

Look at the photo. Discuss in pairs. What have we discovered in the last one hundred years? Think about:

- · animals
- space
- · science

### Vocabulary

Listen and read. TR: 87

Navigation means finding your way from one place to another. The invention of the compass helped sailors on boats and ships to navigate. After it was invented, they could always find north.



A compass shows where north, south, east, and west are. You can make a compass at home.

Take a **needle** and a magnet.

Move the magnet slowly up the needle several times. The needle is now also a magnet.

Put a plastic bottle top into a bowl of water. Put the needle on the plastic bottle top.



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The top will move around, and the needle will point toward north.

- Complete the sentences with words in bold from Activity 1.
  - 1. The opposite of north is \_\_\_\_\_, and the opposite of east is \_\_\_\_\_.
  - 2. \_\_\_\_ work on ships.
  - 3. A \_\_\_\_ can pull metal things toward it.
  - 4. The compass was a very important
- Read sentences 1-5. Then listen to a radio program about the history of navigation. Write T (true) or F (false). Correct the false sentences. A TR: 88
  - 1. Thousands of years ago, most sailors didn't go very far from the land.
  - 2. The Polynesians found new islands.
  - 3. The Polynesians used compasses to help them navigate.
  - 4. The first compasses used pieces of cardboard with words on them.
  - 5. Ships and airplanes still use compasses for naviaation.
- Work in pairs. How do you think people used the stars and the sun to navigate? Discuss your ideas.





1 Study the grammar box.

#### Simple past passive was/were + past participle

We use the simple past passive to focus on an action in the past. Sometimes, we use the past passive when we don't know who did the

The first compasses were used more than a thousand years ago.

A needle was put in the middle of a piece of cardboard.

Complete the text with the simple past passive of the verb in parentheses.

Elizabeth Lindsey is a National Geographic Explorer from Hawaii. When she was a child, she 1 \_\_\_\_\_ (teach) by older Hawaiian women about the traditions of Polynesia. The Polynesian people were amazing navigators. Even after compasses 2. the Polynesians preferred to use the natural world to navigate. Although their knowledge 3. \_\_\_\_\_ (not / write) down, it 4. \_\_\_\_\_ (not / forget). It — (share) through stories and songs. Now Elizabeth Lindsey travels ground the world. She finds out about traditions and shares her knowledge with other people.



- 3 Make passive sentences.
  - 1. The first modern calendar / invent / by the
  - The first modern calendar was invented by the Romans.
  - 2. Chocolate / discover / by the Maya people
  - 3. The first submarine / build / by a Dutch
  - 4. The first e-mail / send / by an American computer engineer
  - 5. The first pens / sell / in Argentina
- Work in pairs. Make the beginnings of simple past passive sentences with the words in 1-6. Then complete each sentence with a person from the box. Listen and check your answers. A TR: 89

Alexander Graham Bell

Karl Benz

Gustave Eiffel

Leonardo da Vinci

Sir Isaac Newton

William Shakespeare

- 1. The telephone / invent
- 2. The Statue of Liberty / build
- 3. The Mona Lisa / paint
- 4. The first car / make
- 5. The play Hamlet / write
- 6. Gravity / discover

The telephone was invented by Alexander Graham Bell.



### Reading

- 1 Work in pairs. Do you ever do quizzes in magazines or watch quiz shows on TV? What's your favorite quiz subject?
- 2 Listen and read. TR: 90

# Great Big History & Quiz

Test your knowledge of history and geography on the ocean, on land, and in the sky!

#### Ocean

- Who was the compass invented by?
  - A. the Chinese
  - B. the Polynesians
  - C. the Egyptians
- The ship *Titanic* sank to the bottom of the Atlantic Ocean in 1912. But when was it discovered?
  - A. 1948
- B. 1985
- C. 2005
- 3. After the "aqualung" was invented, people could **breathe** underwater for a long time. Who was it invented by?



