing any noticeable discomfort. Ashlyn had always been a quiet baby – she seldom cried – but the worried parents **paid a visit** to a doctor. After tests, Ashlyn's very rare condition **came to light** – she could not feel any pain.

Another person who experiences no pain is Jo Cameron, a retired teacher from Scotland, who didn't discover she was different until the age of sixty-five, when she had to have an operation on her hands because of arthritis. ¹ **D** Researchers at University College London analysed samples of Jo's DNA and found that she had a genetic mutation that reduces her pain sensation.

The condition, congenital insensitivity to pain, only affects a few hundred people worldwide, and premature death among sufferers is common. The reason is clear – pain is the body's warning sign that something is wrong, and without this warning, severe problems such as appendicitis remain unidentified and can be left untreated. ² **B** They never learn how to modify their physical activity and ultimately damage their bodies. Researchers now hope to be able to learn more about this mutation in order to develop more effective pain treatments.

Genetic studies like this are becoming more and more widespread as scientists attempt to unlock the mysteries of our DNA. The human eye can normally make out around one million different colours, but a genetic mutation enables the Australian-born artist Concetta Antico to distinguish one hundred times that number. ³ **A** Scientists hope that research into her condition may lead to a major breakthrough in understanding how the brain processes colours, which might help us to understand colour-blindness, affecting around eight percent of men and one in two hundred women.

Concetta Antico is not alone in possessing a sensory 'superpower'. Joy Milne, from Perth in Scotland, is a 'super smeller'. She has a **heightened** sense of smell, which allows her to detect smells that other people can't. Joy has been working with researchers on a test that could help doctors with early detection of a **progressive** brain disorder. It all **came about** when she noticed an unusual odour on her husband, a Parkinson's disease sufferer, which she knew couldn't have had anything to do with his personal hygiene. ⁴ **C** With Joy's help, researchers have been able to identify specific compounds on the skin of people who suffer from this **debilitating** condition.

The new field of study into human DNA has provided an understanding of rare sensory conditions and their causes, which scientists had previously been completely **in the dark** about. Now, owing to people like Joy and Jo, scientists and researchers can potentially make great strides in treating and **alleviating** the symptoms. And there are certainly more fascinating discoveries to be made.



Concetta Antico The Swans

Congenital analgesia, or **congenital insensitivity to pain (CIP)**, is an extremely rare condition that is thought to be suffered by only a few hundred people worldwide. It was first reported in 1932 by an American doctor, George Dearborn. Scientists think that one of the reasons it is so rare is because most people with the condition never reach adulthood. However, social media has brought people with the condition to scientists' attention, and they are now studying people with CIP with the hope of understanding pain better.

Exercise 1

1 Students' own answers

2 Possible answers:

astronauts: Yuri Gagarin, Valentina Tereshkova, Alan Shepard, John Glenn, Neil Armstrong, Buzz Aldrin, Michael Collins, Jim Lovell, Mirosław Hermaszewski
astronomers: Aryabhata, Nicolaus Copernicus, Galileo Galilei, Johannes Hevelius, Isaac Newton, Edmond Halley, Edwin Powell Hubble, Stephen Hawking, Anneela Sargent, Aleksander Wolszczan, Neil deGrasse Tyson
comets: Halley, Encke, Swift-Tuttle, Hale-Bopp, Shumaker-Levy 9, Tempel 1, Hyakutake, McNaught, Kohoutek
constellations: Andromeda, Aquarius, Cancer, Cassiopeia, Gemini, Orion, Perseus, Sagittarius, Triangulum, Ursa Major, Ursa Minor, Virgo
dwarf planets: Pluto, Ceres, Orcus, Salacia, Haumea, Makemake, Eris
galaxies: Milky Way, Andromeda, Triangulum, Magellanic Clouds, Messier 81, 82, 83, Cartwheel
planets of the Solar System: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune
space missions: Vostok, Sputnik, Gemini, Apollo, Soyuz, Voyager, Discovery, Stardust, Rosetta
telescopes: Galileo's refractor, Newton's reflecting telescope, Very Large Array (VLA), Keck telescopes, Wilkinson Microwave Anisotropy Probe (WMAP), Hubble Space Telescope, Kepler telescope, James Webb Space Telescope

Exercise 2

Because he is extremely knowledgeable and enthusiastic about astronomy, and he can explain even the most complex concepts in a relatively simple and engaging way.

2.5

Vocabulary

The **James Webb Space Telescope**, launched on 25 December 2021, is a space telescope which conducts infrared astronomy. Due to its advanced technology, it can investigate objects that are too old, too distant or too unclear for the **Hubble telescope** (the previous telescope, launched in 1990). The first images recorded by Webb reached the Earth in July 2022.

The **Apollo programme** is the US human spaceflight project carried out by NASA. It included several missions, out of which Apollo 11 is the most famous – it was in 1969 when Neil Armstrong and Buzz Aldrin landed on the Moon.



1 SPEAK Answer the questions.

- 1 Imagine the sky on a clear night, away from the light pollution of cities. What can you see?
- 2 Look at the words and phrases from the box. Can you name one example for each?

astronaut astronomer comet constellation
dwarf planet galaxy planets of the Solar System
space mission telescope

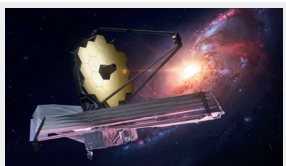
2 1.20 Listen to a podcast about a documentary series. Why is the speaker impressed by Brian Cox?

3 1.20 KEY WORDS Complete the sentences from the podcast with the highlighted words and phrases below. There is one extra word. Then listen to the podcast again and check.

asteroids • atmospheres • black holes • eclipse
meteorites • Northern Lights • orbit • outer space
shooting star

- 1 His commentaries take you on imaginary journeys to outer space, during which you orbit far-distant planets and learn about their atmospheres and characteristics.
- 2 This man can explain the creation of black holes with seeming ease.
- 3 And he himself is still excited by the dramatic visual effects of the Northern Lights, or a partial eclipse, or a(n) shooting star.
- 4 Films like *Don't Look Up* bring the terrible destructive power of comets and asteroids to our screens.

4 1.21 Look at the photos. What do you think they show? Read and listen to the article and check your ideas.



