

10 Brilliant brains

Vocabulary



Useful inventions

1a Work with a partner. Match the words to the photos.

digital camera • laptop (computer)
MP3 player • printer • satnav
smartphone • tablet



1b 90 Listen and repeat.

2a What can you do with each invention in 1?

satnav – You can use it to find places when you are in a car.

printer – You can use it to print documents.

2b **SPEAKING** Work in groups. Decide which two inventions you think are the most useful and why.

3a **SPEAKING** Work with a partner. These household objects appeared on page 26. What can you do with each item?

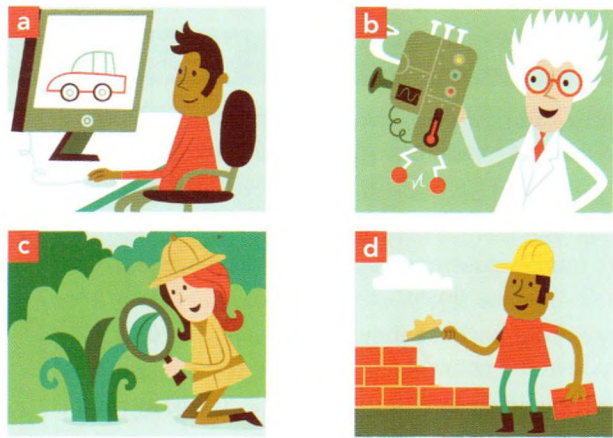
CD player • DVD player • dishwasher
fridge • microwave • washing machine

3b Do you think any of these inventions are more important than your most useful inventions in 2b? Why/Why not?

Creating and inventing

4a Match some of these words to the pictures.

build • create • design • discover • invent • produce



4b Look at the words in the box in 4a. What is the word for the person who does these things? What is the word for the object or thing that each person does or makes?

build – builder – building

4c 91 Listen and check your answers.

5 **PRONUNCIATION** 91 Mark the stress in each word. Then listen again, check and repeat.

ˈbɪldər

6a Work in a group. Try to complete the sentences in the General Knowledge Quiz.

GENERAL KNOWLEDGE QUIZ

- invented the radio.
- Alexander Graham Bell invented
- Charles Babbage designed a basic
- Marie Skłodowska-Curie created the word
- discovered penicillin.
- Apple produced their first tablet in
- Karl Benz built the first modern

6b **LISTENING** 92 Listen to the answers. How many did you get right?

6c 92 Listen again. Write down the date of each discovery or invention. Which is the oldest?

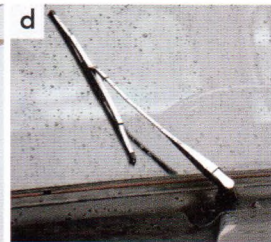
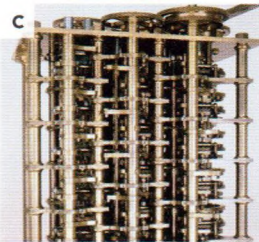


1a Work with a partner. How many famous inventors can you think of? Make a list.

1b Compare answers with the rest of the class. How many of your inventors are women?

2 **READING** Read the article and write the name of the invention and the letter of the photo that shows that invention.

- 1 Ada Lovelace Invention: Photo:
- 2 Mary Andersen Invention: Photo:
- 3 Stephanie Kwolek Invention: Photo:
- 4 Josephine Cochrane Invention: Photo:



WOMEN INVENTORS

Do you know the names of Ada Lovelace or Stephanie Kwolek? They aren't as famous as Alexander Graham Bell or Karl Benz, but they, and many other women inventors, have also created important inventions that have changed our everyday lives.

ADA LOVELACE

Ada Lovelace was a mathematician, a scientist, and ... the world's first computer programmer. In the 1840s, she collaborated with Charles Babbage, the inventor of a mechanism that people call the first computer. In 1843, at the age of 27, Lovelace created a language for the computer. People didn't pay much attention to her work at the time and her ideas were only discovered in the 1950s. In 1980, the software created by the US Department of Defence was named 'Ada', to honour this pioneer of computer programming.