- A. Jethro Tull and John Worlidge
- B. Jacques Cousteau and Émile Gagnan
- C. Leonardo da Vinci and Luca Pacioli

### Land

- Roald Amundsen was the first person to travel to this place in 1911. What place was it?
  - A. the North Pole
  - **B.** Mount Everest
  - C. the South Pole
- Which famous city was called Leningrad before 1991?
  - A. Paris
  - B. Mumbai
  - C. Saint Petersburg
- When was the first train built?
  - A. 1204
- **B.** 1804
- C. 1974

**New words:** sank (simple past of *sink*) breathe design (verb)

- Work in pairs. Do the quiz together. Then listen and check your answers.
- Work in pairs. Which fact from the quiz was the most interesting or surprising? Which invention or discovery do you want to learn more about?



- Who was the first person to fly solo from Hawaii to California?
  - A. J. K. Rowling
  - B. Amelia Earhart
  - C. Florence Nightingale
- The first person on the moon said, "That's one small step for man, one giant leap for mankind." But who was this "one small step" taken by?
  - A. Neil Armstrong
  - B. Buzz Aldrin
  - C. Yuri Gagarin
- Bartolomeu Lourenço de Gusmão was the first person to **design** the hot-air balloon. Where was he from?
  - A. Portugal
  - B. Malaysia
  - C. Brazil

### Grammar 4

1 Study the grammar box.

#### Simple past passive questions

Who was the compass invented by?

When was the Titanic discovered?

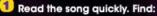
What was designed by Bartolomeu Lourenço de Gusmão?

- Write the four quiz questions. Circle the correct answer (A, B, or C) for each question. Then listen and check. TR: 92
  - 1. When / the Giza pyramids / build?
  - A. about 1,000 years ago
  - B. about 2,500 years ago
  - C. about 4,500 years ago
  - 2. What / discover / by Charles Wilkes / in 1840?
  - A. Antarctica
  - B. Mount Everest
  - C. the Sahara Desert
  - 3. Which animal / send / into space / in 1957?
  - A. a dog
  - B. a monkey
  - C. a mouse
  - 4. What / painted / by Vincent Van Goah / in 1888?
  - A. The Mona Lisa
  - B. Sunflowers
  - C. The Scream
- 3 Complete sentences 1–5. Then work in pairs and ask questions to find out your partner's answers.
  - 1. My schoolbag was made in [place].
  - My house/apartment was built in [year].
  - My favorite song was written by [person].
  - 4. My favorite painting was painted by [person].
  - 5. My favorite jeans were made in [place].

Where was your schoolbag made?

My schoolbag was made in China.

### Song



- five names
- · six inventions/discoveries
- · two years.

- 2 Listen and read. TR: 93
- 3 Listen and act. TR: 94
- 4 Listen and sing. TR: 95 and 96

### **Humans Ask Questions**

Chorus

Humans ask auestions. Humans are smart. We design and invent things that change lives and hearts.

Before the wheel was invented. five thousand years ago. we pulled or pushed things along the ground and it was awfully slow.

Chorus

In 1440, Gutenberg invented the printing press. Books weren't written by hand after that and reading became a success. Chorus

The stars in the sky were too far away for us to clearly see. But in 1608, the telescope was designed by Hans Lippershey. Chorus

Radium and polonium are full of radioactivity. They were discovered by two famous scientists, the Curies-Pierre and Marie. Chorus

We can learn about all these inventions and more in the twenty-first century. because the World Wide Web was invented by Sir Tim Berners-Lee.

#### GLOSSARY





printing press

success a good result





## Writing An Article



Work in pairs. Look at the two photos in the article. Can you agess the connection between them? Then read and find out.

### The Invention of Velcro™

Do you have any clothes with Velcro? Maybe there's Velcro on your sneakers or on your schoolbag. Velcro makes it easy for us to open and close things. But who was it invented by, and how did they think of it?

There are many

tiny hooks on

In 1941, a Swiss engineer named George de Mestral was walking in the woods with his dog. When he got home, some seeds were stuck on his jacket and on the dog. 1.

He looked at them carefully. They had many

tiny hooks. The hooks helped the seeds to stick to his jacket. George wanted to copy this idea. He worked on his invention for eight years and called it Velcro. At first, many other scientists laughed at George's invention. But then Velcro was used in early rockets to stop things in spacecraft from floating around.

Today it is used on clothes, in cars, and in many places in the home.



Velcro was invented by George de Mestral.

