

2

Inspiring ideas

Vocabulary

antenna connect (connected) develop (developed) phone call
 product receive satellite navigation send signal system

Lesson 1 Reading

- 

 How many people in your class know how to use a mobile phone? Guess. Then do a class survey.
 - everybody
 - nearly everybody
 - about half
 - nobody
- How do you think mobile phones work?
 - They use small computers.
 - They use power lines under the ground.
 - They talk to cars on the roads.
- 
2.1 Look at the photos and read the text quickly. Can you answer the question in Activity 2 now? **Be a star!**
- Look at the vocabulary box. Find the words in the text. Use the context to work out what they mean.

A fantastic invention

The first mobile phone?

This is Martin Cooper. He made the first mobile **phone call** in 1972.

But was he using the first mobile phone? Scientists in Norway and Germany had used some types of mobile phone before that, but most people say Martin Cooper was the person who made the first real mobile phone call – more than 50 years ago.

Phones have changed a lot since then. Now we have smartphones – phones with computers. We use them all the time to make phone calls and video calls, take photos and **send** them to friends. But how do they work?

When we speak into a phone, the computer changes our voice into a code. Computers can send pictures or words in code, too.

Computers use binary code – everything is 0 or 1. So,
 'H' is 01001000.
 'E' is 01000101.
 'HELLO' is 01001000
 01000101 01001100
 01001100 01001111.



Mobile phone signals

If a person waves to you, it's a **signal**. A signal is a way of communicating between one person and another. The computers in mobile phones send signals too. There are 8 billion phones in the world. A lot of different signals go from one phone to another. So the phone companies use an **antenna to receive** messages from your phone.

The antenna is **connected** to millions of other antennae around the world. The correct antenna sends the signal to your mobile phone, and then you're ready to talk, text or send photos.

SIM cards: We know where you are

How does an antenna find your mobile phone? The answer is your SIM card. SIM means Subscriber Identity Module. Every phone has a different SIM. When the **system** looks for your phone, your SIM card shouts 'I'm here!' and the system sends the message to you.

Satellite navigation

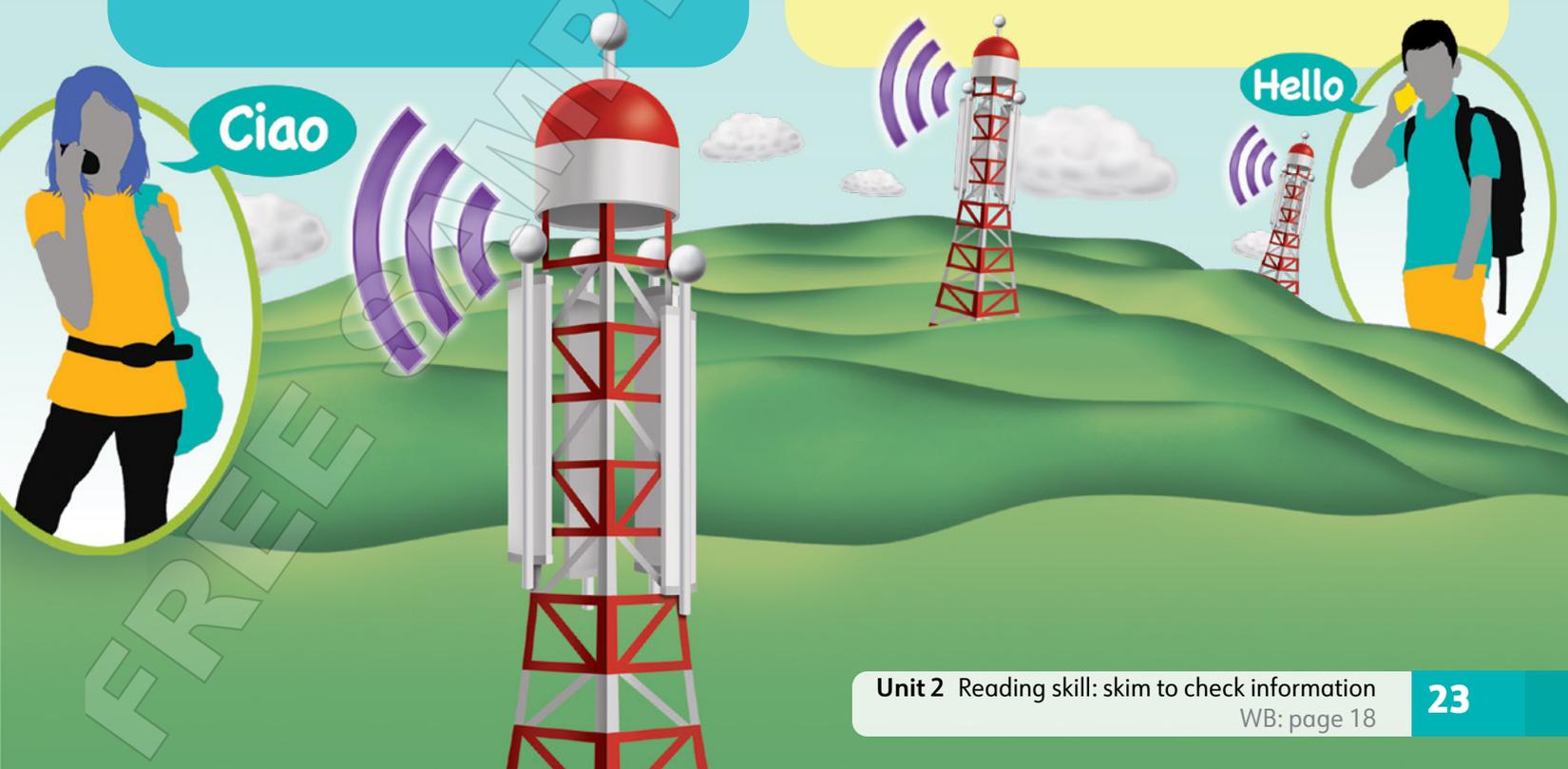
Mobile phone technology like your SIM card means that you can be almost anywhere in the world, and the system will find you. This technology also helps **satellite navigation** systems (satnavs) to see dangerous traffic jams. When a car is travelling with a mobile phone in it, the phone's signal follows your car. The system knows how many cars are usually on a road. If there are too many SIMs shouting 'I'm here!', the satnav knows there is a traffic jam. So it marks the jam on a map, or it makes a noise.