Telescopes come in all shapes and sizes, but nothing compares to the James Webb Space Telescope that is now positioned in outer space a million miles from

Earth, ready to start exploring the depths of **the cosmos**. Astronomers hope that it will help them look into the past and find out about how galaxies were formed. Telescopes have always been astronomers' main tools to see further and further into the vastness of space, more and more light years away, and try to **piece together** the nature, structure and future of the **observable universe**. This latest telescope has been in development for over thirty years, the launch having been delayed several times, and it has involved the global collaboration of thousands of scientists, engineers and technicians. It is a **groundbreaking** achievement built on **collective knowledge**. It has a sunshield roughly the size of a tennis court, protecting its primary mirror from the Sun's heat. The mirror, with a total width of 6.5 metres, is made up of eighteen hexagonal, gold-coated segments. It is used to collect **infrared light**, which will allow the telescope to see deep into space, into **interstellar clouds**, where star systems form. The first full-colour images from the JWST showing far-flung galaxies as

5 KEY WORDS Translate into English. Use some of the highlighted words and phrases from exercises 3 and 4.

- 1 Collaboration, co-creation and collective knowledge (*wiedza zbiorowa*) are increasingly important in designing, developing and deploying 'smart' initiatives and technologies.
- 2 However much we learn about the observable universe, our insatiable curiosity (*nasza nienasycona ciekawość*) will lead to more telescopes, more exploration and more groundbreaking achievements (*więcej przełomowych osiągnięć*).
- 3 A complete understanding of the cosmos (*kosmosu*) as a harmonious and orderly system is probably impossible.
- 4 Visitors to the Space Station marvel at the changing views as they orbit the Earth (*okrążają Ziemię*).
- 5 Astronomers are trying to piece together (*złożyć w całość*) the history of Mars and find out how the sister planet to Earth became a red, dusty desert.
- 6 In science-fiction films, it is quite common for people to launch missions to destroy asteroids and comets (*niszczyć asteroidy i komety*) that threaten Earth.

6 SPEAK Answer the questions.

- 1 Do you think it is more crucial to study outer space or the depths of the oceans on Earth? Why?
- 2 What do you think is likely to result in more scientific progress: global collaboration or competition? Why?
- 3 Imagine it's the year 2080. What have astronomers discovered? What are they actively researching?

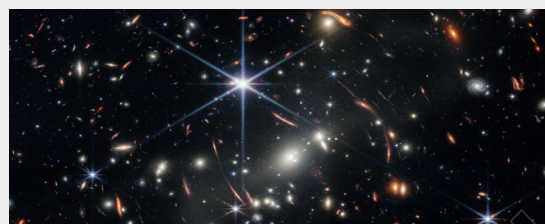
FAST FINISHERS

Make a list of five things of personal interest that you would take on a six-month space mission.

Search the web for information about the failed Apollo 13 mission. Find out what went wrong, what the cause of the failure was, how it was fixed and how the mission ended.

they were thirteen billion years ago were released in July 2022. President Joe Biden described the moment as 'historic'.

Now the burning questions are: how much will the Webb Telescope be able to tell us? What wonders will the next, even bigger and further-reaching telescope bring us? And will man's **insatiable curiosity** about his place in the universe ever be indulged?



Extra classroom activity

As a lead-in, ask students the following questions: *Are you a stargazer? What makes people peer at the sky?*

Online teaching

- Find online some photos showing: black holes, meteorites, an eclipse, a shooting star. Display them on the screen before the lesson and ask what they are.

- For exercise 5, students pair up and send each other the answers for their partner to check.

Extra practice

- Workbook p22
- Photocopiable Worksheet 8, Teacher's Book p402
- Extra Practice Worksheet: Unit 2 Vocabulary, Teacher's Resource Centre
- On-the-Go Practice 2.5, Student's App

For next lesson

Ask students to think about the following question and prepare some examples: *How does science help the disabled?*

Testing

Vocabulary Short Test 2.5

Lesson materials

- Audio script, Teacher's Book p346

A talk about prosthetics

1 **SPEAK** Answer the questions.

1 How easy is it for people with disabilities to get around in your area? Think about:

shopping learning entertainment
transport

2 What could be done to make your area more accessible? Who should be responsible for carrying out the changes?

2 **1.22 KEY WORDS** Complete the highlighted phrasal verbs with the correct particles. Check in a dictionary if necessary. Listen and check.

- A service engineer came to the lab to **hook up** the computer to the printer.
- The engineers **looked at** different ways to make the robotic hand move.
- I wasn't sure whether to **bring up** the subject of his injury.
- Everyone found it difficult to **take in** all the information – it was way too complicated.
- The pill managed to **take away** the pain, but the patient still couldn't eat anything.
- Did you **plug in** the mouse?
- The child was changing so rapidly that no one could predict whom he would eventually **take after**.
- You'll have a chance to **show off** your computer skills later on.
- Let's **go over/through** the calculations again to make sure they're correct.
- Can we **rely on** your brother to help us with the experiment?

3 **WATCH OUT** Read the **WATCH OUT** box below. Then look back at exercise 2, find sentences which contain separable phrasal verbs and rewrite them, moving the direct object before or after the preposition.

1 A service engineer came to the lab to hook the computer up to the printer.

WATCH OUT**Phrasal verbs**

Transitive phrasal verbs (those which take a direct object) can be separable or inseparable.

Separable: ✓ The pill takes the pain away.
✓ The pill takes away the pain.
✓ The pill takes it away.

BUT: ✗ The pill takes away it.

Inseparable: ✓ Do you rely on your parents?
✓ Do you rely on them?

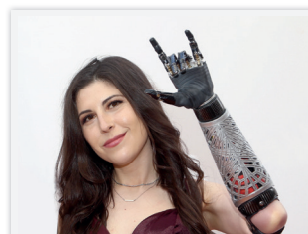
BUT: ✗ Do you rely your parents on?
✗ Do you rely them on?

4 **1.23** Listen to the extract of a talk about prosthetics. Which three disabilities does the speaker mention?

someone born without a hand, someone paralysed, someone blind



3D-printed exoskeleton prototype



Angel Giuffria

5 **1.23** Listen again and complete the sentences.

- When she was a child, Angel Giuffria's prosthetic hand had rubber 'skin' in order for it to **look real / look like a real hand**.
- After getting her new arm and doing an ad, Angel managed to get some parts in **series and films**.
- The German engineers developed the exoskeleton with Juliano and **seven/several other** people.
- Juliano wears a backpack which contains **a computer controlling / to control** the exoskeleton.
- The glasses that Fran wears have a camera which is **(much) like the one / similar to a camera** on a mobile phone.
- For the time being, Fran can only see shapes in **black and white**.

6 **1.23** Listen again and answer the questions.

- Why does Angel prefer her new prosthetic arm to the previous one?
- How did Juliano show off his exoskeleton in 2014?
- How did Fran's disability develop?
- What does Fran's 'bionic eye' enable her to do at the moment?
- Why is Fran currently receiving training?

7 **1.24** Read the **WATCH OUT** box below. Then listen and repeat the phrasal verbs from exercise 2.**WATCH OUT****Stress in phrasal verbs**

Phrasal verbs can have two different stress patterns:

- stress on the main verb, e.g. 'care for
- stress on the particle, e.g. go a 'way turn 'on

8 **SPEAK** Answer the questions.

- Which of the three examples of advances in prosthetics do you think is the most remarkable? Why?
- Do you think scientists will eventually be able to transplant all the organs in the human body? Why/Why not?
- Which do you think scientists should prioritise: the prevention of disease and disabilities through genetic engineering, or treatments and ways of dealing with them? Why?

FAST FINISHERS

Write a forum post with a short review of a cutting-edge device that you have recently bought.

