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GULISTAN STATE UNIVERSITY

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**Collection of Exercises for students of
Natural Sciences**

Gulistan-2017

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Данный сборник предназначается для студентов биолого-химических и географических направлений. Цель пособия – научить студентов читать и переводить специальную литературу на английском языке. Упражнения различны по своему характеру (грамматические, лексические), однако целью их всех является развитие навыков чтения и перевода текстов по специальности. Большое место в пособии отводится упражнениям на развитие языковой догадки и упражнениям на работу со словарём. Особенность этого пособия заключается в том, что грамматика изучается в контексте. Пополнение словарного запаса при работе с текстами пособия должно происходить не механическим заучиванием отдельных слов, а путём многократного возвращения к материалу текстов при выполнении разнообразных упражнений.

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Ushbumashqlar to'plamizamonaviy pedagogik texnologiyalar asosida tayyorlangan bo'libki
muo, biologiya va geografiya onalishitalabalarini uchun muljallangan.
Undagitanlangan matnlar asosida nutq malakalariturlari-tinglab tushunish, gapirish,
o'qish va yozish orqalitalabalarini ingliz tilidan nutqini o'stirish va mutaxassislikka oid tajimalarni
bajarishga ko'maklashish ko'zda tutilgan. Ushbu to'plamning asosiy xususiyati shundaki-
grammatik qoidalar kontekstda o'rganiladi.

Taqrizchi: Filologiya fanlarini omzodidotsent X. Tojiyev

This collection of exercises is adapted for the students of the following faculties: chemistry, biology and geography. It is designed on the basis of modern pedagogical technologies and improves students' reading, writing, listening and speaking skills. The particularity of this manual bases on learning the grammar rules in context.

The reviewer:

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present simple

FORM

affirmative

I / You / We / They	want	go	take
She / He / It	wants	goes	takes
Most verbs add -s for third person she / he / it: want – wants live – lives			
Verbs ending -ss, -sh, -ch, -x, -o: add -es passes washes relaxes goes			

negative

I / You / We / They	do not (don't)	want	go
She / He / It	does not (doesn't)	relax	take

questions and short answers

Do	I / you / we / they	work?	Yes, I do. / No, I do not (don't).
Does	she / he / it	work?	Yes, he does. / No, he does not (doesn't).

USE

Use present simple for

- facts, or things that always happen.
*Water **boils** at 100°C.*
- routines and habits.
*The birds **return** to the island every spring.*
- timetable events.
*The Drama Club **meets** every Thursday at 7.30.*
- plots of films, stories and plays.
*At the party, Romeo **sees** Juliet and **falls** in love with her.*

yes / no questions and short answers

<i>Do male penguins keep the eggs warm?</i>	<i>Yes, they do.</i>
<i>Does water boil at 80°C?</i>	<i>No, it does not / doesn't.</i>

question words

We put question words in front of present simple yes / no questions.

<i>Why</i>	<i>do people grow?</i>
<i>Where</i>	<i>does water come from?</i>
<i>When</i>	<i>do fish sleep?</i>
<i>What</i>	<i>does this word mean?</i>
<i>Who</i>	<i>do you sit next to?</i>
<i>How</i>	<i>does a camera work?</i>

what and who subject questions

With *what* and *who* it is possible to ask questions about the subject of a sentence. In this case, we do not use a question form.

<i>Who knows the answer to this question?</i>
<i>What makes it work?</i>

Complete the sentence with the affirmative form of the verb in brackets.

- a I (drive) *drive* but my sister (cycle) _____
- b The Sun (rise) _____ in the east and (set) _____ in the west.
- c The Prime Minister (travel) _____ abroad in his own private aeroplane.
- d It (cost) _____ \$20 million to be a space tourist for one week in the International Space Station.
- e The European Commission (meet) _____ in Brussels.
- f My dad (read) _____ two books every week.
- g I (understand) _____ geography more than science.
- h My favourite TV programme (start) _____ at half past ten.
- i The teachers at our school (give) _____ us lots of homework.
- j We (like) _____ swimming because it's fun and good exercise.

Complete the sentence with the negative form of the verb in brackets. Use contractions.

- a You (do) *don't do* any of the cooking!
- b My brother (play) _____ tennis because he (like) _____ it.
- c I (think) _____ that's a good idea.
- d Teachers (work) _____ at weekends.
- e The government (agree) _____ with the new EU laws.
- f We (want) _____ to see that film because it looks boring.
- g His mum (drive) _____ a fast car.
- h Those new mp3 players (be) _____ very expensive.
- i These birds (stay) _____ in the country during winter.
- j He (sing) _____ very well, does he?

Complete the sentence with the affirmative or negative form of the verb in brackets. Use contractions.

- a The plane (leave) *leaves* in half an hour but Nick (not / be) _____ at the airport yet.
- b My best friend (love) _____ science fiction films but they (not / interest) _____ me.
- c I (not / study) _____ chemistry because it (be) _____ difficult.
- d I (not / dance) _____ because I (look) _____ stupid.
- e The Sun (not / go) _____ round the Earth, the Earth (go) _____ round the Sun!
- f My new computer (do) _____ lots more things than my old one, and it (not / crash) _____
- g My dad (not / have) _____ any qualifications but he (have) _____ a really good job.
- h Fire (need) _____ oxygen to burn. It (not / burn) _____ without oxygen.
- i My teacher (not / own) _____ a mobile phone because some people think they (be) _____ bad for your health.
- j According to scientists, animals (live) _____ longer if they (not / eat) _____ too much.

Complete the text with the affirmative form of the verbs in brackets.

Emperor penguins a (live) _____ *live* _____ in the Antarctic. The sea b (provide) _____ all their food, so they are good swimmers. They c (dive) _____ under the water and d (hold) _____ their breath for up to 20 minutes. When the weather is very cold, the penguins e (stand) _____ in a group. This f (keep) _____ them warm. The Emperor is the only penguin that g (breed) _____ in winter in Antarctica. Each female h (lay) _____ one egg in May or June. They then i (return) _____ to the sea to feed. Each male then j (stand) _____ with an egg on his feet. His feet k (keep) _____ the egg warm. He l (sleep) _____ most of the time and m (eat) _____ no food for about 65 days. When the egg n (hatch) _____, the female o (come) _____ back and p (find) _____ her mate. Now the females q (feed) _____ the young penguins. The male r (spend) _____ his time eating. After a few weeks, the male s (return) _____ to the family, and then both parents t (look after) _____ the chick.



Complete the text with the negative form of the verbs in brackets.