Read the information in the box. Then complete blanks 1 and 2 in the article with two sentences from A-D.

> It's important to stay on the subject when you write an article. The information you include must be connected to the subject.

- A. The first person in space was Yuri Gagarin.
- B. It was difficult to pull the seeds off.
- C. After that, Velcro became very popular.
- D. George's dog was large and had black and white fur.
- Writing Skill Questions in articles
- a. Read the information about auestions.

In articles, we sometimes ask the reader questions. We don't expect an answer to these questions. They make the reader interested in the text. For example, we can use this question at the beginning of an article about pancakes.

Do you know how pancakes are made?

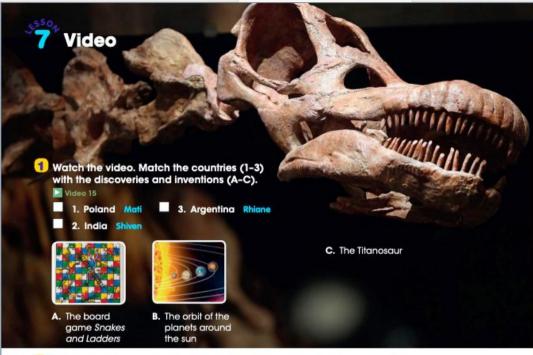
- b. Read the article in Activity 1 again and find two questions.
- Find out about one of these inventions and write a short article about it. Include a question.







the safety pin the light bulb sticky notes



- Watch the video again. When were these things invented/discovered? Match 1-3 with A-C. Video 15
  - 1. the orbit of the planets around the sun

  - 2. the board game Snakes and Ladders
  - 3. the Titanosaur

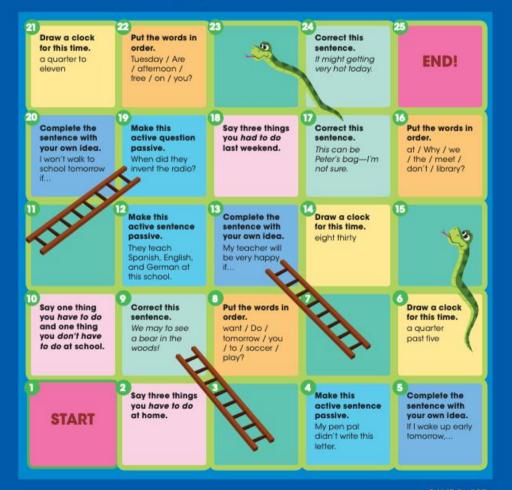
- A. more than two thousand years ago
- B. about five hundred years ago
- C. a few years ago

- Answer the questions.
  - 1. What did people use to think about the sun and Earth?
  - 2. Why is there a statue of Copernicus in the city of Torun, Poland?
  - 3. Where is Snakes and Ladders played today?
  - 4. What happens in Snakes and Ladders if your game piece is on a square with a ladder?
  - 5. What is special about the Titanosaur?
  - 6. What did the Titanosaur eat?
- Work in groups. Think of a famous inventor or explorer from your country. Discuss the questions.
  - 1. What did he/she do?
  - 2. Why is his/her invention/discovery important?

### 1 Work in small groups. Play Snakes and Ladders.

- · Spin the spinner and move your game
- · Do the task on the sauare.
- · If you land on the head of a snake, you must go down it. If you land at the bottom of a ladder, you can go up it.

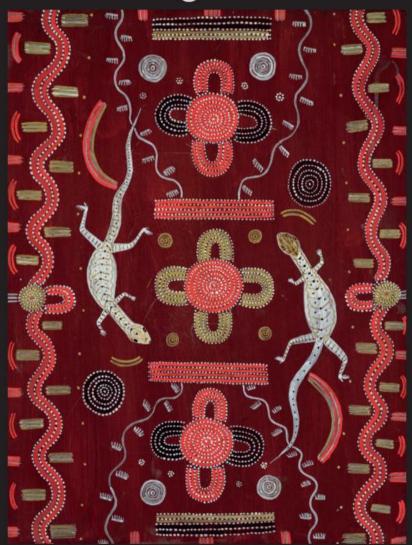




**GAME 3** 125 124 UNIT 12 Discoveries

### Reading Extra 3

### **Aboriginal Art**



Goanna Dreaming by Kaapa Tjampitjinpa

The Aboriginal people are the indigenous people of Australia. They've lived in Australia for more than sixty thousand years, and Aboriginal art is one of the oldest art forms in the world today.