Find out about the latest developments in prosthetics for one of the impairments mentioned in the recording. Share your findings with the class.

Exercise 3

- I wasn't sure whether to bring the subject of his injury up.
- Everyone found it difficult to take all the information in – it was way too complicated.
- The pill managed to take the pain away, but the patient still couldn't eat anything.
- Did you plug the mouse in?
- You'll have a chance to show your computer skills off later on.

Exercise 6

- Because it doesn't pretend to be real and it looks glamorous.
- He took the first kick in the 2014 FIFA World Cup.
- The/A disease slowly took away her ability to see light.
- She can detect dark and light shapes and move around familiar places.
- To improve her ability to see with her new eye.

prosthetics – an artificial body part that replaces a missing part
bionic eye – a visual prosthesis, an artificial eye whose function is to restore a sense of vision to a person
genetic engineering – a process that uses laboratory-based technologies to alter the DNA makeup of an organism

Extra classroom activities

- As a lead-in, draw a 5x5 grid on the whiteboard, with a mix of letters (you can repeat some letters and try to include each vowel at least once). Tell students to create as many phrasal verbs as they can with the letters within two minutes – they can use each letter on the board once in each phrasal verb. Students work in groups of three. They score one point for each phrasal verb. When students finish, elicit the phrasal verbs together

with their definitions. Providing the definition is required to get a point.

- For exercise 2, students write sentences with five phrasal verbs of their choice.
- For exercise 7, ask students to underline the stressed word in each phrasal verb.

Online teaching

For exercise 8, ask students to choose one topic and make it into a short speech, which they record.

Extra practice

- Workbook p23
- Extra Practice Worksheet: Unit 2 Listening, Teacher's Resource Centre

For next lesson

Ask students to finish the sentences:

A good astronomer must be ____

A successful scientist can't have ____

Lesson materials

Audio script, Teacher's Book p346

- 1 **SPEAK** What are the most important characteristics of a good scientist?

- 2 **1.25 SPEAK** Read and listen to the text and answer the final question.

Exercise 3

- He must have been a truly open-minded scientist, to the point that he may have occasionally missed the mark in his own speculations.
- Making wild hypotheses before running an experiment might actually be a good idea as it could open up completely new possibilities.
- Scientists may still be holding the centuries-long dispute on how research should be conducted.
- And, as long as they research the topic properly later on, it definitely won't cause any trouble if a scientist is creative and imaginative.



Scientists **may** still **be holding** the centuries-long dispute on how research should be conducted. According to Peter Achinstein, the author of the book *Speculation: Within and About Science*, in the past even the most famous among researchers showed contradictory attitudes towards the role of assumptions in science. Isaac Newton, for example, condemned the use of hypotheses and would urge fellow scientists to establish experiment-based facts. In contrast, Albert Einstein would encourage researchers to speculate freely in order to create theories they could later test and provide evidence for or refute. He **must have been** a truly open-minded scientist, to the point that he **may have** occasionally **missed** the mark in his own speculations. So, should speculation be a part of science? Making wild hypotheses before running an experiment **might** actually **be** a good idea as it **could open up** completely new possibilities. And, as long as they research the topic properly later on, it **definitely won't cause** any trouble if a scientist is creative and imaginative. Do you agree?

- 3 **VIDEO** Study the grammar table and find examples for rules 1–4 in the text in exercise 2.



VIDEO 07

Key Grammar

Speculation and deduction (past, present and future)

Speculating is making a logical deduction about the past, present or future. The choice of modal demonstrates the degree of certainty of the speculation.

- 1 We use **must / may (not) / might (not) / could (not) / can't + have + past participle** to speculate about past states and events:

She **must have been** very lonely. (= I'm sure she was.)

Sara **may/might/could have forgotten** the formula.

(= It's possible that she did.)

Ben **can't/couldn't have conducted** it all by himself.

(= It's impossible that he did.)

- 2 We use **must / may (not) / might (not) / could (not) / can't + infinitive** to speculate about present states:

You **must think** I'm foolish. It **can't be** true.

- 3 We use **must / may / might / could / can't + be + gerund** to speculate about ongoing events:

Rachel **must be sleeping**.

Ron **can't be talking** to them.

They **might be crossing** the border as we speak.

- 4 We use **may (not) / might (not) / could + infinitive** and **will probably / definitely or probably / definitely won't + infinitive** to make speculations about the future:

Pets infected with this virus **may or may not get** sick.

We **will definitely publish** your valuable works.

Grammar Reference >> 36 Irregular verbs >> 158–159

- 4 **VIDEO** Complete the sentences with one word in each gap.

- Larry is really good at science. He will definitely study physics at university.
- This is a superb presentation. They must have done a lot of research.
- The baby almost didn't cry at all when they gave her the injection. It can't/couldn't have hurt very much.
- Let's face it – the exam questions may/could/might turn out much more difficult than we expect.
- Pam looks nervous, and to be honest, she may not be telling us the whole truth.
- Clive can't have expected to get away with plagiarism and forging research results.

- 5 **VIDEO** Complete the sentences using modal verbs and the correct forms of the verbs in brackets. There may be more than one correct answer.

- You haven't answered any of my questions correctly. You can't/couldn't have read (read) the article before class.
- Be careful. Using these chemicals in your experiment may/might/could be (be) extremely dangerous.
- I heard a noise, and I was sure one of the metal chairs must have fallen (fall) over.
- You can't/couldn't have seen (not see) me in town yesterday – I was in the library all day.
- This research was very thorough – it must have taken (take) a pretty long time.
- It's not working. I suspect we might be using (use) the wrong procedure.

- 6 **SPEAK** Work in pairs. Look at the photo and speculate about what the scientist might have already done/discovered, what she could be doing and what she may/will achieve.



#BRAINTEASER

It can be held without touching or using your hands. It might be difficult to catch once you stop running. *Your breath*



FAST FINISHERS

VIDEO Think of a series you are watching at the moment and make speculations about the plot. Write four sentences.

Extra classroom activities

- After exercise 3, ask students to open the book on a random page with a photo and to make speculations about what they can see, e.g. *They must be tired. They can't be very happy. They might be stressed.*
- For exercise 5, ask students to write three sentences in Polish with various speculations and deductions. Then point to individual students

to read the sentences aloud for the whole class to translate into English.

Online teaching

For exercise 5, display unclear photos or parts of images on the screen. Ask students to make speculations.

Extra practice

- Extra Grammar Practice, Student's Book p149
- Workbook p24 and p113
- Photocopiable Worksheet 9, Teacher's Book p403

- Extra Practice Worksheet: Unit 2 Grammar, Teacher's Resource Centre
- On-the-Go Practice 2.7, Student's App

Testing

Grammar Short Test 2.7

Lesson materials

- Grammar Reference, Student's Book p36
- VIDEO** Video script, Teacher's Book p367

1 **SPEAK** If you were a world-famous scientist, what field would you want to make a major breakthrough in? How would it be useful?