MARY ANDERSEN

Windscreen wipers were invented by an American woman called Mary Andersen. Mary Andersen lived in Alabama, USA. In the winter of 1903, she went to New York. She was travelling in a tram and was very surprised that the driver often stopped to get out of the tram and clean the snow from the window. She suddenly had the idea for a simple version of the windscreen wiper that we use today. It wasn't automatic, but drivers could operate the wiper from inside the car or tram so they didn't need to stop and get out. In 1917, the first automatic windscreen wipers were designed by another woman, Charlotte Bridgwood.

JOSEPHINE COCHRANE

Josephine Cochrane was born in the US in 1839. She didn't take science lessons but her great-grandfather was also an inventor. Cochrane's family often had dinner parties. Cochrane herself didn't have to wash the dishes after these parties because she had servants. But her servants often broke plates and glasses. To solve this problem, in 1886 she created the first commercially successful dishwasher. Her dishwasher became very popular in hotels and restaurants, but not in private homes, because it needed a lot of hot water. Now, of course, dishwashers are seen as essential in many homes.

STEPHANIE KWOLEK

American Stephanie Kwolek always wanted to be a doctor but she never went to medical school. That's good news for police officers all over the world because in 1971 Kwolek invented a new substance. This substance was used to create a material called Kevlar. Kevlar is a synthetic fibre which is incredibly strong and resistant, but is also very light. It is used by police officers in bullet-proof jackets. Kwolek's invention has helped to save thousands of lives. In fact, Kevlar is also used to make many other products such as skis and helmets.

3 Read the text again and complete the information in the notes with between one and four words from the text.

4 **CRITICAL THINKING**

Think! Then compare ideas with your class.

- Do you think men and women have equal opportunities to become inventors today?

5 What do the underlined words in the text mean? Guess and then check in your dictionary.

6 **SPEAKING** What about you?

Which invention in 2 do you think is the most useful? Why?

pad

Women Inventors

Ada Lovelace: Worked with (a) People discovered her invention in (b)

Mary Andersen: Had idea for invention when travelling by (c) during trip to (d)
(e) improved design in 1917.

Stephanie Kwolek: Thanks to invention we can make (f)
(g) and (h)

Josephine Cochrane: Created invention to protect (i) At first, wasn't used in (j) but in hotels and restaurants.



The passive

1 Read the sentences and answer the questions.

- a Kevlar **is used** in bullet-proof jackets.
- b The first computer program **was created** in 1843.
- c Josephine Cochrane **invented** the dishwasher.
- d Windscreen wipers **were invented** in 1903.
- e Dishwashers **are used** in many homes today.
- f The police **use** bullet-proof jackets.

- 1 Which sentences are active and which are passive?
- 2 What verb goes before the past participle to make passive sentences?
- 3 Which sentences are in the present form of the passive and which are in the past?
- 4 What do you do to make the past passive form?
- 5 What is more important in passive sentences – the action or the person who does it?

GRAMMAR REFERENCE ► PAGE 140

2 Complete the sentences with *is* or *are*.

- 1 A lot of cars made in Germany.
- 2 A lot of coffee produced in Brazil.
- 3 New games consoles created in Japan each year.
- 4 American films watched all over the world.
- 5 A lot of tea drunk in Great Britain.
- 6 More and more computer games sold each year.
- 7 Football played in nearly every country in the world.

3 Complete the sentences with the past passive form of the verbs given.

- 1 The first portable computer (produce) in 1975. It weighed 25 kilos!
- 2 The Simpsons (create) in 1987.
- 3 The London Eye (build) in 1999.
- 4 The final match of the UEFA Euro 2012 (play) in Ukraine.
- 5 Rugby, tennis and cricket (invent) in England.
- 6 Jeans (wear) for the first time in 1873.
- 7 The first 3D printer (make) in 1984.