Changing technology

In the past, we used maps to move from one place to another, and we used cameras to take photos. Now we don't need them – we have mobile phones.

After the mobile phone was invented, no one had imagined it could be used to see traffic jams, take photos or show you a map. As the technology got older, scientists **developed** more ways that **products** like these could be used.

You can call them smartphones or mobile phones, but they are all the same – very small, special computers. And they are a fantastic invention. They have changed the world we live in.



Lesson 2 Reading comprehension

1 Read the information text on pages 22–23 again. Underline and correct the mistakes in the sentences.

- 1 Martin Cooper made the first mobile phone call more than 100 years ago.
- 2 Smartphones change your voice into a picture.
- 3 A mobile phone is a very small, special television.
- 4 Satellite navigation helps you see video calls.
- 5 There are 6 million phones in the world.
- 6 Satnavs make a noise when they receive a text message.

50

2 Choose the correct words to complete the summary. **Be a star!**

Phones can find you almost anywhere in the world. Your SIM ¹ card / clock tells an antenna where you are, and the antenna sends a ² **signal** / code to others. Smartphone technology helps satellite ³ **navigation** / camera systems in our cars see ⁴ **traffic** / call jams and send ⁵ **codes** / messages to other drivers. Some people call them ⁶ **satellite** / mobile phones, and some people call them smartphones, but everyone can call them a great invention.

3   Work in pairs. Discuss the questions.

- 1 Did any of the information in the text surprise you? Why / Why not?
- 2 Why does the writer think mobile phones are a fantastic invention?

Working with words

Suffixes: **-ous**

Sometimes we add the suffix **-ous** to nouns to make adjectives.

Noun: *courage*

Adjective: *courageous*

Some noun endings change before **-ous**.

Noun: *fury*

Adjective: *furious*

Check in a dictionary. Which nouns in the box change before **-ous**? Write the noun and the adjective for each definition.

humour adventure fame danger

- 1 adventure _____: loves travelling and exploring
- 2 _____: scary or harmful
- 3 _____: funny, makes you laugh
- 4 _____: known by many people

Past perfect

1 Look and read.

When his mum **arrived**, Peter **had invented** a new drink.