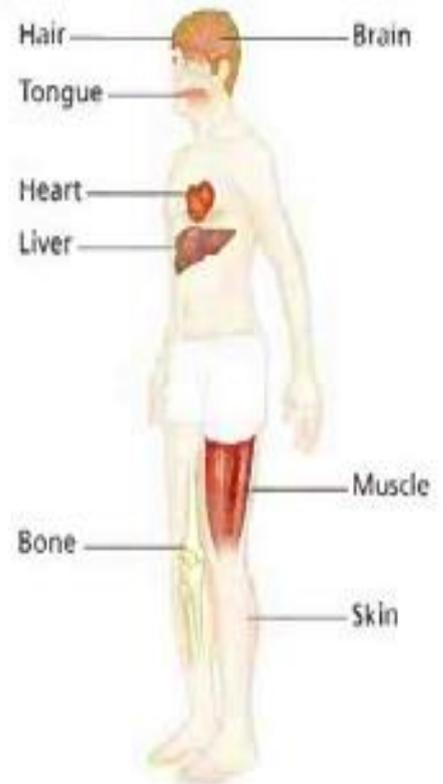
ROMEO AND JULIET

Two families, the Montagues and Capulets, live in Verona, Italy, but they a (get on) _____ *don't get on* _____ with each other. Romeo, son of Montague, thinks he is in love with Rosaline, but unfortunately she b (love) _____ him. He goes to see her at a party at the house of his enemy Capulet, but there he sees Juliet, Capulet's daughter. She c (know) _____ his name because he has a **mask**. Tybalt, one of the Capulet family, tries to fight with Romeo, but Capulet d (allow) _____ this. However, Tybalt e (agree) _____ with him, and f (forgive) _____ Romeo for coming to the house. Romeo manages to talk to Juliet, and he kisses her. They g (understand) _____ that their families are enemies. When Romeo learns the truth, he h (care) _____ that his love for Juliet could be very dangerous. Later he goes back to the house and stands in the garden. Juliet is standing on the balcony talking to herself about Romeo, but i (see) _____ him below in the garden. After he talks to her, they soon show their love for each other, and agree to get married. However, they j (realize) _____ that a terrible tragedy is about to happen.



Complete the question using the verb in brackets.
Check the factual answers on page 208.

- Do bones stop growing? (stop)
- How much water _____ the brain _____? (contain)
- _____ you _____ hair on your tongue? (have)
- How many square metres _____ an adult's skin _____? (cover)
- _____ hair _____ faster in hot weather? (grow)
- How long _____ the heart _____ to pump blood around the body? (take)
- _____ muscles _____ or push? (pull)
- Which vitamin _____ the liver _____? (produce)
- How many times a day _____ you _____ in and out? (breathe)



7 Complete the text with the affirmative, negative or question form of the verbs in brackets.

What a (do) does the body do to protect itself? Your body
b (prevent) _____ harmful **microorganisms** entering and causing harm. The skin, for
example, c (allow) _____ microorganisms to enter. Hairs and **mucus** in your nose
d (catch) _____ **invaders**, and then you e (push) _____ the mucus out when you
cough, sneeze or blow your nose. **Enzymes** and acids in the body; and white blood cells also

f (destroy) _____ **bacteria**.
g (help) _____ **antibiotics** _____? Doctors h (use) _____
antibiotic drugs to fight bacterial **infections**, but antibiotics i (work) _____
against **viruses**. This is why doctors j (give) _____ antibiotics to patients with a
common cold or flu.

How k (work) _____ **immunization** _____? Immunization
(or **vaccination**) is another way of protecting the body, by **injecting** the body with dead or
inactive microorganisms. After vaccination, the body l (start) _____ to make
antibodies that destroy the microorganism. Because the microorganisms in the vaccination are
not dangerous, the person m (get) _____ ill. When they
n (come) _____ into contact with a live (dangerous) micro organism, then the
antibodies o (destroy) _____ the infection before it makes them ill.



present continuous

FORM

affirmative

I	am ('m)	
You / We / They	are ('re)	moving.
She / He / It	is ('s)	

negative

I	am not ('m not)	
You / We / They	are not ('re not / aren't)	studying.
She / He / It	is not (isn't / 's not)	

questions and short answers

Am	I	going?	Yes, I am. / No, I am not ('m not).
Are	you / we / they	waiting?	Yes, they are. / No, they are not (aren't / 're not).
Is	she / he / it	singing?	Yes, he is. / No, he is not (isn't / 's not).

spelling rules

- One-syllable verbs ending in one vowel + one consonant, double the consonant and add *-ing*:
sit – sitting get – getting put – putting
- Verbs ending in e, drop e before adding *-ing*: like – liking write – writing
- Verbs ending *-ie* change *-ie* to *-y*: lie – lying die – dying
- Two-syllable verbs ending in one vowel and one consonant usually double the final consonant and add *-ing*:
travel – travelling admit – admitting
- All other verbs add *-ing*: play – playing feel – feeling try – trying

USE

Use present continuous

- for actions happening at the moment of speaking, and not finished.
Sorry, I'm busy at the moment. I'm doing my homework.
- for continuing, unfinished actions which are not actually happening at the moment of speaking, with verbs like *work, learn, read, study* etc.
What are you doing in science? We're learning about the universe.
- for changing situations, with verbs like *become, get, grow, change, increase*, or with expressions such as *more and more*.
The earth is becoming warmer.
More and more people are leaving the countryside.

Complete the text with the present continuous form of the verbs in brackets.

Good afternoon, everybody. I a (speak) am speaking to you from Mount Surprising, the giant volcano. A team of scientists b (visit) _____ the volcano, and I'm here for Big TV, just in case anything exciting happens. I c (stand) _____ here near the top of the crater, and d (look) _____ down into the volcano. At the moment the four scientists e (climb) _____ down into the crater. It doesn't look very dangerous, I must say, but they f (wear) _____ special clothes and a rescue team g (stand by) _____ just in case!

A little bit of smoke h (rise) _____ from the volcano, but that's normal. Now the scientists i (set) _____ up their equipment. They j (try) _____ to collect some gas, which will help them understand what exactly k (go on) _____ under the volcano.

Wait a minute! Something l (happen) _____! The ground m (shake) _____! The four scientists n (climb) _____ out of the volcano as quickly as they can. They o (shout) _____ something as well. I think it's time to leave!



Gloss

Complete the sentence with the negative form of the verb in brackets. Use contractions.

- a As you know, the Marina space mission (go) isn't going according to plan.
- b As far as we can tell, the spacecraft (head for) _____ the moon.
- c We can't be sure because at the moment it (send) _____ us any useful information.
- d Some of the equipment on the spacecraft (work) _____ properly.
- e As a result, we (receive) _____ radio signals.
- f It seems that the solar power panels (point) _____ at the Sun.
- g So as a result, they (produce) _____ enough power.
- h And at the moment Marina's computer (respond) _____ to our signals.
- i We are trying to correct the problem but we (have) _____ any luck.
- j However, we (give up) _____ hope.

Use the prompts to make a question.