2 **Match** the words from box A to the words from box B to make collocations.

A alleviate be in black come to light outer partial pay piece shooting

B a visit eclipse holes light space stars the dark the symptoms together years

3 **Translate** into English. Use some of the collocations from exercise 2.

- Can at-home self-care measures help alleviate the symptoms (złagodzić objawy) of COVID-19?
- There is no need to pay a visit (Nie ma potrzeby składać wizyty) to the clinic unless the matter is really urgent.
- Look how surprised he is! He must have been in the dark (z pewnością nic nie wiedział) about the counterfeit products.
- They can't still be piecing together (niemożliwe, żeby nadal składali w całość) the circumstances of the crime. It's been a month!
- We were (going) to watch shooting stars (Mielśmy oglądać spadające gwiazdy), but the night was too dull and we didn't see a single spark.
- The concept of light years can't be so difficult (łatwotnych nie może być tak trudny) to understand.
- When are we required to hand in (jesteśmy zobowiązani oddać) the project about black holes?

4 **1.26** **Complete** the text with the words from the box. There are two extra words. Listen and check.

analyse approach breakthrough conducting demonstrate evidence making procedure processing scrutinising

How many planets are there in the Solar System? Most people would answer 'eight', since we now know that Pluto is a dwarf planet. But astronomers are still trying to figure out our planetary system, and some are ¹ conducting research into a possible 'Planet Nine'. A scientist at the California Institute of Technology, Konstantin Batygin, is attempting to ² demonstrate the possibility of the existence of this ninth planet by carefully ³ scrutinising the orbits of objects beyond Neptune. Batygin is trying to provide ⁴ evidence that a massive invisible planet is pulling these objects towards it. Several experts who have read Batygin's work agree that this might be a major ⁵ breakthrough in astronomy. To look for this mysterious ninth planet, astronomers have to follow a basic ⁶ procedure, which is to ⁷ analyse millions of telescope images, but ⁸ processing this amount of data could take years.

5 **Choose** the correct options.



Laughter therapy in the park

I thought I ¹ must have been dreaming when I saw a group of people standing in the local park, all laughing out loud. It looked very odd. I watched for a while to try to work out what was going on. The ages of the people in the group ² might have ranged from twenty to sixty years old, and I thought the person in the middle could be the organiser or a therapist. I discovered from another passer-by that it was a 'laughter yoga' group. She told me that everyone was ³ allowed to join in, and all you were ⁴ supposed to do was to start laughing. Your deliberate laughing would turn into spontaneous, uncontrollable laughter. This type of yoga is based on the belief that laughter boosts your health. Studies indicate that laughter increases blood flow, and therefore it ⁵ could be protected you against heart disease. There is also evidence that laughter can reduce pain and even burn calories. My grandmother always used to say laughter is the best medicine – she ⁶ will definitely be right.

- | | |
|------------------------------------|----------------------------|
| 1 A must have been dreaming | B had to be dreaming |
| C must have been dreamt | D had to dream |
| 2 A might be ranging | B might have ranged |
| C could've been ranged | D could range |
| 3 A meant | B likely |
| C bound | D allowed |
| 4 A necessary | B forbidden |
| C permitted | D supposed |
| 5 A could have protected | B may have been protected |
| C may protect | D could be protected |
| 6 A can't have been | B might have been |
| C could be | D will definitely be |

6 **SPEAK** **Write** down your opinion on the following issues. Then read out your opinions to each other and take turns to agree or disagree. Use the Key Phrases on page 25.

- higher salaries for scientists
- the influence of scientific progress on our future
- more hours of biology, physics and chemistry per week in secondary schools

FAST FINISHERS

Write a forum post in which you disagree with one of your partner's opinions from exercise 6.

Exercise 2

alleviate the symptoms, be in the dark, black holes, come to light, light years, outer space, partial eclipse, pay a visit, piece together, shooting stars

The idea of a 'Planet Nine' has been arousing interest in the scientific community since 2014. A team of astronomers led by Juliette Becker at the University of Michigan in the USA have been tracking a recently discovered asteroid called 2015 BP519 and have concluded that its unusual orbit is due to it being pulled towards a large unseen planet. If there is a ninth planet in our Solar System, it would be an incredibly exciting discovery. However, finding the new world will be extremely challenging because its great distance from the Sun means it will be very difficult to see.

The saying 'laughter is the best medicine' reflects the long-held belief that laughing is good for our physical and mental health. However, scientists now have concrete proof that it's true: laughter strengthens the immune system, decreases the sensation of pain, boosts mood and helps alleviate the symptoms of stress. Researchers in Norway even found that people with a strong sense of humour live longer than people who laugh less often. The reason? Laughter causes endorphins, the body's natural feel-good chemicals, to be released into the bloodstream, making us feel more positive, relaxed and happy.

Extra classroom activities

- As a lead-in, have a class debate. Set the topic: *Science and creativity make the world a better place*. Divide the class into two groups – one group gathering arguments for and one against. Assign the role of the moderator. Give students time to prepare.
- For exercise 6, while preparing the speech, students have to use at least five vocabulary items from unit 2.

Online teaching

For exercise 1, put pairs of students into breakout rooms to discuss the questions. Then change pairs and breakout rooms so that each student can tell another one what they have found out about their partners. Make sure the time limit for the second part of the activity is shorter.

Extra practice

Workbook p25

For next lesson

Ask students to do exercise 1 on page 32.

2.9 Writing

A for-and-against essay

- 1 **SPEAK** Would you like to join a private space mission if money was not an issue? Why/Why not?
- 2 Read the essay. What do you think the task may have been? Which arguments do you find more convincing – *for* or *against*?
- 3  Read the essay again and answer the questions.
 - 1 Where can you find the thesis? *In the introduction*
 - 2 Which pattern does the main body of the essay follow: a or b?
 - a Paragraph 2: argument 1 'for' + explanation, argument 2 'for' + explanation
Paragraph 3: argument 1 'against' + explanations, argument 2 'against' + explanation
 - b Paragraph 2: argument 'for' + explanation + examples
Paragraph 3: argument 'against' + explanation + examples
 - 3 Does the author give his/her opinion? *no*
 - 4 Which sentences are true?
 - a It is enough to give one argument of each kind as long as it is developed and supported with examples. *true*
 - b If you give several arguments in a paragraph, it is enough to enumerate them.
 - c You can give two arguments 'for' and three arguments 'against' as long as both sides of the issue are still balanced. *true*
 - d In the conclusion, you have to say which arguments are more convincing.
 - e The conclusion repeats the thesis, but in different words. *true*

- 4 Study the Key Phrases box. Which Key Phrases did the writer use in their essay?

Key Phrases

A for-and-against essay

Introduction

It is often/widely claimed/suggested that ...

... has been generating considerable publicity. ✓

It is generally believed/held that ...

Some/Many people/experts/scientists/critics ... are in favour of/against ..., while others ...

Presenting benefits and drawbacks

There is/could be an element of truth to the idea that ...