Thousands of years ago, the Aboriginal people painted on rocks, drew pictures in the sand, and decorated their bodies. They had no written language, so they used their art to tell stories about the land. Their paint, in red, orange, white, and black colors, was made from the earth, and they used their fingers or sticks to make marks with this paint. Symbols were used to show different things in the natural world, like stars, animals, or rocks. For example, this was the symbol for rain:

this was the symbol for an emu:

1 1

and this was the symbol for a kangaroo:

In the 1700s, people from Europe came to Australia. They took land away from the Aboriginal people. Over the next two hundred years, life became very difficult for the Aboriginal people. They weren't allowed to speak their own languages. They began to forget their culture—their art, their stories, and their songs.

In the 1970s, a teacher named Geoffrey Bardon was working with Aboriginal children in Papunya, near Alice Springs. He saw that the older Aboriginal men were drawing pictures in the sand while they were telling their stories. He wanted to understand the pictures, so he asked the men to use paints and to draw on cardboard. After that, people all around the world could see this beautiful art for the first time.

Each Aboriginal tribe has its own special style of painting and symbols. Perhaps the most famous Aboriginal style of painting is the Western Desert style, which uses dots, circles, and spirals.

Many other artists around the world now copy these styles in their painting, but only Aboriginal people can make Aboriginal art. This is because Aboriginal art always tells a traditional Aboriginal story. Different tribes have different stories. They can only tell the stories from their tribe, and they aren't allowed to tell other tribes' stories.

- 1 Work in pairs. Look at the picture on page 126. Do you know where this picture is from? What do you think it shows?
- 2 Listen and read. Check your answers to Activity 1. TR: 97
- 3 Read again. Answer the questions.
  - Name three ways the Aboriginal people made art in the past.
  - 2. How did they show things like stars or animals?
  - Why did the Aboriginal people start to forget their culture from the 1700s?
  - What happened after Geoffrey Bardon asked the Aboriginal men to draw on cardboard?
  - 5. What style of painting uses dots, circles, and spirals?
  - 6. What's the difference between an Aboriginal painting and a painting in an Aboriginal style from another country?
- Work in pairs. Imagine you want to paint a picture about life in your country in the Western Desert style. Discuss the questions.
  - What traditional story or information about your history do you want to tell?
  - What are the important things or animals in your story? Make up your own symbols for them.
  - 3. What colors do you want to use? Why?



Review 6: Units 11–12 One More Look

1 What did each person give Katy at her party? Listen and write a letter in each box. There is one example. TR: 98

letter in each box. There is one example. TR: 98

1. Mom 2. Dad 3. Aunt Rachel 4. Uncle Mike 5. Emma 6. Billy

















Read the clues. Complete the words.

1. A long, thin, metal object. It's on a compass n\_\_\_le

2. This person works on boats. s\_\_\_ or

3. The four points on a compass n\_\_h, s\_\_h, e\_\_t, w\_\_t

4. Finding your way from one place to another na \_ g \_ ion

5. Make a new thing that nobody has made before i \_\_\_ nt

3 Rewrite these active sentences as passive sentences.

1. They drive cars on the left in the UK. Cars are driven on the left in the UK.

2. They grow grapes in France.

3. Do they speak German in Austria?

4. How do they make halwa candies?

5. They don't sell newspapers here.

6. They teach science in a different classroom.

Make past passive questions. Then match the questions with answers A–E.

1. Who / the telescope / design / by?

2. When / penicillin / discover?

3. What / write / by Agatha Christie / in 1933?

4. Where / the Titanic / find?

5. What / build / by Gustave Eiffel / in 1887-89?

A. The book Murder on the Orient Express

B. In the Atlantic Ocean

C. Hans Lippershey

D. The Eiffel Tower

E. In 1928

1 Look again at the photos in this book. Which is your favorite? Talk about it with a partner. Explain what the photo shows and why you like it.



