## Contents

| CLIL 1 | Geography • New Zealand |
| CLIL 2 | Geography • India |
| CLIL 3 | Earth Sciences • The Water Cycle |
| CLIL 4 | Geography • Rivers |
| CLIL 5 | History • Democracy in Ancient Greece |
| CLIL 6 | History • The Norman Conquest |
| CLIL 7 | History • The City of York |
| CLIL 8 | History of Art • Kouros and Kore |
| CLIL 9 | History of Art • Roman mosaics in Britain |
| CLIL 10 | Literature • Ovid and Virgil |
| CLIL 11 | Literature • The Novel |
| CLIL 12 | Biology • The Eye |
| CLIL 13 | Physics • Measuring Temperature |
| CLIL 14 | Chemistry • Penicillin |
| CLIL 15 | PE • Rugby |
| CLIL 16 | Biology • Extinction |
| CLIL 17 | Geography • European Contrasts |
| CLIL 18 | Maths • Measurements: metric vs. imperial |
| CLIL 19 | Maths • Algebra: word problems |
| CLIL 20 | Physics • Black Holes |
Developed country – New Zealand

1 How much do you know about New Zealand?
   True or False? Write T or F.
   1 ___ New Zealand is in the South Pacific Ocean.
   2 ___ The capital city is Auckland.
   3 ___ The native people are called Aborigines.
   4 ___ New Zealand is a republic.
   5 ___ 10 million people live in New Zealand.
   6 ___ The weather is very cold.

2 Read the text about New Zealand and check your answers to Ex.1. Correct the false sentences.

New Zealand is in the South Pacific Ocean. There are two islands, North and South. The capital city is Wellington, but the largest city is Auckland, with 1.3 million people. The population of New Zealand is 4.2 million.

New Zealand is a multicultural society, with a mix of Polynesian, Asian, and European cultures. The first people to live there were the Maori, who arrived from Polynesia in about 800 AD. In 1642, a European explorer, Abel Janzoon Tasman from Holland, navigated around the islands, but 100 years passed before the next Europeans arrived.

In 1840 the Maori signed a treaty with the British, and Queen Victoria became New Zealand’s queen. Today, New Zealand is a constitutional monarchy and Queen Elizabeth II is the head of state.

New Zealand is 12 hours ahead of Greenwich Mean Time, so it is one of the first countries in the world to celebrate New Year’s Day each year!

New Zealand is famous for its sports and leisure activities, especially rugby. It is also famous for its beautiful countryside, as seen in films such as The Lord of the Rings.

The weather in New Zealand is very diverse. In the north it is often warm and humid, but the south is near the Antarctic and the weather can be very cold.

This climate makes New Zealand one of the most fascinating countries in the world – snowy mountains, tropical rainforests, and beautiful golden beaches, all in one place!


3 What do these numbers in the text refer to?
   a 1.3 million  
   b 800 AD  
   c 1642  
   d 100 years  
   e 1840  
   f 12 hours

What do you think?

Would you like to visit New Zealand? Why? / Why not?
Developing country – India

1 Put these countries in order of geographical size (1–8), starting with the largest (1).

____ India  ____ Russia
____ China  ____ United States
____ Canada  ____ Brazil
____ Italy  ____ Australia

What is the smallest country in the world?

2 Read the text about India and complete the fact file.

Fact File: India

- Capital: ............................................................
- Population: .....................................................
- Main religion(s): .............................................
- Language(s): ..................................................
- System of government: .....................................
- Climate: ..........................................................
- Currency: ......................................................
- Mobile phone users: ........................................
- Internet users: ..............................................

3 Read the text again. True or false? Write T or F. Correct the false sentences.

1 ____ India is the seventh largest country in terms of population in the world.
2 ____ There are 19 official languages in India.
3 ____ India is a monarchy.
4 ____ The climate is the same all over India.
5 ____ New Delhi is famous for its computer industry.
6 ____ Bangalore is the fastest growing city in Asia.
7 ____ 670 million people use the Internet in India.
8 ____ India is a developed country.

MINI-PROJECT

Look at the information about India again.
Prepare a similar fact file about Italy. Use the Internet, magazine or newspaper articles to find the information.
Then using the information in your fact file, write a short text about Italy.

Glossary: billion – miliardo
overtake – superare  main – principale
monsoon – monsone  currency – valuta
develop – sviluppare  conflict – conflitto
environmental pollution – inquinamento ambientale
The water cycle

1 Choose the correct words to make 5 sentences.

1 Clouds 2 Lakes 3 Wells 4 Ice caps 5 Groundwater

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</table>

2 Read the text about the water cycle and check your answers to Ex. 1.

3 Read the text again. True or False? Write T or F. Correct the false sentences.

1 The total amount of water in the cycle changes.
2 Human actions have created changes in the water cycle.
3 Clean water is fundamental for good health.
4 The water cycle does not change naturally.
5 Many water problems are caused by nature.

4 Choose the correct alternative: a, b or c.

1 The water cycle
   a moves very quickly.  b never stops.  c starts in the oceans and finishes in the rivers.
2 Most precipitation
   a forms glaciers.  b evaporates.  c flows back into the sea.
3 We have a water crisis because
   a there are so many diseases.  b we use too much water.  c it doesn't rain enough.
4 Desalination
   a is a simple process.  b costs a lot of money.  c is the only solution to our water problems.
5 It is important to change our lifestyles because
   a there is enough water  b if everyone does something small, it can have a big positive impact.  c one person can change everything.

What do you think?

1 How much water do you use in a day? What do you use water for?
2 Do you think water should be free?

MINI-PROJECT

Find out some information about the water situation in your region. Where does the local water supply come from? Is the quality good? Are there ever any problems with the water supply? Write a short text about it.