There is some legitimacy to the idea ... ✓

To a certain/major extent ...

A definite plus ...

The advocates argue that ...

One outstanding advantage is ...

There are substantial/significant gains for ...

The opponents of ... may claim that ... ✓

A major stumbling block might be that ...

The principal/most serious drawback ... ✓

This could seriously undermine ... ✓

Conclusion

Overall, ...

... seem right up to a point. ✓

All things considered, ...

Having considered all the arguments/analysed both lines of argumentation, ... ✓

All in all / On balance, ...

The commercial space industry has been generating considerable publicity and has triggered a discussion between those who consider privatised space exploration beneficial and those who mainly see its downsides. Let us take a closer look at the arguments of both sides.

The advocates argue that there is some legitimacy to the idea of private funds supporting space agencies. It is common knowledge that space exploration involves enormous costs, which might be borne by private equities. What is more, such companies are very competitive, which actually favours developing new technologies. With the involvement of innovative entrepreneurs, research conducted by agencies such as NASA might progress faster.

The opponents claim that the principal drawback of commercial space exploration is the fact that companies are always driven by profitability. While private institutions may claim they get involved for the sake of research and the future of mankind, their ventures still need to be financially rewarding. In addition, commercialisation of space travel may take a wrong turn and lead to space journeys being organised at the whim of billionaires. This could seriously undermine decades of research of space agencies.

Having considered both sides, the arguments from supporters and those against commercial space exploration seem right up to a point. Although the private sector may contribute to rapid advances in the field, at the same time company bosses set their sights on boosting their profits.



32 UNIT 2

Extra classroom activities

- As a lead-in, write the following on the board: *A LEAP INTO SPACE FOR MONEY*. Ask students what they would expect to read about in an article with this headline.
- For exercise 7, ask students to compare their paragraphs in pairs.

Online teaching

- For exercise 4, display the Key Phrases box on the screen. Ask students to close their books and try to recall which phrases were used in the article.
- For exercise 8, put students into two groups into breakout rooms. One group gathers 4–5 arguments against participating in paid clinical trials, the other one arguments for. Then put the class together again and ask the

representatives of each group to share their arguments.

Extra practice

Workbook p26

Lesson materials

Model answer to exercise 9, Teacher's Resource Centre

5 Translate into English. Use the Key Phrases.

Possible answers

- 1 The opponents of these changes suggest (Przeciwnicy tych zmian sugerują) that scientists aren't well-paid, yet they can make a real difference to people's lives.
- 2 There is an element of truth to the claim (Jest nieco prawdy w twierdzeniu) that scientific subjects, such as computer engineering or biochemistry, are the fields of the future.
- 3 The most serious drawback of studying scientific subjects (Najpoważniejsza wada studiowania przedmiotów ścisłych) is that education can take many years, which extends the tuition fees to be paid.
- 4 It is generally believed (Ogólnie uważa się) that analytical skills make the prospects for work pretty good.
- 5 Having analysed all the arguments (Po przeanalizowaniu wszystkich argumentów), I can say that not everyone should consider a career in science.
- 6 Some scientists who publicly advocate their views are against the changes, while others (są przeciwni zmianom, podczas gdy inni) see the potential benefits.
- 7 Publishing the latest research results could seriously undermine (mogłoby poważnie podważyć) the government's policy.

6 Read essay topics 1–2 below and write down arguments for and against each of them. Think about how you could develop the arguments and what examples you could give.

- 1 The advantages and disadvantages of having more maths lessons per week.
- 2 Are electric cars a real blessing? Discuss.

7 Look back at the main body patterns in exercise 3. Then use your notes from exercise 6 to develop the beginnings of paragraphs below, following pattern a in one and pattern b in the other.

- 1 On the other hand, introducing more maths lessons per week would be demotivating for many students.
- 2 To begin with, electric cars mean substantial gains for the environment.

8 Read the introduction to a for-and-against essay and write the conclusion.

In the last few decades, we have witnessed numerous scientific advances in the areas of medicine, industry and technology, some of which were real breakthroughs. We were led to believe that all of those developments would make our lives better. However, it is not necessarily true, as the discoveries and innovations may have both benefits and drawbacks.

9 Do the writing task. Follow the steps in the Writing Planner.

Niektórzy ludzie decydują się na udział w płatnych badaniach klinicznych. Napisz rozprawkę na 200–250 słów, w której przedstawisz dobre i złe strony takiej decyzji.

WRITING PLANNER

THINK

Think about who might organise paid clinical trials (e.g. a pharmaceutical company testing a new drug, a research institute experimenting with a new form of treatment) and their reasons for doing so. Make a list of arguments for and against participating in them (e.g. for: supporting medical research, helping humankind, health benefits from the new treatment, considerable financial profit; against: health risk, physical and emotional strain, long-time commitment, could be time-consuming). Then add an explanation or an example to each argument.

PREPARE

Organise your notes into four paragraphs:

- 1 introduce the thesis; state that there are two sides to the argument,
- 2 provide arguments for/against with reasons and/or examples,
- 3 provide arguments for/against with reasons and/or examples,
- 4 mention the topic again and touch upon your arguments, but do it using different words.

WRITE

Write your essay. Remember to use formal language and a variety of expressions to introduce arguments.

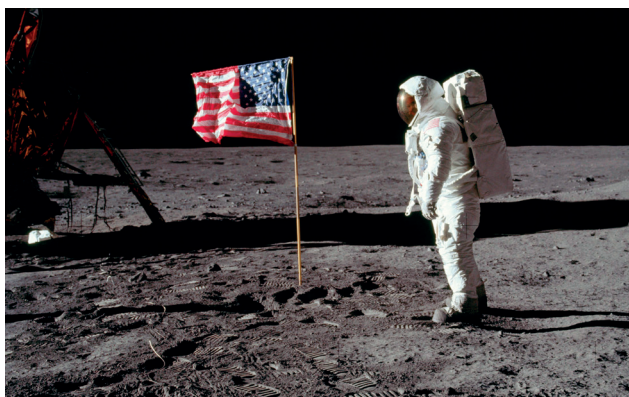
CHECK

Read your essay and answer the questions:

- Have you organised your essay into four paragraphs?
- Have you included and developed both sides of the argument?
- Is your text within the word limit (200–250 words)?
- Have you checked your essay for spelling mistakes?

 FAST FINISHERS

 Imagine you are Neil Armstrong and it's 1968. You have just been offered the chance to command Apollo 11, the first manned mission to the Moon. Make a list of arguments for and against accepting this offer.



VOCABULARY

- 1 Complete the sentences with the verbs from the box. Then search the web to answer the question in the last point.

adopt go over hook up orbit overcome
process take away test

- Our maths teacher would like to go over the quadratic equations with us again.
- Dr Carney tried to explain the theory to us, but it was so complicated that no one was able to process all the information.
- Did you manage to test your theory and determine whether it holds true?
- At the outset of the research, none of us expected there would be so many obstacles to overcome.
- For our experiment, we wanted to adopt a different approach from everyone else.
- We tried to hook the computer up to the projector, but the HDMI cable wasn't long enough.
- Patients might be administered a sedative to take away the feeling of distress and help them to calm down.
- Does the ISS orbit the Earth faster or slower than the Earth's own rotation?
The ISS orbits the Earth faster than the Earth's own rotation.