- | | |
|---|--|
| a the weather in your country / change
<u>Is the weather in your country changing?</u> | e summer / get hotter
_____? |
| b it grow / warmer or colder
_____? | f the changes / become a problem
_____? |
| c storms / happen more often
_____? | g people / worry about this
_____? |
| d less snow / fall in winter
_____? | h they / do anything to help
_____? |

past simple

FORM

affirmative

I / You / We / They / She / He / It **stopped**.

negative

I / You / We / They / She / He / It **did not (didn't) stop**.

questions

	Did	I / you / we / they / she / he / it	wait?
When	did	Leonardo da Vinci	live?
What	did	Leonardo da Vinci	paint?

short answers

Yes, I / you / we / they / she / he / it **did**. No, I / you / we / they / she / he / It **didn't**.

spelling rules

- Verbs ending in **e**, add **-d**: *decide – decided*
- For one-syllable verbs ending one vowel + one consonant, double the consonant and add **-ed**: *stop – stopped*
- Other one-syllable verbs add **-ed**: *wait – waited*
- Verbs ending vowel + consonant + **y**, change **-y** to **-i** and add **-ed**: *study – studied*
Note: verbs ending vowel + **y** add **-ed**: *play – played*
- Two-syllable verbs ending one vowel + one consonant, double the consonant if the stress is on the last syllable and add **-ed**: *prefer – preferred*
- If the stress is on the first syllable, add **-ed**: *profit – profited*

Irregular verbs (see List of irregular verbs page 206)

Many verbs have irregular past simple forms eg *drink – drank* *see – saw*

USE

Use past simple

- to talk about finished events in the past, when we think about a definite time.
*Alexander's army **marched** beside the river and then **stopped** outside the city.*
- to describe the events in a story.
*Oliver **heard** the sound of a bell. Soon afterwards, the door softly **opened**.*
- to describe habits and routines in the past. We usually use a time word or phrase.
*Leonardo **paintd** in his studio **every day**.*

Examples of time words and phrases we use with past simple:

<i>yesterday</i>	<i>last night</i>	<i>last week</i>	<i>last year</i>
<i>on Tuesday</i>	<i>at 6.30</i>	<i>an hour ago</i>	<i>after that</i>
<i>in 1754</i>	<i>in January</i>		

g He began writing plays in Stratford.

Q _____?

A We don't really know. We only know that after 1592 he was an actor and writer in London.

h He wrote 37 plays all by himself.

Q _____?

A Well, we know he wrote two plays together with John Fletcher. Some people think that all his plays were really written by somebody else.

i He made up all the characters and plots of his plays.

Q _____?

A Actually no. He borrowed lots of ideas from other writers. This was quite usual in his time.

j He became rich and famous.

Q _____?

A He certainly became quite rich, and his plays were popular. But he only became really famous in the 18th century and later.

6 Complete the text with the past simple affirmative, negative or question forms of the verbs in brackets.

Louis Pasteur 1822–1895

As a young man, Pasteur a *studied* at the École Normale in Paris. Then at the age of just 32, he b (become) _____ a professor at the University of Lille. In 1856, Pasteur c (receive)

_____ a visit from a man called Bigo who d (own) _____ a factory that e (make) _____ alcohol from *sugar beet*. He f (have) _____ a question for

Pasteur: why g (the alcohol / turn / to acid?) _____? When this

h (happen) _____, they i (not can) _____ use it and j (throw)

_____ it away. Bigo k (ask) _____ Pasteur to find out the reason for this.

At first, Pasteur l (not know) _____, but when he m (examine)

_____ the alcohol under a *microscope*, he n (find)

_____ thousands of tiny micro-organisms. He o (believe) _____ that they

p (cause) _____ the problem. q (milk, wine and vinegar / behave / in the same way?) _____

Other scientists r (disagree) _____ with him, and newspapers

s (make) _____ fun of him. However, Pasteur t (continue)

_____ with his work, he u (invent)

_____ methods of testing his theory and v (*prove*) _____

that he was right. Later he w (work) _____ together with two

doctors and x (develop) _____ *vaccines* for diseases such as

anthrax and rabies.



past continuous, *used to do*

FORM

affirmative

I / She / He / It **was** reading.
You / We / They **were**

negative

I / She / He / It **was not (wasn't)** looking.
You / We / They **were not (weren't)**

questions and short answers

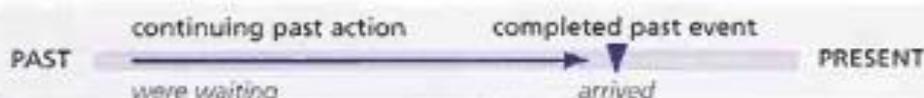
	Was	I / she / he / it	waiting?	Yes, I was .	No, I wasn't .
	Were	you / we / they	watching?	you were .	you weren't .
Where	was	he	waiting?		
What	were	they	wearing?		

USE

Use past continuous

- for a continuing unfinished action in the past.

*When Sue arrived at 9.30 am, four people **were waiting** outside the office.*



- for a continuing unfinished action interrupted by a sudden past action.
*While **we were doing** the maths test, the fire alarm went off.*
- for activities as background description.
*The rainforest was full of sounds. Birds **were calling** from the trees and thousands of insects **were buzzing and humming**.*
- for two continuing events happening at the same time.
*While Cortes **was talking** to the emperor, his army **was taking** over the palace.*

while, when

- Use *while* with past continuous for the time the event was happening.
- Use *when* with past simple for actions.
- We can use other more descriptive time phrases instead of *when*.
*At the moment the earthquake struck, most people **were going about** their normal lives.*

habits in the past

For describing habits and states in the past, it is more natural to use *used to* + verb than past continuous, especially when we make contrasts with the present. We do not mention the exact date.

Used to is unchangeable, and has only a past tense form.

Negative: *didn't use to*

Question: *Did you use to?*

*Rainforests **used to cover** a third of the Earth, but now they are getting smaller.*

*Once people **didn't use to worry** about this problem.*

*What games **did you use to play** in the playground at school?*

Note: we also use **past simple** (+ frequency adverb) to describe habitual actions in the past.

*People **once thought** that the Sun travelled round the Earth.*

Underline the correct form.

- a While he took / was taking a bath, Archimedes discovered / was discovering the principles of density and buoyancy.
- b When Edouard Benedictus, a French scientist, worked / was working in his laboratory, he dropped / was dropping a glass bottle which had some plastic inside – and invented / was inventing safety glass.
- c Columbus arrived / was arriving in America while he tried / was trying to reach the Far East.
- d Alexander Fleming discovered / was discovering penicillin by accident while he looked / was looking at some old experiments.
- e While Hiram Bingham climbed / was climbing in the mountains of Peru in 1911, he discovered / was discovering the lost city of Macchu Picchu.
- f While Isaac Newton sat / was sitting under an apple tree, an apple fell / was falling on his head, and he understood / was understanding gravity.
- g While Dr Harry Coover tried / was trying to invent a new kind of plastic, he made / was making a very soft substance which stuck / was sticking things together. It was Superglue.
- h While he observed / was observing the Moon through his telescope, Galileo realized / was realizing that it had mountains and craters.



Macchu Picchu

1 Use the prompts to make a question. The answers are in Exercise 1.

- a Where / Edouard Benedictus / work when he invented safety glass?
Where was Edouard Benedictus working when he invented safety glass?
- b Where / Columbus / try to go when he reached America?
_____?
- c Where / Isaac Newton / sit according to the story about gravity?
_____?
- d What / Dr Harry Coover / hope to invent?
_____?
- e What Galileo / look at / through his telescope?

2B Complete the sentence with the past continuous form of the verb in brackets. The sentences refer to Exercise 1.