Water

The water cycle is the continuous movement of water on, above, and below the surface of the Earth. As the name suggests, it has no beginning or end. Water can change states from liquid to vapour to solid during the cycle, but the quantity of water on Earth remains constant over time.

This is how it works: the sun heats water in the seas and oceans and causes plants to transpire on the land. The water evaporates into the air as water vapour, and then condenses into water droplets inside the clouds. As air currents move the clouds, the water droplets collide, grow, and fall out of the sky as precipitation in the form of ice and snow crystals, or rain. Some snow stays as ice caps and glaciers on mountains but most precipitation falls back into the sea and onto the land, where it enters the ground. Some water stays under the ground and in lakes, but eventually, by flowing from springs and along rivers in valleys, the water always returns to the ocean, where the water cycle started.

Natural changes occur in the water cycle, but many of the changes we see today – for example melting ice caps, droughts and floods – are the result of human activities. We now have a global water crisis caused by agriculture, industry, the alteration of the chemical composition of the atmosphere, the construction of dams, deforestation, the removal of too much groundwater from wells, taking water from rivers, and urbanization. There is now too much human demand for usable (fresh) water and a lot of our water is polluted. Many people today still do not have access to safe water for drinking and washing, and this is the cause of about 88 percent of all diseases!

Where can we find more water? Ironically, two thirds of the Earth’s surface is covered in water, but the water in the oceans is full of salt and can only be used after desalination – a very complicated and expensive process.

According to the United Nations there is enough water for everyone, but water problems are often the result of bad management, corruption and poor regulation by governments. But one thing is certain – we have to change our habits! So next time you brush your teeth, don’t forget to turn off the tap while you are doing it. Water is precious, and small changes can make a big difference!

Rivers

1 Match the words (1–4) to the definitions (a–d).

1 __ river a the side of a river
2 __ river bank b the place where a river meets the sea
3 __ ford c water that flows to the sea
4 __ river mouth d part of a river where it’s possible to cross

2 Read the text about rivers. Why have rivers been important?

3 Read the text again. True or false? Write T or F. Correct the false sentences.

1 __ Many people in Britain like rivers. T
2 __ In Oxford it wasn’t possible to cross the river. F
3 __ All places with the word ‘mouth’ in their name are inland. F
4 __ Rivers were once important for transport. T
5 __ Polluted rivers are a resource for agriculture. F

4 Choose the correct alternative: a, b or c.

1 Many cities developed on rivers because
a it was easy to transport goods on boats.
 b you could get a suntan.
 c they are a relaxing place.

2 The canal system in Britain
a has given the names to lots of cities.
 b was first created by the Romans.
 c developed very late.

3 A lot of towns and cities
a have strange names.
 b have meeting places around a river.
 c include a word in their names related to rivers.

4 In the past rivers and canals were especially important
a for producing raw materials.
 b for the development of the industrial system.
 c to use water for pottery.

5 Today rivers
a are still useful.
 b are not used anymore.
 c cannot be a resource anymore.

What do you think?

1 Do you live near water (a river, lake or the sea)?
2 What types of activities do people do on the water near where you live?

MINI-PROJECT

Think of a big river in your country, and find out some information about it. Write a short text, including any information about the influence it had on the economy and lifestyle of the local people in the past.

Glossary:

riverside – lungo fiume
suntan – abbronzatura
developed – sviluppati
founded – fondata
low – basso
cross – attraversare
oxen – [parola antica] buoi
river bank – argine del fiume
raw materials – materie prime
carbon – carbone
pottery – ceramiche
valuable – prezioso
environment – ambiente
goods – merci

If you go to Britain in the summer, you will almost certainly see hundreds of people walking and lying by the riverside, trying to get a suntan or relaxing on little boats. Rivers are very popular, and they always have been, but for lots of different reasons. Since the beginning of time, man has used them to find fresh water for drinking, irrigating and cleaning. After man invented the boat, rivers also became a fundamental resource for transport. It is not surprising then that over time, lots of towns and cities developed along the banks of navigable rivers.

Britain is a country with a particularly high number of rivers (and later canals, which were developed on an earlier Roman system), and the names of many cities reveal their connection with water. A city with the name ‘ford’ for example (Oxford, Stratford, etc) was certainly founded on a river at a point where the water was low and it was possible to cross (at Oxford, people could take their oxen across). A place name including the word ‘bridge’ will obviously also indicate the presence of a river (Cambridge, Trowbridge, etc) and a city ending in ‘mouth’ (Portsmouth, Exmouth, Bournemouth) was built at the mouth of a river, where it meets the sea. River life has also influenced the language in other ways. For example, in old English a ‘rival’ was someone who took water from the other side of the river bank from you.

In Britain the river and canal system played a vital role in the development of the Industrial Revolution by allowing ‘mass’ transit of raw materials and finished products (for example, coal and pottery). Unfortunately, lots of our rivers became so polluted that they were more of a problem for agriculture than a resource, but today many of them are clean again, so they can be a valuable part of our environment once more. Today rivers are no longer used much for the transport of goods, but they are still important for giving us water for irrigation, for fishing and of course, for having fun.
Democracy in Ancient Greece

1 What do you know about politics and democracy?
Match the words (1–4) to the definitions (a–d).

1 elect  a to have the same opinion as another person
2 citizen  b a person legally belonging to a country or state
3 slaves  c to choose a government or public figure by voting
4 agree  d people who are forced to work without pay

2 Read about democracy in Ancient Greece. How was it different from modern democracies?

The birthplace of democracy

Democracy and democratic are two of the most used words in contemporary politics, but do we all know what they really mean?
The origin of the word democracy is Greek. It simply means ‘the people’s government’ and it is exactly what happened in Attica, the region of Athens, around the 4th century BC. Athens’ democracy was direct, so all citizens participated in the government personally and not through representatives, as we do today. However, it was only open to men over 30 and they had to complete their military service before they could have a role in public life. This obviously excluded younger men, women, slaves and foreigners.