- 2 Complete each pair of sentences with the same word.

- a When the results of this experiment come to light, you will become famous.

b Rheumatologists have used infrared light to alleviate pain and inflammation.
- a I need to take notes carefully – how else would I take in all this information?

b People say I take after Aunt Lucy, but I can't see any resemblance, to be honest.
- a The whole team was really making great strides to finish the project on time.

b Helen was squinting her eyes, making out what the lecturer had written on the board.
- a Oh, come on, just plug the fan in! Clearly the battery has run out.

b We have all been in the dark about the real purpose of the experiments.

34 UNIT 2

GRAMMAR

- 3 Correct the mistakes in the sentences.

- These pills are obliged supposed to alleviate the pain after the operation.
- Dr Smith must be have been awfully disappointed when the experiment failed.
- The researchers will probably observing observe / be observing the animals for the next two months to collect enough data.
- Look at the dog running over there. It could have been be Mrs Doyle's new puppy.
- My teacher told me there was no it was not necessary need / to adopt a different approach.
- Is Frederick likely to drawing draw any conclusions any time soon?
- Their results might relied rely / have relied on incorrect data.
- You can't have been hooked up the equipment properly – otherwise it would work.

- 4 Complete the second sentence so that it means the same as the first one. Use the words in capitals.

- You should have written a report about the experiment, not the results. **WERE**
You were supposed/meant to write a report about the experiment, not the results.
- Do you think it's possible that scientists have had messages from aliens? **COULD**
Do you think scientists could have had messages from aliens?
- A lot of people were extraordinarily interested in that experiment. **MUST**
That must have been an extraordinarily interesting experiment.
- It's impossible that we are taking the biology test today. **CAN'T**
We can't be taking the biology test today.
- We mustn't enter the lab unaccompanied. **FORBIDDEN**
We are forbidden to go into the lab unaccompanied.

USE OF ENGLISH

- 5 Choose the correct options.

HOW DIET CHANGED THE WAY WE TALK

How did humans develop the ability to speak a language? And what causes certain sounds to exist in different languages? Scientists from different ¹ of study have been pursuing the matter for decades. A recent study ² the possibility that changes in human language may be connected to the rise of agriculture. Scientists ³ that eating different foods ⁴ the shape of our mouths to ⁵ differently. Then they ⁶ detailed research into how diet-induced changes in the human bite affect language. A team of analysts followed a complex ⁷, which involved sampling ⁸ amounts of data and ⁹ the findings together. Finally, they ¹⁰ prove that certain sounds were easier to pronounce for speakers who ate softer food. The study led to a major ¹¹ in our thinking about the role that diet, culture and human biology have played in the evolution of language.

Extra practice

- Workbook Revision p27
- Workbook Matura Practice pp28–29
- Photocopiable Worksheet 10, Teacher's Book p404

For next lesson

Ask students to explain how they understand the phrase: *to make the world a better place*.

Testing

Unit 2 Test

Lesson materials

- Model answers to exercises 7 and 8, Teacher's Resource Centre
- Audio script, Teacher's Book p346

- 1 A places
C approaches
- 2 ☒ A explored
C designed
- 3 A analysed
☒ C observed
- 4 ☒ A may have caused
C might cause
- 5 A emerge
C capture
- 6 ☒ A conducted
C analysed
- 7 A approach
C range
- 8 A divergent
☒ C substantial
- 9 A showing
C breaking
- 10 A succeeded in
C were prone to
- 11 A approach
☒ C breakthrough
- B varieties
☒ D fields
- B resulted
D approached
- B conducted
D processed
- B will cause
D can cause
- B orbit
☒ D evolve
- B observed
D followed
- ☒ B procedure
D system
- B insatiable
D ingenious
- B hooking
☒ D piecing
- ☒ B managed to
D were bound to
- B obstacle
D source

LISTENING

- 6 1.27 Listen to a podcast about weird science stories and choose the correct options.

- 1 What would cause an earthquake if Earth was made of blueberries?
A The rise in temperature.
☒ B The change in gravity.
C The expulsion of elements into space.
D The disappearance of the Earth's core.
- 2 What causes the smell in Uranus's atmosphere?
A The high concentration of ammonia.
B The drastically low temperatures.
C The lack of light in the atmosphere.
☒ D The abundance of hydrogen sulphide.
- 3 What was the cause of the orange snow?
A A rare phenomenon in North Africa.
☒ B Desert sand from the Sahara.
C Unusually low temperatures in North Africa.
D Warm air in the atmosphere.
- 4 Which is true about the manager of a local bat colony near Sydney?
A She was forced to leave the sanctuary.
B She managed to rescue a lot of bats.
C She made frequent visits to the colony to observe the situation.
☒ D She kept a record of the number of bats that had died.
- 5 Which of the following is stated in the podcast as a fact, not an opinion?
A The research Anders Sandberg did had pedagogical value.
☒ B The planet Uranus emits a foul odour.
C The mysterious precipitation in Romania, Bulgaria and Russia resembled the surface of Mars.
D The Australian animal rescuers were overwhelmed.

SPEAKING

- 7 Describe the photos and answer the questions.

Uczeń A



- 1 What do you think motivated these women to participate in this event?
- 2 In what areas of your life is technology important?
- 3 Describe a situation in which you or someone you know achieved something with the help of technology.

Uczeń B



- 1 What are the potential threats of creating robots?
- 2 Which of your daily duties would you like to have done by a robot or a machine?
- 3 Describe a situation in which a machine failed you.

WRITING

- 8 Read the instructions and do the task.

Coraz więcej osób uważa, że smartfony powinny być wykorzystywane przez uczniów do nauki podczas zajęć lekcyjnych. Napisz rozprawkę na 200–250 słów, w której przedstawisz dobre i złe strony takiego rozwiązania.

2.2 Modals and alternatives to modals

Znaczenie typowe dla czasowników modalnych można wyrazić również za pomocą pewnych utartych wyrażień.