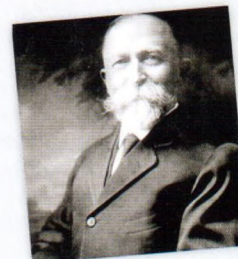
The passive with *by*

4 Read the sentences and then decide if the rules below are *true* or *false*.

- a Windscreen wipers were invented **by** Mary Andersen.
 - b Mary Andersen invented windscreen wipers.
- 1 In sentence a, the action is more important than the person who did it.
 - 2 In sentence b, the most important thing is the person who did the action.
 - 3 We use **by** to introduce the person who does or did an action.

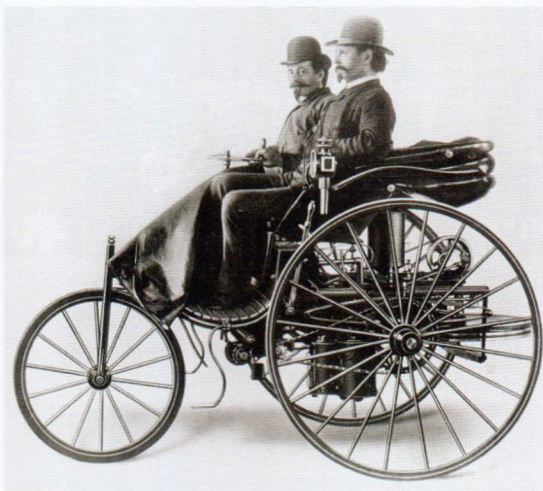
GRAMMAR REFERENCE ► PAGE 140

5 Change these sentences from active to passive.



- 1 Dr John H Kellogg invented Corn Flakes in 1894.
Corn Flakes
- 2 Suzanne Collins wrote the book *The Hunger Games*.
The book *The Hunger Games*
- 3 Robots build cars in many factories.
Cars
- 4 Francis Crick and James Watson discovered the molecular structure of DNA in 1953.
The molecular structure of DNA
- 5 Microsoft make the Xbox.
The Xbox
- 6 Adele sings *Rolling in the deep*.
Rolling in the deep
- 7 Alexander Graham Bell made the first telephone call.
The first telephone call





Nouns with -ion



6 Choose the correct alternative.

Cars are one of the most important inventions ever. The modern car was made possible by the invention of the internal combustion engine. The first practical internal combustion engine **(a)** *made/was made* by Etienne Lenoir in about 1859. Before this, engines **(b)** *was/were* driven by steam. Karl Benz made his own engine, and then he designed and **(c)** *built/was built* his first car. His car needed petrol but at that time petrol **(d)** *sold/was sold* only by chemists. 25 cars were sold **(e)** *by/from* Benz's company between 1888 and 1893. Cars became much more popular thanks to the American Henry Ford. More than 15 million Model T cars were produced **(f)** *by/-* Ford's factories between 1910 and 1927. Of course, now that number seems small. More than half a billion cars **(g)** *are/were* driven each day by people all over the world.

7a Look at these sentences. Do you know the answers?

- The Eiffel Tower was designed by ?
- ? was created by Bill Gates and Paul Allen.
- In the Harry Potter films, the role of Harry was played by ?
- Octavia cars are built by ?

7b Work in a small group. Prepare a General Knowledge Quiz for other groups. Write sentences like the ones in 7a. Use these past participles for ideas. You must know the answers yourselves.

invented • written • painted • sung • built • created • made

7c Give your sentences to another group. Ask them to do your quiz and then check their answers.

1 Look at these words. Which are verbs and which are nouns?

create • **creation** • imagination • imagine • invent
invention

The part of the words in **bold** is a suffix. The suffix can change certain verbs into nouns.

2 Complete the table. Check your answers to 1.

Verb	Noun
act	1
describe	2
3	explanation
express	4
5	imagination
inform	6
7	investigation
8	organisation

3a PRONUNCIATION 93 Listen to the nouns. Where does the stress come in each word?