In Ancient Greece there was not a government and an opposition. Each individual had the opportunity to propose a law and the Assembly voted using a simple majority system. Usually the Assembly voted by show of hands, but for important votes they introduced the pebbles system. Each voter could use a white pebble to agree with the law and a black pebble to disagree. This practice made counting the votes more accurate – it was easier to count pebbles rather than the hands of hundreds of people!

Public administrators were not elected or nominated, but selected by a lottery system. This was a guarantee against ambition and greed. Of course, not all citizens had the right qualities for the different tasks, but they solved the problem by creating groups of people who worked together and learned from each other. The only elected people were officials with two specific positions: those managing large sums of money and the generals of the army. The first group came from the richest families, an effective strategy to stop people stealing public money; the second came from military ranks because they needed specific experience.

It is interesting to note that our word ‘idiot’ comes from the Greek word ‘idiotes’, meaning a private person, someone who was not interested in politics, and it became an insult because these people were not respected by other citizens.

3 Read the text again. True or false? Write T or F. Correct the false sentences.

1 In Athens all citizens were part of the government.
2 Women could participate in government.
3 The government had an opposition.
4 The pebbles system was more precise.
5 There weren’t any elected public officials.

4 Choose the correct alternative: a, b or c.

1 You could not have a role in public life if
   a you did not finish military training.
   b you were 35.
   c you had children.

2 Proposing a law was
   a open only to the majority.
   b open only to some people.
   c open only to the government.

3 Voting by show of hands was
   a restricted to special occasions.
   b a very unpopular system.
   c difficult to count.

4 Some officials were elected from rich families because
   a rich people did not need to steal.
   b they needed experience with money.
   c they knew the right strategies.

5 ‘Idiots’
   a were stupid people.
   b weren’t interested in participating in public life.
   c were not very interesting.

What do you think?

1 Is politics a subject you are interested in? Why? Why not?

2 Imagine you are the Prime Minister of Italy. What are the first three things you will change?

Glossary:
citizen – cittadino  belong to – appartenere a
slave – schiavo  through – tramite
representative – rappresentante  law – legge
pebble – sasso  guarantee – garanzia  greed – avidità
task – compito  army – esercito  steal – rubare
The Norman Conquest

1 Describe what you can see in the picture. Which period of history do you think it is?

2 Read the text and put the sentences (a–d) in chronological order (1–4).
   a ___ Harald Hardrada invaded England.  
   b ___ The Normans won the Battle of Hastings.  
   c ___ Edward the Confessor died.  
   d ___ Harold Godwinson became king.

3 Answer the questions.
   1 What does the Bayeux Tapestry illustrate?  
   2 Who were the three kings of England in 1066?  
   3 Who fought the battle of Stamford Bridge?  
   4 Where did William’s army land?  
   5 How did William keep control of England after the Battle of Hastings?  
   6 What changes did the Norman Conquest bring to England?

What do you think?
   1 Why do you think Harold lost the Battle of Hastings?  
   2 Do you think the feudal system was popular with the English?

MINI-PROJECT
Think of an event that significantly changed the history of Italy. Write a brief description of the event. Include information about:
• dates  • people involved  • places

The Bayeux Tapestry is displayed in Bayeux, in Normandy, France. It shows the Norman Conquest of England and the events that happened before and after the Battle of Hastings in 1066, one of the most famous battles ever fought in Britain.

1066 was the year in which England had three kings! When Edward the Confessor died in January, it wasn’t clear who should become the next king. Harold Godwinson, an English nobleman, declared himself king. Harald Hardrada, the Viking King of Denmark, also thought he should be king. In September he invaded the north of England with his army. The two sides fought each other at the Battle of Stamford Bridge, and Harold Godwinson won. Duke William of Normandy also wanted to be king. He invaded England at the same time and landed with his army near Hastings on the south coast. Harold and his tired army had to march 250 miles in 9 days to fight them.

On the 14th October 1066, the two armies fought the Battle of Hastings. Harold was killed, the English lost the battle, and William the Conqueror became King of England.

The Normans brought the French language and French customs to England, which changed its language, culture, and society forever.

William introduced the feudal system. He divided England’s land and castles between his Norman barons. The people who worked on the land paid taxes to the barons, and the barons paid the king. In this way, William kept control with fewer than 20,000 men in a hostile country of more than 1.5 million people.

Since the Norman Conquest, England has never been successfully invaded again.

The City of York

1 How old is the town or city where you live? What do you know about its history?

2 Read the text about York and number the historical periods in chronological order (1–7).

___ Viking  ___ Anglo-Saxon
___ Victorian  ___ Medieval
___ Georgian  ___ Roman

Welcome to York!
The city of York in the north of England is nearly 2,000 years old.
The Romans built a fortress there in 71AD and called it Eboracum.
It was one of the most important cities in the Roman Empire. After the Roman armies left in 410, the Anglo-Saxons invaded Britain. They changed York’s name to Eoferwic, and it became an important religious centre with the spread of Christianity.
In 866, Vikings captured the city and made it their capital, renaming it Jorvik. The city was a major river port on the Viking trade network because of its position next to two rivers, the Ouse and the Foss.
William the Conqueror came to York in 1069, after the Norman invasion of England. He caused a lot of destruction, killing lots of people and burning the land.
The city slowly recovered, and by the Middle Ages it was a profitable centre of trade, particularly for wool. The people of York rebuilt the cathedral, York Minster, and the defensive stone walls around the city, which still exist today. York was the second biggest medieval city in England, and many kings and queens visited it.
York became a social and cultural centre in the Georgian period, with the construction of its racecourse, public meeting places, and many elegant houses. Its development continued with the growth of factories, banks, and offices during the Victoria era, and it became a famous railway centre. Over 5,500 people worked on the railway there at the end of the 19th century.
In 1968, the city’s historic centre was designated a conservation area. Today it is a major tourist destination and attracts more than 7 million visitors each year.