Modal verbs	Alternatives	
Obligation or necessity		
<i>must/have to</i> + infinitive	<i>be obliged to</i> + infinitive	In some countries, people are legally obliged to report a crime.
<i>need to</i> + infinitive	<i>be required to</i> + infinitive	All new arrivals are required to check in at the front desk.
	<i>be necessary to</i> + infinitive	It was necessary for candidates to bring their CV to the interview.
No obligation or necessity		
<i>not have to</i> + infinitive	<i>there be no need to</i> + infinitive	There's no need to call Mum. I'm sure we can figure this out on our own.
<i>not need to</i> + infinitive	<i>be unnecessary to</i> + infinitive	It was unnecessary to file a complaint because they gave us a refund.
	<i>not be obliged/required/necessary to</i> + infinitive	Teachers are not required to reply to messages on social media.
Advice and recommendation		
<i>should/ought to</i> + infinitive	<i>be meant to</i> + infinitive	We were meant to sing a cappella during the auditions.
<i>had better</i> + infinitive	<i>be supposed to</i> + infinitive	All employees are supposed to follow the new procedures.
Ability and willingness		
<i>can</i> + infinitive	<i>manage to</i> + infinitive	Although we tried our best, we didn't manage to complete the final task.
<i>be able to</i> + infinitive	<i>succeed in</i> + gerund	Mike's team succeeded in proving that the initial hypothesis was wrong.
Deduction and speculation		
<i>may/might/could</i> + infinitive	<i>be prone to</i> + infinitive	She's prone to make some spelling mistakes in her essay.
	<i>be possible (that)</i> + clause	It's possible that I've left the car keys on my desk.
<i>must/can't</i> + infinitive	<i>be likely / unlikely to</i> + infinitive	Jon is unlikely to have found an academic position so soon.
	<i>be bound to</i> + infinitive	If you are one of those people who just cannot sit still, at some point somebody is bound to have told you not to wriggle about.
	<i>be sure (that)</i> + clause	I'm sure you'll pass the test; you've studied a lot!
Permission		
<i>can</i> + infinitive	<i>be allowed to</i> + infinitive	Are we allowed to use a dictionary during the test?
<i>may</i> + infinitive	<i>be permitted to</i> + infinitive	Are students permitted to leave the school premises during the break?
Prohibition		
<i>mustn't</i> + infinitive	<i>be forbidden to</i> + infinitive	Nurses at this hospital are forbidden to wear high heels.
<i>can't</i> + infinitive	<i>not be allowed/permitted to</i> + infinitive	We were not allowed to go to the forest on our own as kids.
<i>may not</i> + infinitive		

2.7 Speculation and deduction (past, present and future)

Za pomocą czasowników modalnych: *must*, *may*, *might*, *could* oraz *can* możemy spekulować na temat przeszłości, teraźniejszości i przyszłości. Czasowniki te występują wówczas w następujących konstrukcjach:

- *must / may (not) / might (not) / could (not) / can't + have + past participle* – w odniesieniu do czynności i stanów z przeszłości, np.:
Someone **must have** moved the documents. They were just here!
The theatre was very crowded, so he **may not have** seen you.
It **can't have** been Janice's fault. She wasn't involved in that project at all!
- *must / may (not) / might (not) / could (not) / can't + infinitive* – w odniesieniu do aktualnych stanów, np.:
You **must be** exhausted! Lie down and relax.
She **could be** wrong, of course, but I don't think she is.
This **can't be** Jerome's paper. His handwriting is much neater.
- *must / may / might / could / can't + be + gerund* – w odniesieniu do wydarzeń, które są aktualnie w toku, np.:
Can you hear Ian? He **must be** practising for the talent show.
Don't call Meredith just yet. She **might be** interviewing candidates.
Mr Jenkins **can't be** talking on the phone. The line isn't engaged.

- *may (not) / might (not) / could + infinitive* – w odniesieniu do czynności i stanów z przyszłości, np.:
He **might** go on to study medicine at university.
It all depends on his exam results.
If you work hard, you **could** get into the school rugby team.
- *will probably / definitely won't + infinitive* – w odniesieniu do czynności i stanów z przyszłości, np.:
Fred is good at biology, so he **will probably** get an A.
My parents **definitely won't** sell their flat in the city centre.

UWAGA!

Jeśli jesteś czegoś niemal pewni, możemy użyć czasownika *will*:

- w odniesieniu do przeszłości: *will + have + past participle*, np. As you **'ll have** noticed, the master bedroom has been refurbished.
- w odniesieniu do teraźniejszości: *will + infinitive*, np. 'Can you hear footsteps?' 'That **'ll be** Bill. He's staying over tonight.'

- KEY WORDS

VOCABULARY 1

adopt an approach	/əˈdɒpt ən əˈprəʊtʃ/	przyjąć podejście
collate evidence	/kəˈleɪt ˈeɪdɪns/	zbierać i analizować dowody
combat	/ˈkɒmbæt/	zwalczyć, pokonać
complexity	/kəmˈpleksəti/	złożoność
conduct research	/kənˈdʌkt ˈriːsɜːtʃ/	przewodzić badanie
deem sth safe	/diːm ˈsæf/	uznać coś za bezpieczne
demonstrate the possibility	/ˈdɛməˌstreɪt ðə ˈpɒsəˈbɪləti/	dowieść, że coś jest możliwe
diverse sources	/daɪˈvɜːs ˈsɔːsɪz/	różnorodne źródła
execute experiments	/ˈeksɪkjʊt ɪkˈspɪrɪmənts/	przeprowadzać doświadczenia
field of study	/fiːld əv ˈstʌdi/	dziedzina nauki
global collaboration	/ˈɡləʊbəl kəˈlæbəˈreɪʃən/	ogólnosiwiatowa współpraca
guinea pig	/ˈɡɪni piɡ/	świnka morska; tu: królik doświadczalny
harness	/ˈhɑːnɪs/	ujarzyć
human trials	/ˈhjuːmən ˈtraɪəlz/	badania kliniczne z udziałem ludzi
light years ahead	/laɪt ˈjɪəz əˈhed/	lata świetlne do przodu
major breakthrough	/ˈmeɪdʒə ˈbreɪkθruː/	przełom, punkt zwrotny
mould	/məʊld/	pleśń
not rocket science	/ˌnɒt ˈrɒkɪt ˈsaɪəns/	żadna wielka filozofia
overcome obstacles	/ˌəʊvəˈkʌm ˈɒbstəklz/	pokonywać przeszkody
procedure	/prəˈsiːdʒə/	procedura
process data	/ˈprəʊses ˈdeɪtə/	przetwarzać dane
quantum leap	/ˈkwɒntəm ˈliːp/	krok milowy, skok, przełom
scrutinise	/ˈskruːtɪnaɪz/	badać, obserwować
sensory issues	/ˈsensəri ˈɪʃuːz/	zaburzenia sensoryczne
side effects	/ˈsaɪd ɪˈfekts/	skutki uboczne
test tube	/ˈtest ˈtjuːb/	próbówka
timescale	/ˈtaɪm ˈskeɪl/	czas na wykonanie czegoś
trial and error	/ˈtraɪəl ˈænd ˈɛrə/	metoda prób i błędów

GRAMMAR 1

fidget	/ˈfɪdʒɪt/	kręcić się, wiercić się
mind wandering	/ˈmaɪnd ˈwɒndərɪŋ/	dekoncentracja, błądzenie myślami
overstimulation	/ˌəʊvəˈstɪməʃən/	przebodźcowanie
prone to	/ˈprəʊn tə/	podatny na
wriggle	/ˈrɪŋɡəl/	wyginać się