3b 93 Listen again and repeat with the correct stress.

4 Complete the sentences with nouns from 2.

- She has a lot of I think she could write a novel one day.
- For homework, we have to write a short of the place where we live.
- Is *Best wishes* a good to use at the end of an email to a friend?
- There will be an into the crime.
- The United Nations is an international with 193 member states in 2013.
- I'm looking for about scientific discoveries on the Internet.
- I hope you have a good for why you're late.

The passive

FORM

subject + **to be** + past participle

- We make the present passive with the present form of the verb **to be** and the past participle of the verb.

Many computers are built in China and India.

Tea is drunk in many countries.

- We make the past passive with the past form of the verb **to be** and the past participle of the verb.

The television was invented in 1926.

New images of Mars were seen last week.

USE

- We use the passive when we are more interested in the action than the people who do the action.

The bridge was built in 1866.

The passive with by

FORM

subject + **to be** + past participle + **by** + agent

The television was invented by John Logie Baird in 1926.

USE

- We use the preposition **by** after the past participle to introduce the person or thing which does the action.

The bridge was built by the French in 1866.

1 Complete the sentences with the correct form of the verb given in the passive form.

- 1 The book *Twilight* (write) in 2007.
- 2 White coats (wear) in labs.
- 3 This photo (take) when I was five.
- 4 Bread (make) here every day.
- 5 I didn't understand the words of the last song because it (sing) in French.
- 6 The pyramids (build) long ago.
- 7 English and French (speak) here.

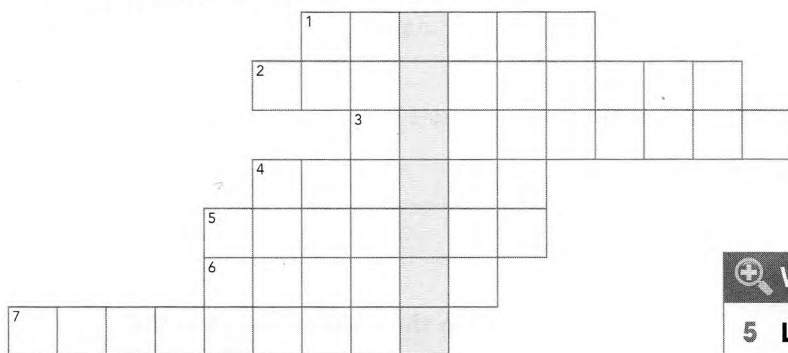
2 Complete the sentences with the correct word.

- 1 Jeans were invented Mr. Levi Strauss.
- 2 The 2014 World Cup won by Germany.
- 3 The *Mona Lisa* was by da Vinci.
- 4 Mobile phones used by millions of people every day.

Vocabulary



1 Use the clues to complete the crossword and find the word in the shaded column.



- 1 a small computer you can carry
- 2 you use this to phone or go online
- 3 it cooks meals quickly
- 4 it gives you directions
- 5 a type of camera
- 6 a very small, thin computer with touch screen
- 7 you can listen to music on this

Word down:

2 Write what the people are talking about. Use words from 1.

- 1 We got lost because of it again!
- 2 I do my homework on this at home, and I take it to class with me. It opens and closes.
- 3 It's very light. I can switch it on fast. I use it to watch films when I'm on the train or plane.
- 4 It's so easy to use and it takes great pictures, too.
- 5 The colours aren't very good. It needs some more ink.