3 Answer the questions.
1 Who called the city Jorvik?
2 What are the names of York’s rivers?
3 How did William the Conqueror destroy York?
4 What was the main industry in medieval times?
5 How did the city grow during the Georgian period?
6 How many tourists visit York each year?

What do you think?
1 King George VI said ‘The history of York is the history of England.’ What do you think he meant by this?
2 Which Italian city most reflects the history of Italy?

MINI-PROJECT
Choose an Italian city and write a similar short text. Include information about its history, development and monuments.

Kouros and Kore

1. Put the words in the box in the correct columns.

Clay thin healthy metal statue

Sporty stone sculptor model

Musculature anatomy anorexic

<table>
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<th>The human body</th>
<th>Sculpture</th>
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2. Read the text about the Greek sculptures called Kouros and Kore. What did they represent?

3. Read the text again. True or false? Write T or F. Correct the false sentences.

1. Greek art has not always been an inspiration for Western art.
   - True

   - True

3. The first Korai bodies were not very realistic.
   - True

4. Later human figures were more realistic.
   - True

5. Modern models of beauty are similar to ancient Greek models.
   - False

4. Choose the correct alternative: a, b or c.

1. The Kore
   - a. were naked.
   - b. were enormous.
   - c. wore a short dress.

2. Archeologists now say that Korai are the image of
   - a. deities.
   - b. young people.
   - c. older people.

3. In later statues Greek sculptors changed the
   - a. pose and muscles.
   - b. smile.
   - c. clothes.

4. For thousands of years Greek sculptures have been
   - a. considered too thin.
   - b. ignored.
   - c. a model for artists.

5. Today's fashion requires
   - a. a healthy look.
   - b. an excessively thin body.
   - c. an athletic body.

What do you think?

1. Who is your idea of a perfectly beautiful person?
2. Does 'objective' beauty exist?
3. How important is beauty to you?

MINI-PROJECT

Beauty is not only associated with people. Think of an object or animal that you find beautiful and describe it. Add a photo if you can.

Glossary:
- Clay – argilla
- Healthy – sano
- Stone – pietra
- Civilization – civiltà
- Proud – fiero
- Confident – sicuro di sé
- Smiling – sorridente
- Marvel – meraviglia
- Beauty – bellezza
- Catwalk – passerella
Roman mosaics in Britain

1 What different kinds of Roman art can you think of?

2 Read the text about Fishbourne Roman Palace in England and write the paragraph headings in the box in the correct spaces (1–4).

Mosaics  Education  History  Size

Fishbourne Roman Palace

1 ___________ The Romans built the palace around 80 AD on the site of a military base in Sussex, England. It was rediscovered in 1960.

2 ___________ It is the biggest single building ever found by archaeologists in Britain. It covered an area the size of Buckingham Palace and had approximately 100 rooms. Today, it is possible to visit parts of the original palace, the museum, and gardens.

3 ___________ Most of the rooms in the palace had mosaic floors, built at the time of the palace’s construction. Visitors can still see some of the original mosaics. The mosaic collection at Fishbourne is famous because it is one of the largest and oldest in Britain.

4 ___________ The palace is open to school groups all year. During school holidays, students can participate in workshops such as Roman Textiles, Making Mosaics and Roman Plants and Gardens.

3 Now read the text about Roman mosaics. What is the most famous mosaic at Fishbourne?

4 Match the words (1–6) to the definitions (a–f).

1 __ process  a a person who makes things by hand
2 ___ tesserae  b a strip around the edge of a picture
3 ___ craftsman  c a method of doing or making
4 ___ limestone  d a type of dark grey stone
5 ___ slate  e a type of soft, white stone used to make cement
6 ___ border  f the individual pieces in a mosaic

5 Answer the questions.

1 Which parts of their villas did Romans decorate with mosaics?

2 Why were personalized mosaics situated in the main room of the villa?

3 What materials did the craftsman use to prepare the surface?

4 When did the craftsman lay the border?

5 How many tesserae are there in the Cupid on a Dolphin mosaic?

6 How did the Roman artists personalize their work?

Glossary:


MINI-PROJECT

Roman mosaics often contained scenes of everyday domestic life, such as people and animals. Battles, religious subjects, and geometric designs were also popular.

Design a 21st century mosaic for your home. Write a brief description of it and include the following information:

- subject
- materials
- colours
- location

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Ovid and Virgil

1 Match these historical figures (1–5) to their descriptions (a–e).

1 Ovid and Virgil
2 Brutus
3 Octavianus Augustus
4 Julius Caesar
5 Cleopatra

a Queen of Egypt
b poets
c General and dictator
de Emperor
e adopted son of Julius Caesar

2 Read the text about Ovid and Virgil. What was the main difference between the later years of their lives?

3 Read the text again. True or false? Write T or F. Correct the false sentences.

1 Antony and Cleopatra won the battle against Augustus. T
2 Ovid’s parents weren’t poor. F
3 Ovid and Virgil studied law together. T
4 Ovid never married. T
5 Virgil loved the countryside. T

4 Choose the correct alternative: a, b or c.

1 Ovid and Virgil have in common the fact that
a they had lots of students.
b they worked together.
c they wrote in the same period.