READING

alleviate	/əˈliːviət/	łagodzić
appendicitis	/əˈpendɪˈsaɪtɪs/	zapalenie wyrostka robaczkowego
arthritis	/əˈθraɪtɪs/	artretyzm, zapalenie stawów
bewildering	/biˈwɪldərɪŋ/	zdemiewający
colour-blindness	/ˈkʌlə ˈblaɪndnəs/	daltonizm
come about	/kʌm əˈbəʊt/	zdarzyć się
come to light	/kʌm tə ˈlaɪt/	wyjść na jaw, wyjść na światło dzienne
compound	/ˈkɒmpaʊnd/	związek chemiczny
congenital	/kənˈdʒenɪtəl/	wrodzony
debilitating	/dɪˈbɪlɪˈteɪɪŋ/	wyniszczający, osłabiający
distressing	/dɪˈstresɪŋ/	niepokojący
halt	/hɔːlt/	przerwać
heightened	/ˈhaɪtənd/	wzmocniony
in the dark	/ɪn ðə ˈdɑːk/	w nieświadomości
indulge in sth	/ɪnˈdʌldʒ ɪn ˈsʌmθɪŋ/	oddawać się czemuś
inflammation	/ˌɪnˈfləˈmeɪʃən/	zapalenie, stan zapalny
make great strides	/ˌmeɪk ɡreɪt ˈstraɪdz/	robić znaczne postępy
make out	/ˌmeɪk ˈaʊt/	dostzegać, widzieć
odour	/ˈəʊdə/	woń, odor
pay a visit	/ˌpeɪ ə ˈvɪzɪt/	złożyć wizytę
procedure	/prəˈsiːdʒə/	zabieg chirurgiczny
progressive	/prəˈɡresɪv/	postępujący
retina	/ˈretɪnə/	siatkówka (oka)
sensation	/ˌsenˈseɪʃən/	doznanie, uczucie
wavelength	/ˈweɪvˌlɛŋθ/	długość fali
widespread	/ˈwaɪdˌspred/	rozpowszechniony

VOCABULARY 2

asteroid	/ˈæstəˌɒɪd/	asteroida
atmosphere	/ˈætəˌmɪˌfɪə/	atmosfera
black hole	/ˈblæk ˈhəʊl/	czarna dziura
collective knowledge	/kəˈlektɪv ˈnɒlɪdʒ/	wiedza zbiorowa
deploy	/dɪˈplɔɪ/	wdrażać
dwarf planet	/ˈdwɔːf ˈplæɪnɪt/	planeta karłowata
eclipse	/ɪˈklyps/	zaćmienie
far-distant/far-flung	/ˈfɑːˈdɪstənt/ˌfɑːˈflʌŋ/	odległy
groundbreaking	/ˈɡraʊndˌbreɪkɪŋ/	przełomowy
indulge	/ɪnˈdʌldʒ/	zaspokoić
infrared light	/ˌɪnfraˈred ˈlaɪt/	promieniowanie podczerwone
insatiable curiosity	/ɪnˌseɪʃəbəl ˈkjʊəriˈɒsəti/	nienasycona ciekawość
interstellar cloud	/ɪntəˈstɛlə ˈklaʊd/	obłok międzygwiazdowy
marvel at sth	/ˈmɑːvəl ət ˈsʌmθɪŋ/	dziwić się czemuś
meteorite	/ˈmiːtiəriːt/	meteoryt
Northern Lights	/ˈnɔːðən ˈlaɪts/	zorza polarna
observable universe	/əbˌzɜːvəbəl ˈjuːnɪˈvɜːs/	widzialny wszechświat
orbit (n; v)	/ˈɔːbɪt/	orbita; okrążyć
outer space	/ˈaʊtə ˈspeɪs/	przestrzeń kosmiczna, kosmos
piece together	/piːs tə ˈɡeðə/	składać w całość
shooting star	/ˈʃuːtɪŋ ˈstɑː/	spadająca gwiazda, meteoroid
sunshield	/ˈsʌn ʃiːld/	osłona przeciwsłoneczna
the cosmos	/ðə ˈkɒzmos/	kosmos
vastness	/ˈvɑːstnəs/	bezkres

LISTENING

bionic eye	/baɪˈɒnɪk ˈaɪ/	sztuczne oko
bring up	/ˈbrɪŋ ˈʌp/	poruszać (np. temat)
exoskeleton	/eksəˈskelɪtən/	szkielet zewnętrzny
genetic engineering	/dʒəˈnetɪk ˌendʒɪˈnɪərɪŋ/	inżynieria genetyczna
go over	/ˌɡəʊ ˈəʊvə/	powtórzyć
hook up	/hʊk ˈʌp/	podłączyć
impairment	/ɪmˈpeəmənt/	upośledzenie, uszkodzenie
look at	/lʊk ət/	analizować
plug in	/plʌŋ ˈɪn/	wpiąć, podłączyć wtyczką
rely on	/rɪˈlaɪ ˈɒn/	polegać na
show off	/ʃəʊ ˈɒf/	zaprezentować, popisać się
take after	/ˌteɪk ˈɑːftə/	być podobnym do, wdać się w
take away	/ˌteɪk əˈweɪ/	usunąć, odjąć
take in	/ˌteɪk ˈɪn/	przyswoić, zapamiętać

GRAMMAR 2

condemn	/kənˈdem/	potępić
hold a dispute	/həʊld ə ˈdɪspjuːt/	spierać się, dyskutować
refute	/rɪˈfjuːt/	obalić (np. teorię)

WRITING

advocate	/ˈædvəkeɪt/	obrońca, osoba wspierająca
at the whim of sb	/ət ðə ˈwɪm əv ˌsʌmbədi/	zależnie od czyjegoś kaprysu
craft	/kraːft/	statek/statki, np. kosmiczne
forge	/fɔːdʒ/	falszować
generate publicity	/dʒenəreɪt ˌpʌbˈlɪsəti/	powodować rozgłos
legitimacy	/lɪˈdʒɪtɪməsi/	ślusność, zasadność
private equity	/ˈpraɪvət ˈekwɪti/	prywatny kapitał
stumbling block	/ˈstʌmblɪŋ ˈblɒk/	przeszkoda
undermine	/ˌʌndəˈmaɪn/	podważać

REVISION

abundance	/əˈbʌndəns/	duża ilość
bite	/baɪt/	zgrzyz
expulsion	/ɪkˈspʌljən/	wydalenie, wypuszczenie
foul	/faʊl/	odrażający
induce	/ɪnˈdjuːs/	wywołać, spowodować
precipitation	/prɪˈsɪpɪˈteɪʃən/	opady atmosferyczne
pursue	/pəˈsjuː/	drażyć, badać
quadratic equation	/kwɒˈdrætik ɪˈkweɪʃən/	równanie kwadratowe
sample	/ˈsɑːmpəl/	badać, przeprowadzać
sedative	/ˈsedatɪv/	wyrwykowe badania
		środek uspokajający