I really love this photo. The goats have climbed the tree, and they're standing on it! I've never seen this before.

I like that photo, but my favorite is this one. The performer is on a really strange bike, and there are a lot of people watching him. I've seen street performers in my town—they were really funny.

### 2 Make a list of:

- · three interesting facts that you've learned from this book
- · three people from the book who you'd like to meet
- three places from the book where you'd like to go.
   Work in pairs. Compare your lists.
- 3 During your school vacation, prepare a "show and tell" presentation. Choose one of these ideas.
  - Talk about your favorite place in your town. Take photos of the place and explain why you love it.
  - Make something—a drawing, a necklace, or something to eat.
     Take a photo of it or bring it into class. Explain how you made it.
  - Bring one of your favorite possessions (or a photo of it) into class. Say where you got it, how it was made, and why you like it.



you can see many different birds there.

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### **BONUS School Trip**

### Greenland

Greenland is the world's largest island. It's in the North Atlantic, and most of the island is within the Arctic Circle. If you travel to the northern part of the island, you'll be just 800 kilometers from the North Pole. It's a very cold country, with average temperatures of between –7 to –30° Celsius in the winter and 4 to 7° Celsius in the summer. For two months during the summer, Greenland has a "midnight sun." This means that there's no nighttime, because the sun never sets. 80%

of Greenland is covered in a very thick sheet of ice, about 1,500 meters thick. As snow falls onto the ice, it freezes and makes new sheets of ice.

These sheets of ice are always moving—like very slow rivers. They're called *glaciers*. Big icebergs are made when the glaciers fall into the ocean. In this video, National Geographic Explorer Eddie Kisfaludy and his wife, Amanda, fly a tiny helicopter over Greenland and collect information about how the environment there is changing.

### 1 Read the information about Greenland. Complete the sentences with numbers.

- In the summer, the sun doesn't set for \_\_\_\_\_
  months.
- The ice sheet that covers \_\_\_% of Greenland is \_\_\_ meters thick.
- The northern part of Greenland is \_\_\_\_\_ kilometers from the North Pole.
- Sometimes, in the winter, the temperature goes down to -\_\_\_\_° Celsius.

### 2 Watch the video. Write T (true) or F (false).

- Eddie and Amanda are flying from San Diego to London.
- 2. Not many people have filmed Greenland.
- Greenland is getting colder and more ice is forming.
- Eddie and Amanda can't find out much information from their helicopter.
- Eddie and Amanda share the information that they collect with other scientists.

### 3 Work in pairs. Discuss the questions.

- Would you like to travel to Greenland?
   Why? / Why not?
- 2. What kind of information is useful for the scientists?
- Think of other ways that scientists can find out about different countries.



Eddie and Amanda Kisfaludy

### 4 PROJE

#### Write an explorer fact file.

Eddie and Amanda are explorers. Think about other explorers you've learned about in this book. Choose one explorer and write a fact file about him or her. Think about the answers to these questions.

- · Where did he/she travel to?
- · Why did he/she go there?
- · What did he/she find out?

#### Present your fact file to the class.

Amelia Earhart was the first female pilot to fly solo across the Atlantic Ocean.

Elephant Foot Glacier.

Greenland

### **BONUS Reading Extra**

### Sand and Stone

Two friends, Ahmad and Ismail, were walking across the desert. The journey was long, and they were thirsty and tired from walking in the hot, hot sun. Ismail wanted to rest, but Ahmad was not ready for a rest. "We have a long way to go," he said. "We must walk a few more kilometers before we can stop."

They began to argue. Ahmad became so angry that he hit Ismail. Ismail fell to his knees in the sand. He was sad and anary. With his finger, he wrote in the sand: "Here, my friend hit me."

The two friends continued their journey across the desert. Not a word was spoken between them. After a long time, they came to an oasis with palm trees and a pool of water. Excited, Ismail ran toward the cool water. But, as he came near the water, he found that he couldn't run anymore.

The sand was wet. He was pulled down into it, and he couldn't climb out. He sank further and further into the sand, and he became very frightened. He shouted to Ahmad, "Help me! Help me!" Ahmad ran forward and reached across the dangerous sand. He took his friend's arm and pulled him to safety.