2 Ovid
a studied law.
b was a middle child.
c was very polite.

3 Ovid was exiled
a with his family.
b for unknown reasons.
c three times.

4 Virgil’s family
a was interested in philosophy.
b had property in the countryside.
c owned a lot of books about nature.

5 The Aeneid is a book about
a a hero escaping from a war.
b life in the countryside.
c the Emperor Augustus.

What do you think?

1 Do you read a lot?
2 What kind of books do you like?
3 Which don’t you like?

MINI-PROJECT

The poet Horace wrote in the same period as Ovid and Virgil. Find out some information about his life and write a short biography.

Glossary:
battle – battaglia
hero – eroe
will – volontà
fought – combatterono
achieve – ottenere
lawyer – avvocato
seduction – seduzione
imitated – copiati
verses – versi
exiled – esiliato
characters – personaggi
trip – viaggio
A sudden chill came over me. There was a loud shriek from a woman behind. I half turned, keeping my eyes fixed upon the cylinder still, from which other tentacles were now projecting, and began pushing my way back from the edge of the pit. I saw astonishment giving place to horror on the faces of the people about me. I heard inarticulate exclamations on all sides. There was a general movement backwards. I saw the shopman struggling still on the edge of the pit. I found myself alone, and saw the people on the other side of the pit running off, Stent among them. I looked again at the cylinder, and ungovernable terror gripped me. I stood petrified and staring. (War of the Worlds, Chapter 4)
The Eye

1. Match the senses (1–5) to the parts of the body (a–e).

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</tbody>
</table>

Which sense do you think is the most important? Why?

2. Read the text. Which are the four most important parts of your eye? What gives our eyes their colour?

3. Read the text again. True or false? Write T or F. Correct the false sentences.

1. The cornea is the most internal part of the eye.
2. The iris regulates the light that comes into the eye.
3. With myopia you can’t see close to you.
4. With hyperopia the light stops in front of the retina.
5. With astigmatism you cannot focus properly.

4. Answer the questions.

1. What are the two main functions of the cornea?
2. What does the retina do to light rays?
3. Why are the muscles of the iris so important?
4. Why are the eyes sometimes blue?
5. What are the most common eye problems?

What do you think?

1. What is your eyesight like?
2. Why do so many people wear glasses today?
3. Which activities are bad for your eyes?
4. What did people with bad eyesight do in the past?

A window on the Universe


We can admire these marvels of nature because we have eyesight. But how does the eye work?

The human eye is composed of four major parts: the cornea, the lens, the retina and the iris.

The cornea is the clear, round-shaped surface that covers the front of the eye. It helps to protect the rest of the eye from germs and dust. It is like a window that controls and focuses the entry of light into the eye. When light strikes the cornea it bends the light to focus it onto the retina.

The lens helps the light to be focused on the retina by changing shape so that it can focus on objects at various distances and create sharp images. It works just like a camera lens.

The retina converts the light rays into impulses that the optic nerve then sends to the brain, which interprets them as images.

The iris is the coloured part of the eye. The round opening in the centre of the iris is called the pupil. If there is too much light, the muscles of the iris make the opening smaller to limit the light entering the eye. Exactly the opposite happens when there is not enough light. The iris is also responsible for the colour of our eyes. It contains melanin, which reflects the colour brown. When there is insufficient melanin, the iris reflects the colour blue.

Sometimes the incredible mechanism of the human eye does not work properly. The most common eye problems are:

- myopia (short sightedness): light entering the eye is focused in front of the retina, and not directly on it. People with myopia have problems seeing in the distance.
- hyperopia (long sightedness): light entering the eye is focused behind the retina, instead of directly on it. Those with hyperopia usually have problems seeing at a short distance, but sometimes also far away.
- astigmatism: light focuses on more than one point in the eye, causing blurred vision.

People who have these problems wear optical glasses to correct them. However, thanks to scientific progress, it is now possible for many people to have an operation to solve the problem permanently.

MINI-PROJECT

Animals see differently from humans. Do some research on the eyesight of dogs. How is their eyesight better than ours? And how is it worse?

Glossary:

- taste – gusto
- sunset – tramonto
- leaves – foglie
- rainbow – arcobaleno
- marvels – meraviglie
- eyesight, sight – vista
- lens – lente
- iris – iride
- dust – polvere
- focus – focalizzare
- shape – forma
- blurred – sfocato
Physics • Measuring Temperature

1 How many systems are there for measuring how hot or cold something is? What are these systems called?

2 Read the text and check your answer to Ex.1.

3 Read the text again. True or false? Write T or F. Correct the false sentences.
   1 ___ 23° F is warm.
   2 ___ There are different temperature measurement scales in the world.
   3 ___ The first person to invent an international temperature scale was Anders Celsius.
   4 ___ The system used in science is the Celsius scale.
   5 ___ Today the Fahrenheit scale is only used in the USA.

4 Answer the questions.
   1 Should you wear a T-shirt, a jacket or a pullover at 100° F?
   2 What are the two anchors of temperature scales?
   3 What are the boiling points of the Fahrenheit and Celsius scales?
   4 Why do we use the word ‘centigrade’ when we measure temperature?
   5 What is the temperature on a mild day in the USA and in Italy?

What do you think?