He **was** happy because he **hadn't invented** anything before.



Look!

Use the **past simple** to talk about an event in the past. Use the **past perfect** to talk about an event that happened *before* this event.

2 Underline the actions or events that happened first.

- Before I read the article, I hadn't heard of Martin Cooper.
- I went back to the phone shop because I'd left my charger there.
- Before I got my mobile phone, I'd always used a camera to take photos on holiday.

3 Complete the sentences with the past perfect form of the verbs in brackets.

- We had visited (visit) the museum once before so we didn't go there yesterday.
- She felt ill because she _____ (not eat) lunch.
- Jimmy enjoyed the film even though he _____ (see) it before.
- Before we moved to New York, we _____ (not study) English.

4 Work in pairs. Make sentences about events. **Be a star!**

- A** Look at page 144. **B** Look at page 146.
- Take turns to use the ideas on your page to start sentences about how you felt and what happened.
- Your partner finishes the sentence. **A** starts.

I was happy when I arrived home because ...



... my dad had baked a cake!

1 2.2 Listen and say.



- What are you doing?
- I'm teaching **myself** to play the guitar.
- How are you doing that?
- I'm watching a video. Look. This man films **himself** giving lessons. People film **themselves** teaching lots of different things.
- I know, it's a good way to learn something new. Is it difficult?
- A bit. Why don't you teach **yourself**, too? Then we can practise together.
- That's a good idea. We could record **ourselves** and play it back.
- And when we're really good, we can play in the school concert!

Look!

myself, yourself, himself / herself / itself, ourselves, yourselves, themselves

2 Complete the sentences with the correct reflexive pronouns.

- 1 Why do you want to film yourself ?
- 2 We're teaching _____ to play the drums.
- 3 Did you and your friends enjoy _____ at the theme park?
- 4 While she was cooking, my mum cut _____ with a knife.
- 5 He didn't hurt _____ when he fell over.
- 6 Anna and Jenny record _____ when they sing.



Why is it good to learn new things?

3 Think of things you can teach yourself. What could you do to help you learn?

4 Make a new dialogue. Use your ideas in Activity 3. **Be a star!**

- What are you doing?
- I'm teaching myself karate.

Lesson 5 Listening

Vocabulary

aim engine expedition hero
journey race sledge South Pole

1 2.3 Look at the photos. Where do you think the people are? What are they doing there? Listen and check your ideas.



2 2.3 Listen again and write *T* (True) or *F* (False).

- 1 Robert Scott was Norwegian. F
- 2 The South Pole is difficult to get to because it's so cold. _____
- 3 Both men went on their expeditions for the same reasons. _____
- 4 Scott decided not to use sledges with engines on his expedition. _____
- 5 Scott's horses were able to pull the sledges. _____
- 6 Both explorers succeeded in reaching the South Pole. _____

3 2.3 Take notes to complete the table. Then listen again and check. **Be a star!**

	Robert Scott	Roald Amundsen
Aim of expedition:	<i>be first to reach South Pole do scientific research</i>	<i>be first to reach South Pole</i>
Had they been to Antarctica before?		
Transport:		
Start date:		
Arrival date:		
What happened on the way back?		

4 Compare and contrast the two expeditions.

- 1 Which things were the same?
- 2 Which things were different?

1  Read the opinion essay. Match paragraphs 1–4 to the descriptions. Is the writer for or against space tourism?

- a Conclusion: your opinion on the topic. _____
- b Advantages: the positive arguments. _____
- c Introduction: general idea about the topic. _____
- d Disadvantages: the negative arguments. _____

Is space tourism a good idea?

1 For some people, travelling to another country is not exciting enough. When they go on holiday, they want to travel into space! Space tourism isn't just a dream – there are companies that say they can make it happen. But is it a good idea?

2 On the one hand, there are important advantages. Firstly, imagine the amazing things you could see in space! We have always travelled to new places to learn. In addition, if we can't continue to live on Earth in the future, we will need to find new planets to live on.

3 On the other hand, the expense is a big disadvantage. It costs so much money to fly into space that only very rich people are able to do it. Secondly, is it safe? Although the spaceships are checked very carefully, something could go wrong, which would be a disaster.

4 In conclusion, space tourism is an exciting chance to find out more about other planets. However, we also need to think about the dangers. In my opinion, space tourism is a great idea, but we must make sure that we aren't in too much of a hurry to make it happen.