- f Edouard Benedictus (not try) _____
_____ to invent safety glass.
- g Alexander Fleming (not hope) _____
_____ to discover penicillin.
- h Hiram Bingham (not look for) _____
_____ the lost city of Macchu Picchu.
- i Isaac Newton (not sit) _____
_____ in his study when he understood gravity.
- j Dr Harry Coover (not conduct) _____
_____ an experiment to discover a kind of glue.

present perfect simple

FORM

affirmative

I / You / We / They	have ('ve)	decided.	(past participle)
She / He / It	has ('s)		

negative

I / You / We / They	have not (haven't / 've not)	decided.
She / He / It	has not (hasn't / 's not)	

questions

	Have	I / you / we / they	decided?
	Has	she / he / it	
Where	have	you	put it?
What	has	she	done?

short answers

Yes,	I / you / we / they	have.	No,	I / you / we / they	haven't.
	she / he / it	has.		she / he / it	hasn't.

Regular verbs use **-ed** form as the past participle. Irregular verbs have irregular forms.

verb	past simple	past participle
wait (regular)	waited	waited
see (irregular)	saw	seen

USE

Use present perfect simple

- to describe an event in the past without a definite time.
*Someone **has broken** a window in our classroom.*
- to describe what someone has completed or achieved in a period of time.
*I've **finished** my homework, and I've **cleaned** my room.*
- to describe how many things someone has done.
*Scientists **have found** more than 30 unknown insects.*
- to describe someone's experiences, what he or she has done in life.
*I've **travelled** by plane, but I **haven't flown** in a helicopter.*
- to describe changes, comparing past and present.
*Our climate **has become** much warmer.*

action verb happening in a period of time up to the present,
exact time not known

_____ ? _____ ? _____ ? _____ ? _____ ? _____ PRESENT

*Someone **has broken** a window.*

Use the prompts to make a present perfect simple question about scientific advances. Then answer *yes* or *no*. Check the factual answers on page 208.

- a scientists / discover a cure for the common cold?
Have scientists discovered a cure for the common cold?
- b people / live for long periods in space?

- c human beings / land on Mars yet?

- d scientists / invent time travel yet?

- e doctors / manage to transplant human hearts?

- f archaeologists / find the lost city of Atlantis?

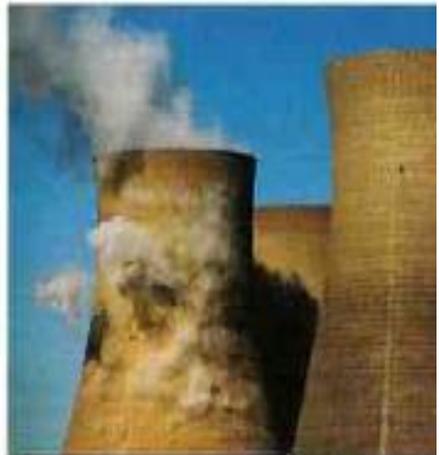
- g scientists / ever teach an animal to talk?

7 Read the text about climate change. Choose the correct form, A or B, to complete the sentence.

At the moment, scientists agree that the world's climate a B warmer over the past 50 years, but they disagree about the causes. Some believe that human activities b _____ climate change. They argue that for 1,000 or 2,000 years before 1850, when records c _____, the temperature was more or less stable. Short warm or cold periods d _____ during that time, but the climate always e _____ to the same level. However, since the Industrial Revolution, human beings f _____ more and more fossil fuels, such as coal and oil. In 1800 the atmosphere g _____ around 280 parts per million of carbon dioxide (CO₂). Since then there h _____ an increase of about 31%. This extra carbon dioxide i _____ the world's temperature because of the greenhouse effect.

Other scientists disagree that human activities over the past 50 years j _____ global warming. They point out that volcanoes and other natural processes k _____ CO₂ into the atmosphere, and that human activity l _____ a rise in CO₂ of only three per cent.

In 1999, 156 countries m _____ the Kyoto protocol, part of a United Nations agreement on climate change, which n _____ into force in 2005. They o _____ to reduce their emissions of CO₂ and other greenhouse gases, although so far, some countries, such as the USA and Australia, p _____ any action.



- | | |
|---------------------|------------------------|
| a A became | B has become |
| b A caused | B have caused |
| c A began | B have begun |
| d A occurred | B have occurred |
| e A returned | B has returned |
| f A burned | B have burned |
| g A contained | B has contained |
| h A was | B has been |
| i A raised | B has raised |
| j A caused | B have caused |
| k A always released | B have always released |
| l A contributed | B has contributed |
| m A signed | B have signed |
| n A came | B has come |
| o A agreed | B have agreed |
| p A did not take | B have not taken |

present perfect continuous

FORM

affirmative

I / You / We / They have ('ve) been reading.
She / He / It has ('s)

negative

I / You / We / They have not (haven't / 've not) been working.
She / He / It has not (hasn't / 's not)

questions

	Have	I / you / we / they	been waiting?
	Has	she / he / it	
What	have	you	been doing?
Where	has	she	been staying?

short answers

Yes,	I / you / we / they	have.	No,	I / you / we / they	haven't.
	she / he / it	has.		she / he / it	hasn't.

USE

Use present perfect continuous

- to talk about recent continuing activities.
*What **have** you **been doing** lately?*
*I've **been revising** for my exams.*
- to explain how recent continuing activities have caused the present situation.
*My eyes ache. I've **been reading** all day*
- to talk about recent continuing activities which will probably continue in the future.
*This diagram shows how the climate **has been changing**.*
- with how long questions.
*How long **have you been studying** French?*
(this is a continuing process, and isn't finished)
- with time words *lately, recently, all (day), every (morning), for, since.*

covering a period of time up to the present

PAST  PRESENT

*I've **been studying** all morning.*
(It's still morning now and I haven't finished my work yet)

present perfect simple or present perfect continuous?

Present perfect simple	<i>I've written my project.</i> (finished, but we don't know when)
Present perfect continuous	<i>I've been writing my project.</i> (continuing up to the present, and not finished)

With verbs that describe continuing states eg *work, live*, there is little difference in meaning.

*I've **worked** here for three years. I've **been working** here for three years.*

Note that we do not say *I **am working** here for three years.*

Complete the sentence using the verb in brackets in the present perfect continuous form.

- a I'm sorry to keep you waiting. I hope you (not wait) haven't been waiting long.
- b There you are! We (look for) _____ you all morning!
- c I feel really tired. I (study) _____ hard lately.
- d Anna has got a really good suntan. She (go) _____ to the beach a lot.
- e Tom needs cheering up. He (have) _____ a lot of problems lately.
- f I haven't seen you for ages. What (you / do) _____ ?
- g I (work) _____ here for the past three years, and I really like it.
- h Sam and Chris (paint) _____ their room, and their clothes are covered in paint!

2 Underline the correct form.

A Scientists a have recently identified / have been identifying a new species of animal in the rainforest of Borneo. They b have been searching / searched for this creature for several years, after reports from local villagers, and say it is a type of lemur.



A lemur

B Archaeologists in Guatemala c have found / have been finding a Mayan wall painting which they think is more than 2,000 years old. Archaeologist William Saturno d explored / has been exploring the site since 2002.

C Scientists using the Hubble Space Telescope think they e found / have found two new moons circling the planet Pluto. Astronomers f have been looking / looked closely at Pluto since 1978 when they g spotted / have spotted its first moon.