1 What is the normal body temperature of a human being? How much higher can it go before you think you are ill?
2 What is the hottest temperature you have experienced? And the coldest? Where were you?

MINI-PROJECT

There is also a third scale for measuring temperature, called the Kelvin scale. Do some research and find out how it is different from the other two scales, how it works, why it was developed and who developed it.

Penicillin

1 Match the inventions (1–6) to the person who invented them (a–f).

1 ___ Electricity  a John Logie Baird
2 ___ Radio  b Orville and Wilbur Wright
3 ___ Telephone  c Thomas Edison
4 ___ Television  d Tim Berners-Lee
5 ___ Aeroplane  e Antonio Meucci
6 ___ World Wide Web  f Guglielmo Marconi

2 Read the text about penicillin and answer these questions.

1 Who discovered penicillin?
2 Why was penicillin an important discovery?

3 The following sentences (1–5) are missing from the text. Where do they go? Label them with the correct position (A–E).

1 ___ For example, simply cutting your hand could be fatal!
2 ___ He named this substance penicillin.
3 ___ Fleming was a bacteriologist working at St. Mary's Hospital in London.
4 ___ An antibiotic can attack, kill, and prevent these bacteria from multiplying.
5 ___ During the Second World War, the medical industries in the USA and Great Britain worked together to produce large quantities of penicillin.

4 Complete the sentences with words from the text.

1 Fleming observed a blue-green ____________ , which destroyed bacteria.
2 ____________ create infection, which penicillin can kill.
3 ____________ was important in saving the lives of soldiers.
4 Penicillin is an important ____________ .

What do you think?

1 Which of the inventions in Ex.1 do you think was the most important? Why?

MINI-PROJECT

Think of another discovery or invention and find out more about it using the Internet. Write a short text about it. Include information on:
• when?  • who?  • where?  • why?

Penicillin was the first antibiotic used to treat bacterial infections successfully. A bacterial infection is caused when bacteria multiply in the body. (A) ____________

Before the discovery of penicillin, many people suffered and died from bacterial infections that are not considered dangerous today. (B) ____________

Alexander Fleming discovered penicillin in 1928. (C) ____________ He noticed that a blue-green mould was growing on a plate culture of the bacteria, Staphylococcus. The mould was dissolving bacteria around the plate. He decided to grow the mould and found that it produced a substance which could kill bacteria. (D) ____________

In 1939, a group of scientists at Oxford University developed Fleming's research and realized the importance of penicillin as a life-saving drug. (E) ____________ Penicillin made a big difference in the number of deaths and amputations caused by infection. In 1945 Alexander Fleming was awarded the Nobel Prize for his discovery.

Glossary:
- cut – tagliare
- prevent – prevenire
- treat – curare
- multiply – moltiplicarsi
- mould – mossa
- plate culture – coltura
- dissolve – disciogliere
Rugby

1 What do you know about the game of rugby? Answer the questions.
1 What are some of the differences between rugby and football?
2 Have you ever watched a game?
3 Do you know anyone who plays it?
4 Do you know the names of any Italian players?

2 Read the text. What physical and mental characteristics do you need to play the game?

3 Read the text again. True or false? Write T or F. Correct the false sentences.
1 ___ The game was invented at a school.
2 ___ In rugby you can pick up the ball and run with it.
3 ___ You have to be big to play rugby.
4 ___ Rugby is not a professional game.
5 ___ The Six Nations tournament is played every year.
6 ___ New Zealand won the World Cup in 2000.

4 Answer the questions.
1 When was rugby invented?
2 Name two types of positions in a rugby team.
3 What is important to be a successful team?
4 Why is it so important to respect the rules?
5 What are the All Blacks famous for?

What do you think?
1 Why do you think rugby is becoming more popular?
2 At which sports events do you think the atmosphere is friendly? At which do you think it is aggressive?
3 Which sports do you like watching? Why? Which sports do you hate watching? Why?

MINI-PROJECT
Make a poster about 2 or 3 national rugby teams, showing their names, their nicknames, their national symbols, and the colours they play in. Write a paragraph next to each team with any other interesting information about them.

A DIFFERENT KIND OF FOOTBALL

Rugby was invented ‘accidentally’ in the 19th century, at Rugby School in England, when a schoolboy called William Webb Ellis picked up the ball in a game of football and ran with it. It is now one of the most popular contact sports in the world. In a great game of rugby you can see fast running, courageous tackling, players passing the ball quickly in every direction, and lots of points – it is quite common for there to be more than 50 points scored in a game.

You may think that rugby is only for enormous, strong men, but in fact anybody can play the game because you need different skills for different types of play and positions. The ‘forwards’ must be strong and determined, the ‘backs’ have to be fast at running and changing direction rapidly. However, there are no real ‘stars’ like in other sports, the secret to winning is ‘team spirit’. Part of this spirit is respect for the rules of the game. This is especially important because rugby can be dangerous.

The sport is now played all over the world by men and women, amateurs and professionals, and new exciting national teams are now emerging. The Italian team, for example, joined the famous Six Nations annual championship since in 2000. But the most famous team in the world is probably the New Zealand All Blacks. They are famous for performing the ‘haka’ before each match, and they won the Rugby World Cup in 2011.

The atmosphere at international rugby matches is fantastic. They are happy occasions for all the family, and fans from both sides are always friendly to each other.

So next time you are in the park with your friends, instead of the usual game of football, pick up the ball and run with it like William Webb Ellis did nearly 200 years ago! But watch out for tackles!