2 Read the essay again. What two advantages and disadvantages of space tourism does the writer give?

- Advantages: 1 _____
- 2 _____
- Disadvantages: 1 _____
- 2 _____

3 Underline the words or expressions the writer uses to introduce an argument.

On the one hand, there are ...

4 Prepare an opinion essay on the topic: 'Are zoos a good idea?' Work with a partner to complete the essay plan.

Introduction: _____

Advantages: 1 _____

2 _____

Disadvantages: 1 _____

2 _____

Conclusion: Our opinion: _____

5 Use your plan to write an opinion essay. Use some of the phrases below. **Be a star!**

Look!

On the one hand / On the other hand
Firstly / Secondly / In addition /
In conclusion



Learning to learn

Using an index

An index appears at the back of a reference book. It's a list of the main information in the book, organised in alphabetical order. You use it to quickly find a piece of information you need in the book.

Look at part of an index from a reference book. Answer the questions.

electronics
in aircraft 349
in medicine 240
in music 580-1
elementary education 260-1
elements **40-3**, 177
elephant birds 138
elephants 30, 156, **171**, 173

- 1 On what page is information about elephant birds?
- 2 How many entries are there for 'electronics'?
- 3 What do you think the **bold** page numbers mean?



Lesson 7 Speaking

Vocabulary

childish
sporty
waterproof



1 Look at the watches. How are they the same? How are they different? Which one do you prefer?

2 2.4 Listen to the dialogue and complete the sentences. Which watch does the boy decide to buy?

- The black one looks really cool whereas the other looks childish.
- I don't agree. I think it looks _____ and _____.
- The black one is more _____ though.
- But it's much more _____.
- The black one needs _____ and so does the other.
- And they're both _____, which is good.

3 Look at the trainers. What's the same and what's different? Complete the table.



	comfortable	colourful	sporty	cool	expensive
Pair A	✓				
Pair B	✓				

4 Act out a dialogue in pairs. Compare the trainers and decide which ones to buy. Use the phrases to help you. **Be a star!**

Which trainers should I buy? I've seen two pairs and I like them both.

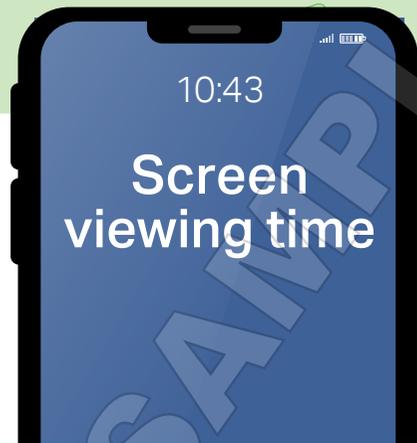
Well, the blue and yellow ones look cool and sporty whereas ...

The same:

They('re) both ...
This one ... and so is / does / can the other.

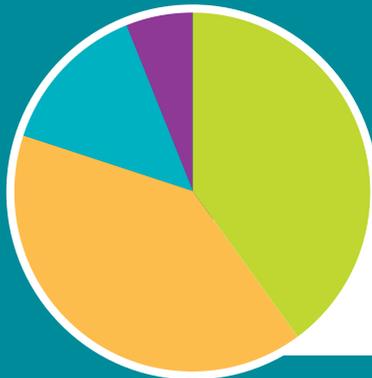
Different:

This one ... **whereas** the other ...
This one is (**much**) **more** ...



1 Look at the pie chart and answer the questions.

- 1 Do more children spend 1–3 hours on a screen or 3–6 hours?
- 2 Which is the smallest group?
- 3 Which group do you fit into?
- 4 Do the results surprise you? Why / Why not?