The telescope h worked / has been working for fifteen years, and i has been producing / has produced more than 700,000 images of the universe.

D Australian scientists j have been discovering / have discovered a new coral reef over 60 km long in the Gulf of Carpentaria by using satellites to spot the reefs in deep water. Recently divers k have managed / have been managing to reach the reefs and take photographs.

GLOSSARY



Use the prompts and *how long* to make a question.

- a astronomers / look for Pluto's moons?
How long have astronomers been looking for Pluto's moons? ?
- b archaeologists / hope to find Atlantis?
_____ ?
- c scientists / use satellites to discover new reefs?
_____ ?
- d physicists / investigate the origin of the universe?
_____ ?
- e scientists / observe Vesuvius?
_____ ?
- f biologists / try to find new species of mammal?
_____ ?
- g archaeologists / excavate the palace in Guatemala?
_____ ?
- h doctors / search for a cure for HIV?
_____ ?

past perfect

FORM

past perfect simple

affirmative

I / You / We / They / She / He / It **had ('d)** left. (past participle)

negative

I / You / We / They / She / He / It **had not (hadn't)** left.

questions

What **Had** I / you / we / they / she / he / it **left?**
had they **found?**

short answers

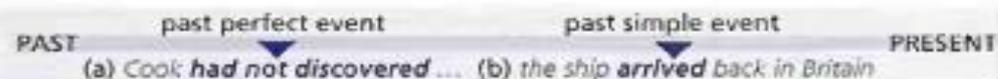
Yes, I / you / we / they / she / he / it **had.**
No, **hadn't.**

USE

Use past perfect simple to describe a past event which happens before another event in the past. Only use it when it is important to make clear that one event in the past happened before another.

*On 12 July 1771, Cook's ship The Endeavour arrived back in Britain. Cook **had not discovered** a new continent, but he **had visited** places never seen before.*

In this example, 'not discovered' happened before 'arrived'.



We do not use past perfect simple simply to show that an event happened a very long time ago. We can sometimes use *before* or *after* with past simple to make the order of events clear.

*By the time the ship reached the island, more than twenty sailors **had died**.*

*More than twenty sailors **died before** the ship reached the island.*

forgot, remembered, realized

With *forgot, remembered, realized, knew*, we use past perfect simple to describe the past events that happened before the moment we forgot, remembered or realised something.

*When Franklin checked the ship's position, he **realized** he **had made** a mistake.*

FORM

past perfect continuous

affirmative

I / You / We / They / She / He / It **had been waiting.**

negative

I / You / We / They / She / He / It **had not (hadn't) been waiting.**

Read these sentences about Julius Caesar. Then complete the sentence with the past simple or past perfect form of the verb in brackets.

- a Julius Caesar (come) *came* from an aristocratic Roman family, though his family was not rich by Roman standards.
- b When he was 15 his father (die) _____, and to avoid political problems in Rome, Caesar (serve) _____ as a soldier in the east.
- c By the time he (return) _____ to Rome, he (win) _____ awards for bravery.
- d He (become) _____ a member of the Senate, and governor of what is now Spain.
- e By the age of 40 he (rise) _____ to the top of the political world, and (form) _____ a political alliance with a powerful general, Pompey, and a rich man, Crassus.
- f Between 58 BC and 49 BC he (fight) _____ a war against the people of what are now France, Belgium, Switzerland and parts of Germany.
- g By the end of this war, according to the historian Plutarch, three million men (die) _____.
- h In 50 BC the Senate (order) _____ Caesar to return to Rome. By that time, Crassus was dead and Pompey (become) _____ Caesar's enemy.
- i In the civil war that followed, Caesar (defeat) _____ all his enemies.
- j By the time a group of Roman senators (murder) _____ him in 44 BC, he (be) _____ the most powerful man in Rome for only a year.

Choose the correct form, A, B or C, to complete the sentence.

On 26 December 2004, Tilly Smith, a 10-year-old British schoolgirl, a *C* on the beach with her family. They b _____ Christmas in Thailand. Suddenly Tilly c _____ that something was wrong. She could see that the water d _____ and waves e _____ up the beach. The beach f _____ smaller and smaller. She g _____ that there had been an earthquake in Sumatra that morning, but she h _____ a geography lesson she i _____ at school just two weeks before. So she j _____ her mother what she k _____ about earthquakes and giant waves. Luckily for the Smith family, Tilly's teacher Andrew Kearney l _____ the class about earthquakes and m _____ them a video of a tsunami in Hawaii. Tilly n _____ screaming at her parents to get off the beach. They o _____ Tilly back to their hotel, which was not too close to the shore, and p _____ the alarm. One of the staff, who was Japanese, q _____ the word tsunami, and r _____ everyone to leave the beach. From their room on the third floor, the Smiths s _____ the terrible effects of the tsunami on the area. Thanks to Tilly, everybody from that beach t _____ that terrible day.

- | | | |
|------------------|------------------|-------------------|
| a A walked | B had walked | C was walking |
| b A spent | B had spent | C were spending |
| c A felt | B had felt | C was feeling |
| d A rose | B had risen | C was rising |
| e A came | B had come | C were coming |
| f A got | B had got | C was getting |
| g A did not know | B had not known | C was not knowing |
| h A suddenly | B had remembered | C was suddenly |
| | remembered | suddenly |
| | | remembering |
| i A had | B had had | C was having |
| j A told | B had told | C was telling |
| k A learnt | B had learnt | C was learning |
| l A taught | B had taught | C was teaching |
| m A showed | B had shown | C was showing |
| n A started | B had started | C was starting |
| o A took | B had taken | C were taking |
| p A raised | B had raised | C were raising |



- | | | |
|----------------|------------------|---------------------|
| q A understood | B had understood | C was understanding |
| r A ordered | B had ordered | C was ordering |
| s A watched | B had watched | C were watching |
| t A survived | B had survived | C was surviving |

Read the story of Archimedes and his bath. Then complete the text with the correct form of the verb in brackets.



Archimedes, the Greek mathematician, is probably most famous for the story of King Hieron II of Syracuse and the gold crown. The king a (want) wanted to give a gold crown as a gift to the gods, and b (give) _____ a carefully weighed amount of gold to a goldsmith. The man c (produce) _____ a beautiful crown, but the king was worried that the **craftsman** d (not use) _____ all the gold to make the crown. Dishonest craftsmen often e (mix) _____ gold with silver, which was cheaper, but the king could not find a way of proving that the man f (do) _____ this. He g (ask) _____ Archimedes to solve the problem. Archimedes h (know) _____ that gold and silver have different **densities**. The problem was that nobody could calculate the **mass** of an object like a crown. While Archimedes i (think) _____ about this problem, he decided to go to the public baths to relax. While he j (climb) _____ into the bath, he k (notice) _____ some water on the floor. It l (spill) _____ over the side of the bath, and he m (realize) _____ that he n (solve) _____ the problem by accident. The total amount of water that o (spill) _____ out of the bath must be the same as the **volume** of his body. He could use a piece of pure gold and calculate its volume, and then test the crown and see if it was the same. According to the story, he p (jump) _____ straight out of the bath and q (run) _____ down the street calling 'Eureka – I've found it.' The goldsmith soon r (admit) _____ that he s (cheat) _____ the king, and was punished. Archimedes t (discover) _____ a principle of buoyancy.