Glossary: picked up – prese in mano tackling – placcaggio skills – abilità amateur – dilettante watch out – fare attenzione a
Extinction

1. How many extinct species can you think of? Do you know how to say them in English?

2. Read the text about extinction and write the questions in the correct spaces (1–4).

| How do we know about species which no longer exist? |
| What is extinction? |
| What causes extinction? |
| What do we mean by ‘occasional catastrophes’? |

Going, going, gone!

Life first appeared on the Earth 3 billion years ago. Of all the species that have lived on the Earth since then, only about one in a thousand is still living today. All the others are extinct.

1. It is when a plant, an animal, or a way of life stops existing.

2. Scientists are divided on this question. Some think extinction is a natural part of the evolution process and that all species will become extinct one day. Others think occasional catastrophes cause extinction.

3. • Environmental change due to factors such as the climate, urbanization, and mining. When habitat conditions change quickly, it is difficult for some species to adapt and survive. When a species can’t evolve quickly enough, it becomes extinct.
   • Overexploitation of resources can cause extinction, such as too much fishing in the sea or hunting.
   • Disease
   • Collision of comets or asteroids with the Earth can cause very sudden extinctions.

4. Thanks to fossils! Fossils are the preserved remains of creatures that existed long ago. They can be millions of years old, and they can tell us a lot about extinct species.

3. Answer the questions.

1. What are the different scientific opinions on the causes of extinction?
2. What environmental factors can cause extinction?
3. Why do some species survive when habitat conditions change?
4. What can cause very sudden extinctions?
5. What are fossils?

MINI-PROJECT

Think of an animal that is in danger of becoming extinct. Do some research and write a short text about it. Answer these questions:
• Why is the animal at risk?
• What are the environmental factors affecting it?
• Can anything save the animal from becoming extinct?

Glossary:
- no longer – non più
- occasional – occasionale, sporadico
- appeared – comparve
- billion – miliardi
- mining – estrazione dei minerali
- adapt – adattarsi
- survive – sopravvivere
- overexploitation – ipersfruttamento, depauperamento
- hunting – caccia
- disease – malattie
- sudden – improvviso
- remains – resti
European Contrasts

1 Match the words (1–7) to the definitions (a–g).
1 ___ hill  
a piece of land surrounded by water
2 ___ wood  
a high area of rock with a vertical side
3 ___ cliff  
a very high part of the Earth’s surface
4 ___ mountain  
da small river
5 ___ stream  
an area of land covered with trees
6 ___ loch  
an area of land higher than the surrounding land
7 ___ island  
a Scottish lake

2 Read the text about two archipelagos. Where are the Arcipelago Toscano and the Shetland Islands?

3 Read the text again. True or false? Write T or F.
Correct the false sentences.
1 ___ Europe is bigger than the other continents.
2 ___ An archipelago is a group of islands.
3 ___ Once Italy and Corsica were on the same land.
4 ___ In the Shetland Islands only a few islands have people on them.
5 ___ The sea around the Shetlands is lovely to swim in.

4 Answer the questions.
1 Which is the oldest part of Elba?
2 What is the name of the highest mountain?
3 Why did Napoleon go to the island?
4 What are the economic resources of the Shetland Islands?
5 What is the most famous product of the Shetland Islands?

What do you think?
1 Have you visited any places in Europe (including in Italy), that were very different from each other?
2 What were the biggest differences you found?

MINI-PROJECT
Choose two more regions in very different parts of Europe and find some information about them. Write a short text comparing their populations, places of interest, economies and climate.

A TALE OF TWO ARCHIPELAGOS

Comparing the five continents of our planet, you can see that Europe is the smallest by far. However, if you travel from north to south, or from east to west, you will find enormous differences in landscape, climate and culture. Looking at two archipelagos, one off the west coast of central Italy and one off the north coast of Scotland, we can see an excellent example of this diversity: the Arcipelago Toscano and the Shetland Islands.

The Arcipelago Toscano is made up of six islands. The biggest and most important is the Isola d’Elba. Geologically, Elba is what remains of a long stretch of land which connected Italy and Corsica. The oldest part, 400 million years old, is in the east, where the hills are rich in iron, once the main resource of the island. The west is the most recent part, and includes the highest mountain, Monte Capanne. In the centre there is a flat area where we find the most important towns. The island has a source of fresh water named after Napoleone Bonaparte, exiled there in 1814. The white sandy beaches, the Mediterranean climate and the delicious local Aleatico wine are irresistible tourist attractions.

The Shetland archipelago is made up of more than a hundred islands, but only fifteen are inhabited. Very few trees grow here because the wind always blows. Hills covered in heather, rocky crags, cliffs and pebble beaches, where you can see seals and otters. Fishing has been the main resource of the island for a long time, but the discovery of North Sea oil in the 1970s changed the economy. Tourism is also very important and more than half of the population depend on it for their jobs. The breeding of Shetland ponies, sheep farming, and the production and transformation of the world-famous Shetland wool are other economic activities. The weather is very cold in winter and cool in the summer: the beaches are fabulous, but don’t expect to swim there because in the summer the water is only 14°C!

Glossary:
- hill – collina
- cliff – scogliera
- wood – foresta
- stream – ruscello
- mountain – montagna
- stream – ruscello
- surrounded – circondato
- rock – roccia
- side – lato
- surface – superficie
- covered – ricoperta
- lake – lago
- comparing – confrontando
- by far – di gran lunga
- landscape – paesaggio
- made up of – composto di
- stretch – distesa
- iron – ferro
- main – principale
- flat – pianeggiante
- source – sorgente
- exiled – esiliato
- blows – soffia
- overlook – sovrastano
- heather – erica
- crag – dirupo
- pebble beaches – spiagge di sassolini
- seal – foca
- otter – lontra
- oil – petrolio
- breeding – allevamento
- wool – lana

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**Measurements: metric vs. imperial**

Most countries in the world use the **metric system of measurement**. In the past, the United Kingdom used the imperial system. British people still use some imperial measurements today, such as **miles** to express distance, and **pints** to express capacity.