3 Complete the verbs with the missing vowels (a, e, i, o or u).

- | | |
|-------------------|------------------|
| 1 b.....l d | 4 ..n v ..n t |
| 2 d...s...g n | 5 c r.....t... |
| 3 d...s c...v...r | 6 p r...d...c... |

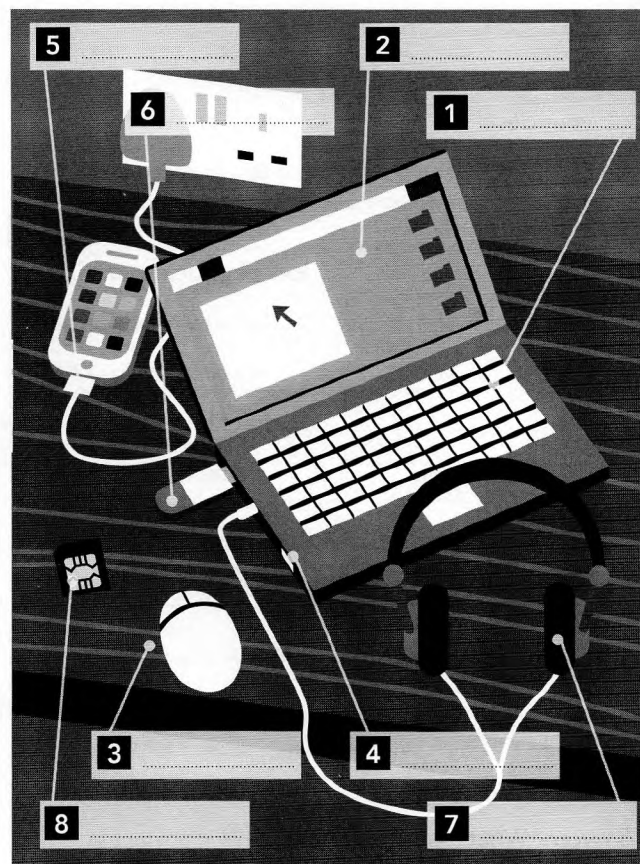
4 Complete the sentences with the noun of the verbs in bold.

- 1 Our school moved to a new **build**
- 2 My mum's favourite is the dishwasher. **invent**
- 3 Which redecorated that house? **design**

- 4 The of that brilliant new TV series lives near here. **create**
- 5 The of penicillin changed people's lives. **discover**
- 6 The company stopped of cars at the factory last year. **produce**

VOCABULARY EXTENSION

5 Label the picture with the correct words.



6 Complete the sentences with words from 5.

- 1 Freddy's wearing his He can't hear you!
- 2 Copy your files onto a and you can give it to the teacher.
- 3 Have you seen the for my phone?
- 4 The on my dad's laptop is really big, but I like smaller ones. Maybe his eyes aren't very good!
- 5 My is getting old – you can't see 'e' or 'i' very clearly now.



1 Match the paragraphs to each heading. Read the blog quickly to check.

- 1 It copies more than paper
- 2 Take your computer with you
- 3 New use of robots

MY FAVOURITE NEW INVENTIONS

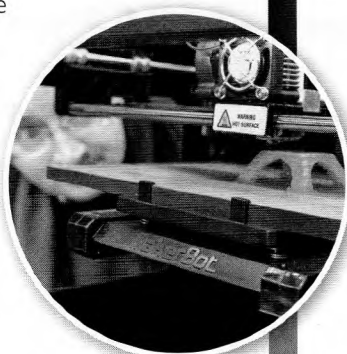
I've read a lot about new inventions and advanced technology recently for a school project. Technology is progressing so quickly that it's really quite scary! Every year, smaller computers are developed and technology is used more than ever. Here are some of my favourite recent inventions.



A Everyone knows that old people sometimes get lonely. The Japanese have invented a special robot. It is designed to look and act like a small, furry animal! These robots are used a lot by old people in Japan. When these robot pets are talked to, they turn their heads and move. They also make little noises like an animal when they are stroked! It's just like having a real pet so it makes you feel better when you spend time with it. Awesome!

B Another of my favourite inventions is the 3D printer.

They're expensive now, but in a few years they'll be cheaper and I will be able to buy one. The 3D printer was invented in 1984 - but it didn't become popular then. Now more and more companies are starting to use them. Ordinary printers print onto flat paper. The 3D printer produces models. It can copy nearly anything, from small models of houses to jewellery! Soon every home will have one.