GLOSSARY

Read the sentences about two mountain climbers. Then complete the sentence with the past perfect simple or past perfect continuous form of the verb in brackets.

- a The two climbers stopped to rest. They (climb) had been climbing for hours and were exhausted. Things were not looking good.
- b They were very cold, because it (snow) _____ heavily since mid-morning, and one of them (hurt) _____ his ankle.
- c They (look) _____ for shelter for the past two hours, because they realized that the weather was going to get worse.
- d They (already phone) _____ the rescue centre for help.
- e They (also leave) _____ details of their planned route at the village where they stayed the night.
- f They were experienced climbers and they (prepare) _____ carefully for their trip. They knew there was a cave halfway up the mountain.
- g They spent a long time searching for the cave before they realized that they (head) _____ in the wrong direction. Then the snow stopped, and they could see the dark entrance of the cave nearby.
- h Luckily they (bring) _____ warm clothes and plenty of food with them, and they waited safely in the cave.

Match sentences a to j with their responses 1 to 10.

- | | |
|--|---|
| a Why can't I play with the Bunsen burner? | 1 Sorry, I won't do it again. |
| b We're really tired. | 2 She won't stop taking my things. |
| c Put away these books, please. | 3 Yes, there's the bell. I'll see you tomorrow. |
| d I can't write on this blackboard. | 4 No, you'll hurt yourself. I'll do it. |
| e Why is Maria annoying you? | 5 I'll hand it in on Monday, I promise. |
| f I don't understand this problem. | 6 It's dangerous. You'll burn yourself. |
| g Please stop throwing things, George. | 7 Ok, I'll explain how to do it. |
| h Shall I move this desk? | 8 We'll have a short break in a few minutes. |
| i I still haven't got your project! | 9 Shall I put them in the cupboard? |
| j Is that the end of the lesson? | 10 I'll clean it for you. |

Read the information about environmental problems and their solutions. Then make five statements about what you're going to do and five about what you're not going to do to solve these problems.

There are a number of things we can do if we want to help save our planet. For example, if we stop wasting paper, and recycle paper and cardboard, we'll save some of the millions of trees which are cut down every year. As far as the problem of rubbish is concerned, if we recycle bottles and cans and **organic waste**, and stop taking plastic bags from the supermarket, this will all make a big difference. We also have to stop making unnecessary car journeys so as to cut down air pollution. Try walking or using a bike instead, and if you buy **local** fruit and vegetables, this reduces **lorry traffic** to supermarkets. Water is another problem, and we should all take showers, not baths, to save water. Finally, we need to stop using so much energy, so try changing to low-energy light bulbs, and turning off unnecessary lights.



a I'm not going to *waste paper*

b I'm going to _____

c _____

d _____

e _____

f _____

g _____

h _____

i _____

j _____

future time

present continuous future

- Use for a fixed arrangement in the future eg an event already written in a diary.

I'm coming back next Thursday.

We're having a party next Friday. Would you like to come?

Note that there is usually a time reference.

What are you doing next week?

present simple

- Use for an event that always happens at a certain time, or is part of a timetable.

The conference begins on Tuesday at 10.00.

will, going to or present continuous?

When we make predictions *will* and *going to* are both possible.

I think Helen is going to win. I think Helen will win.

We use *going to* when we talk about plans.

We're going to go to France next year. (a plan)

We use present continuous when we talk about an arrangement that is definitely fixed.

We're leaving for France on Monday. (we've bought the tickets)

When we see that an event has already started to happen, we use *going to*.

Look at that ship! It's going to hit the rocks!

future continuous

will + be + -ing

Use future continuous

- to describe an activity in progress in the future, with a time reference.

This time next week I'll be starting at my new school.

What will you be doing in ten years' time?

future perfect

will + have + past participle

Use future perfect

- to look back from the future to an earlier event, often with *by* or *by the time*.

By the time we get home, the match will have begun.

future time clauses following time words

A future time clause follows a time word or phrase.

after as as soon as before by the time until when

In sentences referring to the future, the verb following the time word or phrase is present simple, and the main verb is a *will*-future.

By the time we reach the station, it will be too late.

When we emphasize completion or achievement, we can use a present perfect simple verb instead of a present simple verb.

We'll let you know when we have reached a decision.

Underline the correct form.

- a 'Be careful with that test tube. It will break / *it breaks.*'
b 'The egg is cracking. The baby bird will come out / *is going to come out* / *comes out.*'
c 'Can you hurry up please. The film will start / *is going to start* / *starts.*'
d 'Carry this very carefully.' 'Don't worry. I'm not dropping it / *I won't drop it.*'
e 'We're playing / We'll play football this afternoon. Do you want to play too?'
f 'This dictionary costs €50, but the red one is cheaper.'
'Ok, I'll take / *I'm taking* / *I'm going to take* the red one.'
g 'Have you decided about next year yet?'
'Yes, I'm studying / *I'm going to study* / *I'll study* journalism. Well, that's the plan anyway.'
h 'Ok, bye for now.'
'Bye, I'll see you / *I'm going to see you* / *I'm seeing you* at the same time on Friday.'

Complete each sentence with a phrase from the list.

I'll be waiting I'll be watching I'll be starting I'll be catching
I'll be lying I'll be living I'll be going I'll be working

- a Next Tuesday at this time I'll be lying on the beach!
b _____ outside the cinema at 7.30. See you then!
c All tomorrow afternoon _____ on my history project.
d This time next week _____ my holiday!
e In three years' time _____ into the army.
f Don't phone at 9.00, because _____ the match then.
g In ten years' time, I expect _____ in my own flat.
h This time tomorrow _____ the plane to Brazil

Complete each sentence using *will have (done)* or *won't have (done)* + the verb in brackets, according to your opinion.

In my opinion, by the end of the 21st century:

- a People (start) will have started living on other planets.
b Scientists (invent) _____ artificial food.
c We (find) _____ a solution to the problem of poverty.
d Doctors (discover) _____ a cure for cancer.
e Most people (move) _____ to very large cities.
f We (use) _____ all the fossil fuel on Earth.
g The world (become) _____ a peaceful place.
h People (make) _____ the environment cleaner.

Complete the text with the present simple or will form of the verb in brackets.



The future of our solar system

The Sun **a** (continue) will continue much as it is today until it **b** (enter) its red **giant phase** in 4 to 5 billion years. Then, the **core** **c** (grow) smaller and hotter until it finally **d** (finish) burning the fuel in its **nuclear core**. When this **e** (occur) the core **f** (become) so dense that helium **fusion** will begin. When the helium **atoms** **g** (collide) they **h** (form) carbon (from 3 helium atoms) and oxygen (from 4 helium atoms). When this process **i** (begin) the Sun **j** (produce) enormous amounts of energy. The Sun **k** (grow) larger as this energy **l** (increase) It **m** (be) over a hundred times its present size by the time it **n** (stop) growing. This is why we use the term red giant. As the Sun **o** (expand) it is probable that it **p** (absorb) the Earth. When the Sun **q** (use) up all its energy, it **r** (become) a small white dwarf, and **s** (not make) any more energy. After a few billion years, when it is completely cool, it **t** (be) just a cold dark object.