1. **Write the Italian translations of these units of measurement.**
   - foot (ft) ________ pound (lb) ________
   - gram (g) ________ centimetre (cm) ________
   - kilogram (kg) ________ litre (l) ________
   - mile (m) ________ centilitre (cl) ________
   - kilometre (km) ________ pint (pt) ________
   - inch (in) ________ gallon (gal) ________
   - metre (m) ________

2. **Now write the units of measurement from Ex.1 in the correct column.**

<table>
<thead>
<tr>
<th>LENGTH</th>
<th>WEIGHT</th>
<th>CAPACITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>METRIC</td>
<td>IMPERIAL</td>
<td>METRIC</td>
</tr>
</tbody>
</table>

3. **Which units would you use to describe the following?**
   - Give each answer in both metric and imperial.
   1. the distance from Rome to Florence
   2. a bag of flour
   3. a bottle of milk
   4. the size of your computer screen
   5. the size of your bedroom
   6. your height

4. **Read the conversion rules. True or false? Write T or F. Correct the false sentences.**
   1. To convert from pounds to kilograms, we **multiply** by 2.2
   2. To convert from litres to pints, we **divide** by 1.75
   3. To convert from litres to gallons, we **divide** by 4.5
   4. To convert from inches to centimetres, we **multiply** by 2.54
   5. To convert from miles to kilometres, we **divide** by 1.6

5. **Now do the conversion exercises.**
   1. Rob is 5.5 feet tall. What is his height in metres? ________
   2. Susan’s son weighs 30 kilograms. What is his weight in pounds? ________
   3. Helen runs 3.5 miles every day. How far does she run in kilometres? ________
   4. I drink 2 litres of water a day. How much do I drink in pints? ________
   5. We’ve got a 32-inch television screen. What is its size in centimetres? ________
   6. The car’s fuel tank capacity is 56 litres. How many gallons can it hold? ________

**Example:**
1 foot = 30.5 cm
To convert from feet to centimetres, we **multiply** by 30.5
   - e.g. 2 feet = 2 × 30.5 = 61 cm

To convert from centimetres to feet, we **divide** by 30.5
   - e.g. 885 cm = 885 ÷ 30.5 = 29 feet

**DOING CONVERSIONS**
- 1 km = 0.625 mile
- 30.5 cm = 1 foot
- 2.54 cm = 1 inch
- 1 kg = 2.2 lb
- 4.5 litres = 1 gallon
- 1 litre = 1.75 pints

**MINI-PROJECT**
Write 6 similar conversion exercises to those in Ex.5. Write the solutions. In pairs. Swap your conversions exercises and try to solve them.

**GLOSSARY:**
measurements – misure
metric system of measurement – sistema metrico decimale
length – lunghezza
weight – peso
flour – farina
height – altezza
fuel tank – serbatoio del carburante
hold – contenere
Algebra: word problems

1 Word problems can be solved by changing them into equations. ‘Key’ words can help you understand which operation to use: addition (+), multiplication (×), subtraction (−) or division (÷).

1 Match the key words underlined in the table below to the type of operation they represent, and then write them as equations.
2 Now solve the equations in the table. How old is Jon?

<table>
<thead>
<tr>
<th>Key word</th>
<th>Operation</th>
<th>Equation</th>
</tr>
</thead>
<tbody>
<tr>
<td>a The sum of Jon’s age and 15 equals 29.</td>
<td>sum = addition</td>
<td>x + 15 = 29</td>
</tr>
<tr>
<td>b Three times Jon’s age is 42.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c The difference between Jon’s age and the age of his younger brother, who is 10, is 4 years.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d The product of Jon’s age and 12 is 168.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e Six less than Jon’s age is 8.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>f 23 more than Jon’s age equals 37.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2 Solve these word problems using equations to help you.

1 The sum of two numbers is 41. The larger number is 1 more than 4 times the smaller number. What are these numbers?
2 The sum of two numbers is 4 times their difference. If one exceeds the other by 8, what are the numbers?

3 Now see if you can solve these word problems about time and distance.

1 At the same moment, two trains leave Edinburgh and London. They move towards each other with constant speeds. The train from Edinburgh is moving at a speed of 60 miles per hour, and the train from London is moving at a speed of 40 miles per hour. The distance between Edinburgh and London is 350 miles. How long after their departure will they meet?

2 A boat has a speed over water of 8 miles per hour. A river flows downstream at a speed of 2 miles per hour. How long will it take the boat to go from point A to point B upstream, and then back, if the distance from A to B is 24 miles?
Black Holes

1 Do you know what a black hole is? Are black holes a reality or theory?

2 Read the text about black holes and write the paragraph headings (1–5) in the correct spaces (a–e).

3 Answer the questions.
   1 Why can’t light escape from a black hole?
   2 What is the escape velocity for the Earth?
   3 Who first thought about black holes?
   4 Who developed the theory of gravity?
   5 Why can’t you see a black hole?

MINI-PROJECT
Sir Isaac Newton was a famous mathematician and physicist. Do some research on him and write a short text about his life and how he developed his theory of gravity. Include the following information:
- when/where he was born/died
- when/how he developed his theory of gravity
- other achievements in his life

Glossary:
black hole – buco nero
escape – sfuggire, uscire fuori
throw – lanciare
harder – più forte
speed – velocità
in order for – affinché
heavy – pesante
compressed – compresso
radius – raggio