C Wearable technology has progressed a lot recently. I remember the first time I heard about it. Skiers were given goggles with inbuilt computers. The ski goggles didn't look different, but there was a tiny screen and it was connected to buttons in the skiers' jackets. When these buttons were pressed, the skier was shown information about his speed and where the other skiers were. Soon we will all have tiny computer screens near our eyes. I wear normal glasses now but I'd love to have ones with computers in them like Google glasses.

Which is your favourite? Leave your comments here.



2 Read the blog again and complete the information in the notes. Use between one and four words from the text.

- 1 The writer needed to know about new inventions for a
- 2 These robot pets are used by old people in
- 3 The writer hopes to buy a 3D printer in a
- 4 The first 3D printer was made in
- 5 A 3D printer can make of houses and
- 6 The ski goggles had inside them.
- 7 The skiers got information about the speed and the

3 CRITICAL THINKING

According to the text which of these options answer the question: Why is it important to have new inventions?

- 1 They make our lives easier.
- 2 They make our lives more interesting.
- 3 They make our lives cheaper.
- 4 They make our lives faster.
- 5 They make us healthier.

4 Match the underlined words in the blog with these definitions.

- 1 hairy (like an animal skin)
- 2 getting better
- 3 special glasses that protect your eyes
- 4 feeling alone
- 5 you can wear it
- 6 frightening
- 7 move your hand over



1 Circle the correct alternative to complete the rules.

- 1 We use *to be* and the past simple/participle to make the passive.
- 2 We use the passive when the action/person who does the action is more important.
- 3 We use by/from to show who did the action.

2 Complete the sentences with the correct form of the verb to be.

- 1 These robots produced in Japan.
- 2 Each robot designed to look like an animal.
- 3 3D printers invented in 1984.
- 4 Smartphones used by people all over the world.
- 5 The first wearable technology worn by skiers.
- 6 The first tablets produced in 2002.

3 Complete the sentences using the correct passive form of the verb given.

- 1 A brown dog (find) in the forest yesterday.
- 2 The classrooms (clean) every evening.
- 3 At the restaurant our meal (serve) by an Italian waiter.
- 4 The rule is that guests at the hotel (ask) to pay when they arrive.
- 5 This type of chocolate (not make) in this town. They (make) in London.
- 6 this book (write) five years ago?
- 7 The rubbish (not collect) yesterday.

4 Match the halves to make sentences.

- | | |
|----------------|--|
| 1 A wolf | a was written by a French author. |
| 2 Laptops | b were cooked by a top chef. |
| 3 The criminal | c was seen near the village. |
| 4 The winner | d was marked by the teacher. |
| 5 The homework | e were given to all the students in the class. |
| 6 The novel | f was found by the police. |
| 7 The meals | g was chosen by all the judges in the competition. |

5 Write the sentences using the passive. Use by when it's necessary.

- 1 They sold ten dishwashers last week.
.....
- 2 They didn't teach us ICT at Primary School.
.....
- 3 Old people in Japan use the robots.
.....
- 4 Someone translated the book into Spanish last year.
.....
- 5 Many people don't use 3D printers at the moment.
.....
- 6 Three students won the top prize.
.....

6 Write sentences in the passive using the prompts below.

- 1 The Mona Lisa/paint/Leonardo da Vinci
.....
- 2 Ferrari cars/produce/in Italy
.....
- 3 Buckingham Palace/build/in London
.....
- 4 Computers/invent/an Englishman
.....
- 5 Spanish/speak/people all over the world
.....

GRAMMAR CHALLENGE

7 Rewrite the notice using the passive.

Someone left a laptop in the cafeteria this morning. Another student found it and she gave it to a teacher. We asked the owner to come to the headteacher's office to collect it. Students lost a lot of electronic gadgets last month. We didn't return several of these to their owners, because we didn't find the owners. We remind you to be careful with laptop computers and smartphones.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....