Choose the correct form, A, B or C, to complete the sentence.

- We seem to be completely lost. What **A** now?
- Just think, this time next week we taking a taxi to the airport.
- As soon as we hear any news, we you know.
- The new film of *Hamlet* starring Johnny Depp next week.
- Some scientists believe that they a cure for most types of cancer by 2050.
- a press conference about our new discovery on Tuesday.
- Look at that helicopter! It on the sports field!
- In a year's time I in the music industry.
- Hold on to the camera. drop it.
- We a new area in the Zoo where visitors will be able to get closer to the animals.

- | | | | |
|---|-----------------------------|-------------------------------|--------------------------------|
| a | A <i>are we going to do</i> | B <i>are we doing</i> | C <i>will we do</i> |
| b | A <i>are going to take</i> | B <i>take</i> | C <i>will be taking</i> |
| c | A <i>are letting</i> | B <i>will have let</i> | C <i>will let</i> |
| d | A <i>will have come out</i> | B <i>comes out</i> | C <i>will come out</i> |
| e | A <i>discover</i> | B <i>are discovering</i> | C <i>will have discovered</i> |
| f | A <i>We'll have held</i> | B <i>We hold</i> | C <i>We're holding</i> |
| g | A <i>will land</i> | B <i>is going to land</i> | C <i>lands</i> |
| h | A <i>am going to work</i> | B <i>am working</i> | C <i>will be working</i> |
| i | A <i>You drop</i> | B <i>You're going to drop</i> | C <i>You'll be dropping it</i> |
| j | A <i>open</i> | B <i>will have opened</i> | C <i>are going to open</i> |

Complete the sentence with *it's* or *its*.

- a Come on, let's go home. It's getting late.
- b I'm taking my umbrella because _____ going to rain.
- c The horse had a white star on _____ forehead.
- d The school at the end of my road has given _____ pupils a holiday on Friday.
- e _____ time to go now.
- f I think _____ a pity you couldn't stay longer.
- g My cat has broken one of _____ back legs.
- h _____ easy to get things wrong if you're not careful.

5 Complete the sentence with *it* or *there*.

- a There is a problem with the computer. Can you help?
- b Will _____ be a party at the end of term?
- c _____ is a pity she wasn't here to get her prize.
- d 'Who's at the door?' ' _____ is me.'
- e _____ is a very good restaurant not far from my house.
- f _____ is a long time since I went to the dentist's.
- g _____ is easy to book a ticket on-line.
- h If you want to look up a word, _____ is in the back of the book.
- i Hello, Sue. _____ is really good to see you.
- j _____ is no point in phoning him again. He must be out.

Complete the text with *it* or *there* in each space.



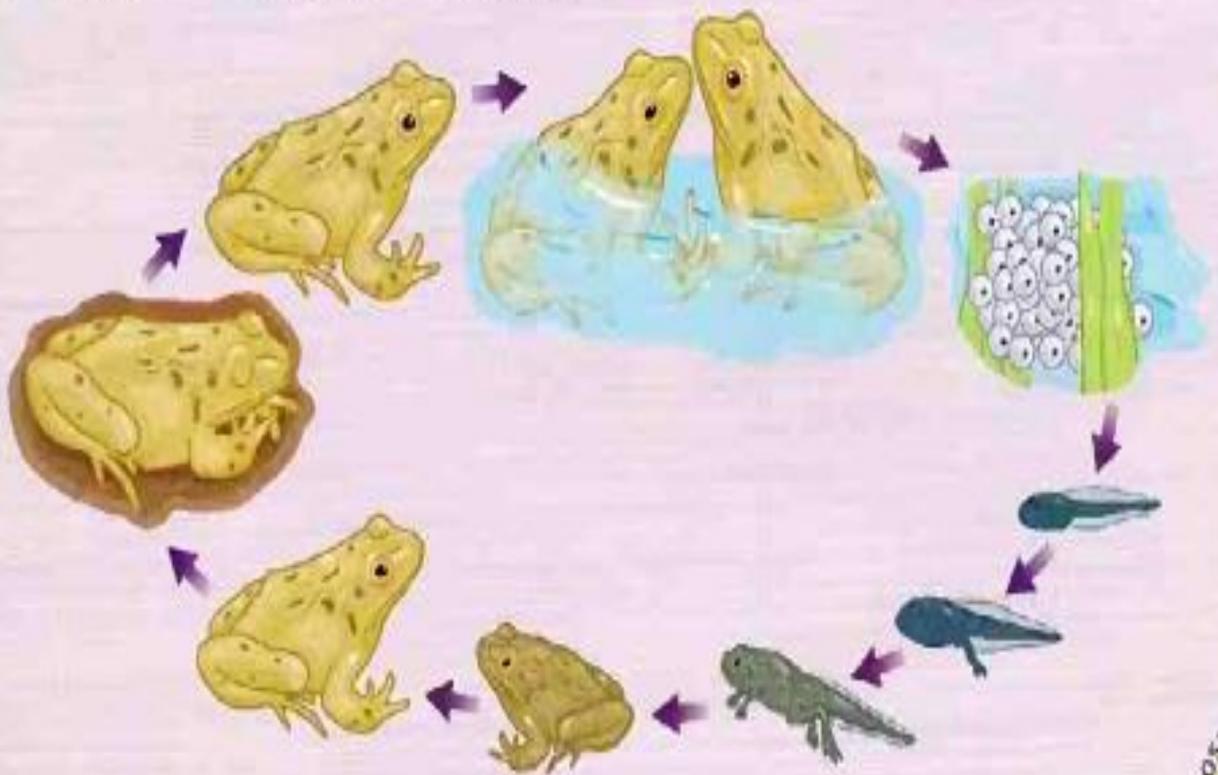
Tropical forests grow near the Equator where a it is warm and wet. b _____ are only two seasons, rainy and dry. c _____ is normally 20–25°C in a tropical forest and d _____ is only a drop of about 5°C in the coldest months. e _____ is a lot of rain, on average more than 200 cm per year. f _____ is poor soil, and g _____ is difficult for plants on the forest floor to develop, as tall trees (25–35 metres) block the light. h _____ are many plants, birds, animals and insects. i _____ are different kinds of tropical forests with different kinds of trees. j _____ depends on the temperature and the amount of rainfall.

In temperate forests, k _____ are four seasons with a cold winter. l _____ is impossible for the trees to grow all the year round in a temperate forest, and m _____ is a growing season of only 140–200 days. n _____ is also a greater range of temperatures, from –30 to 30°C, and o _____ rains throughout the year (75–150cm). As p _____ is cooler and drier here, trees are smaller, q _____ is more light, and the soil is richer. r _____ are many deciduous trees in these forests, and s _____ is common to find many animals and birds. Again, t _____ is a range of forest types depending on the annual rainfall.

Choose the correct form, A, B, or C, to complete the text.