Then Ismail took out his metal knife and on a stone near them, he carved these words: "Here, my friend helped me."

"But why," said Ahmad, "did you write in the sand when I hit you? But when I helped you, you carved 1 Look at the words for materials in the box. Answer the questions.

metal sand stone water wood

- 1. Which are hard? Which are soft?
- 2. Which can you find in the desert?
- 2 Listen and read. TR: 99
- Read again. Which statement is true for Ahmad (A)? Which is true for Ismail (I)? Write A or I.
  - 1. He didn't want to stop for a rest.
  - 2. He was hit by his friend.
  - 3. He ran toward the water.
  - 4. He pulled his friend out of the sand.
  - He wrote messages in sand and in stone.
  - 6. He wasn't angry with his friend anymore.
- Look at sentences 1-4. Which would you write in sand? Which would you carve in stone? Add two more sentences of your own.
  - 1. My friend said my handwriting was terrible.
  - 2. My cousin helped me with my homework.
  - 3. My friend gave me her last piece of chocolate.
  - 4. My brother broke the glass screen on my phone.

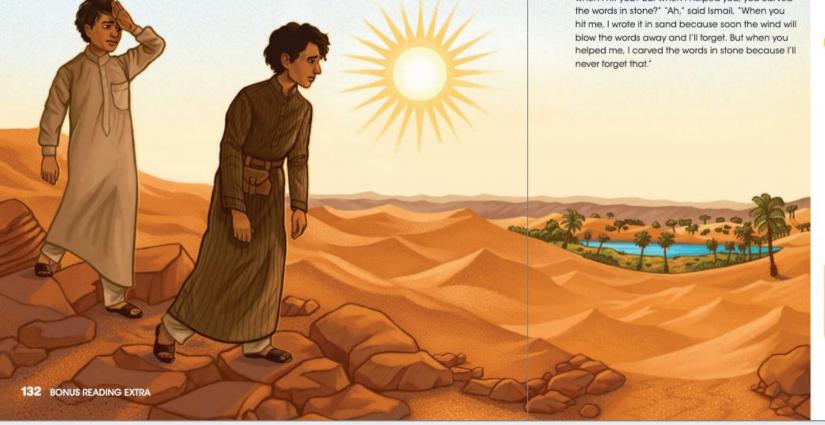
5.	

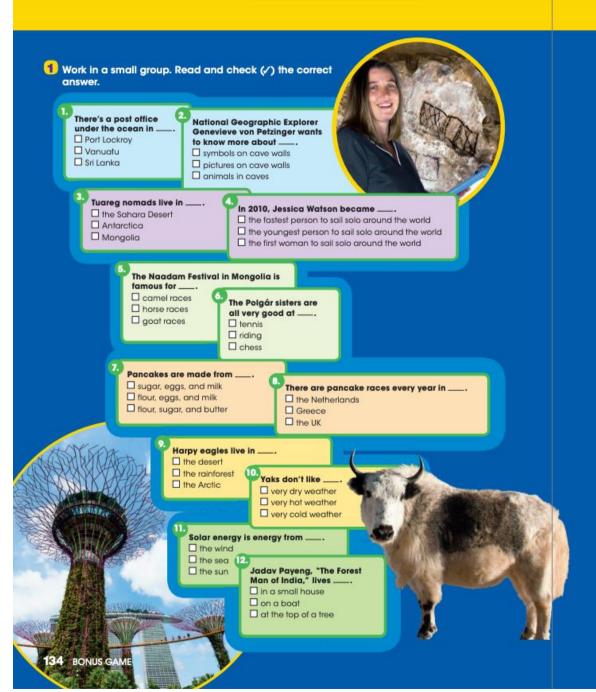
argue speak angrily with someone continue keep doing something; not stop

oasis an area of water in the desert where plants and

carve out pictures or letters into stone or wood

blow move air (the wind does this)





Every day, astronauts of International Space Sta do about two hours of get letters from their fa wear different clothes	the pupper shows at the Thang Long Theater in Hanoi, Vietnam, are	
mountains, you m a map a first aid kit a flashlight		
2 cı	Pearls grow in  oysters fish	you