Screen time (number of hours per day) for 11-year-olds in England

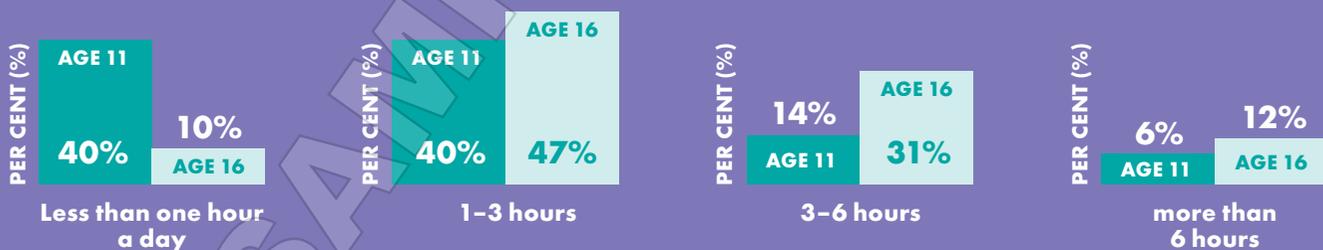
Number of hours per day



2 Now look at the bar graphs. Answer the questions.

- 1 What percentage of 16-year-olds spend less than an hour per day on screen?
- 2 How much time do 31 per cent of 16-year-olds spend on screen?
- 3 Look at each bar graph. What are the differences between 11-year-olds and 16-year-olds?
- 4 Why do you think there are these differences?

Screen time (number of hours per day) for 11-year-olds and 16-year-olds in the UK



3 Which do you think is better for comparing information, a pie chart or a bar graph? Why? What other types of graph could you use?

4  Do a class survey on screen time (or use your own idea for a topic). Make a graph to show your results. **Be a star!**

Review 1

1 Complete the sentences with the correct words.

aim behaviour childish endangered engines
foreground journey predators send species



- 1 This photo shows a turtle in the foreground.
- 2 _____ animals are at risk of dying out.
- 3 There are many different _____ of monkeys living in the Amazon.
- 4 Conservationists often study the _____ of animals in their habitats.
- 5 The _____ to the South Pole took many weeks.
- 6 _____ hunt other animals.
- 7 The _____ of the expedition was to reach the South Pole first.
- 8 The bright colours on the watch look _____ to me.
- 9 Cars are powered by _____.
- 10 He tried to _____ the message many times before he finally succeeded.

2 Circle the correct form of the verbs to complete the text.

Michelle Vincent is a famous wildlife photographer. When she was thirteen, she ¹ **has been** / **went** on holiday to Canada. While she was there, she ² **has seen** / **saw** a whale for the first time. 'I ³ **had never seen** / **didn't see** a whale before that. They were so beautiful. I ⁴ **had fallen** / **fell** in love with them.'

Since leaving university, Michelle ⁵ **observed** / **has observed** different species of whales in all the oceans of the world and ⁶ **took** / **has taken** many amazing photos. In 2010 she also started filming them. Last autumn, she ⁷ **has travelled** / **travelled** to the Antarctic to film migrating whales. No one ⁸ **filmed** / **had filmed** these whales on their journey to warmer waters before.



3 Work in pairs. Ask and answer questions about Michelle Vincent.

How old / see / whales / first time?

How long / film / whales?

Where / travel / to last year?

Why / fall / in love / them?

Where / observe / whales?

Why / her film special?

How old was Michelle when she saw whales for the first time?

She was thirteen.

1 **CE:Key** For each question, choose the correct answer.

Alexander Graham Bell was a scientist and inventor. He (0) _____ was _____ born in Scotland but later lived (1) _____ the USA. He was (2) _____ interested in how people communicate and wanted to find a way for people to speak to each other when they were in different places. In 1876, he (3) _____ a machine to do this. The first person he spoke to was (4) _____ assistant. He said, 'Mr Watson, come here. I want to see you.' Bell (5) _____ the telephone - now he had to work on his design (6) _____ make it better. Within 10 years, around 150,000 homes in the USA had telephones. Bell believed that one day people speaking on the phone (7) _____ be able to see each other too. This prediction (8) _____ true. We don't know if Bell ever imagined everyone would have a phone like a small computer.

Example

- | | | |
|------------------|----------------|----------------|
| 0 A is | (B) was | C did |
| 1 A in | B at | C of |
| 2 A never | B always | C not |
| 3 A has made | B made | C is making |
| 4 A our | B her | C his |
| 5 A had invented | B invented | C has invented |
| 6 A for | B will | C to |
| 7 A could | B would | C will |
| 8 A comes | B had come | C has come |



2 **CE:Key**  Work in pairs. Talk about these inventions together.



What do you think of the laptop computer?



It's a fantastic invention!



Why?



Watch the speaking exam practice video.