When a C winter, frogs stay in a **dormant** state at the bottom of ponds or in holes where
 b _____ wet. In spring c _____ important for the frogs to **reproduce**, and d _____ usually
 return to a place they know to lay their eggs. e _____ may be necessary for them to travel a long distance,
 and f _____ not unusual for frogs to take risks. g _____ cross from one side of a busy road to the
 other, for example. When h _____, they call to each other. Each species of frog has a particular set of
 sounds, because i _____ important that frogs of the same species find each other. The frogs **mate** in the
 water and the **fertilized** eggs live in a layer of jelly in the water. j _____ large numbers of eggs, because
 k _____ likely that **predators** will eat most of them. l _____ about ten days before the **tadpoles**
 leave the eggs. m _____ like small fish, with a large body and a tail, and live in the water until
 n _____ to change into frogs, o _____ an amazing story

- | | | | | | |
|----------------|---------------|----------------|----------------|-------------|-------------|
| a A there is | B they are | C it is | i A it is | B they are | C there is |
| b A it is | B there is | C there are | j A It is | B They are | C There are |
| c A there is | B they are | C it is | k A they are | B it is | C there is |
| d A it | B they | C there | l A It takes | B There is | C They take |
| e A They | B It | C There | m A It looks | B Looks | C They look |
| f A they are | B there is | C it is | n A they begin | B it begins | C begin |
| g A They might | B It might | C There might | o A There is | B They are | C It is |
| h A it arrives | B they arrive | C arrive there | | | |



Read the text about earthquakes. Then complete the question for each answer.

Earthquakes

When an earthquake occurs, part of the Earth's surface moves. In fact, the surface of the Earth moves all the time. The **tectonic plates** which make up the surface press against each other very slowly. Over thousands of years, this movement creates great **stress**. In some places where the **layers** of rock are weak, this eventually causes a sudden movement – an earthquake. Thousands of earthquakes happen every day, but most are very small and cause no damage. A large earthquake **shakes** buildings to the ground, or causes a tsunami wave. The effects are usually very serious.

Severe earthquakes are common in southern Europe, and on 1 November 1755 a powerful earthquake hit the city of Lisbon in Portugal. Between 60,000 and 100,000 people died. After the earthquake a tsunami struck the city, and there was also a fire, which caused nearly total destruction. People as far away as Finland felt the shock, and the tsunami reached Barbados in the West Indies. Geologists now believe that the strength of the earthquake was as high as 9 on the **Richter scale**. This is the same strength as the Indian Ocean earthquake of 26 December 2004.



- a What *moves when an earthquake occurs* ?
Part of the Earth's crust moves when an earthquake occurs.
- b What _____ ?
The movement of tectonic plates creates this stress.
- c How many _____ ?
Thousands happen every day.
- d What _____ ?
It shakes buildings or causes a tsunami wave.
- e When _____ ?
On 1 November 1755.
- f How many _____ ?
Between 60,000 and 100,000.
- g In which distant country _____ ?
In Finland.
- h What _____ ?
That the strength of the earthquake was as high as 9 on the Richter scale.

Complete the text with one word from the list in each space.

allow	careful	decided	encouraged	failed
forced	learned	let	managed	prepared
refused	sorry	supposed	threatened	trying

I'm a sorry to say that we have b _____
to close the science laboratory until further notice.
Although we have always c _____ pupils to
conduct safe experiments, and have always believed it was
important to d _____ students discover
science for themselves, recent events have made it difficult
for us to e _____ such work to continue.
I am referring of course to the robot that Class 5
f _____ to construct recently while they were
g _____ to be constructing a simple computer.
Although at first the builders of this machine were
h _____ to hide their machine from members of
staff, unfortunately they i _____ to control the
robot. It not only j _____ how to leave the
laboratory, but walked into the town centre and broke
into the National Bank in Green Street. It is impossible to
imagine what it was k _____ to do. The pupils who
built it have l _____ to say whether they were
controlling its actions. In any case, the police were not
m _____ to permit this situation to continue,
especially when the robot n _____ to attack
members of the bank staff, and o _____
them to fill a large bag with money. Please remember, this
is not what science is for!



conditionals: true, real and unreal

always true (zero conditional)

if X happens, Y happens

These sentences describe what always happens in certain circumstances eg scientific facts.

present simple

present simple

*When / If you **press** the switch, the light **comes on**.*

real conditions (conditional 1)

if X happens, Y will happen

These sentences describe what the speaker thinks will possibly happen as a consequence of a real situation

present simple

will future

*If we **do not deal** with the global warming problem, temperatures **will rise**.*

*If we **leave now**, we'll **catch** the bus. If we **don't leave now**, we **won't catch** it.*

In informal speech, we often use *going to* instead of *will*.

*If you **don't take** an umbrella, you're **going to get** wet.*

We can also use imperatives in real conditions.

*If you don't know a word, **look it up** in the dictionary.*

Sentences beginning *if you will...* are only used when *will* means *insist*, or is used as a polite form.

*If you **will stay up** so late, then of course you'll feel tired.* (insist)

If you'll wait here, I'll see if the manager is ready. (polite)

unless

Unless means *only if not*. We use it when we say that if something does not happen, something else will happen.

*Unless we deal with the global warming problem, average temperatures **will rise**.*

provided, as long as + present simple

Provided and *as long as* mean *only if*.

Provided / as long as we reduce energy consumption, we can slow down global warming.

in case + present simple

This describes a possible situation we want to be prepared for.

*Take an umbrella **in case it rains**.*

unreal conditions (conditional 2)

if X happened, Y would happen

These sentences describe what the speaker thinks would happen in an imaginary situation.

past simple

would + verb

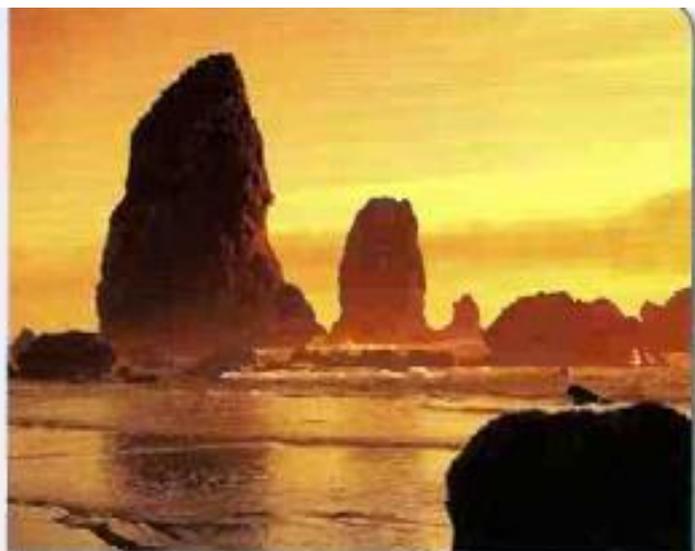
*If you **were** on Venus, you **would see** the Sun rise in the west.*

*What **would happen** if the Earth **stopped** turning?*

*If the Earth **didn't have** a Moon, there **wouldn't be** any tides.*

The past simple tense we use in an *if*-sentence does not describe past time, but unreal time.

Use the prompts to complete the question.
Then choose the most likely answer.
Check the factual answers on page 208.



a what / happen if you / travel through the Earth to the other side?

What would happen if you travelled through the Earth to the other side?

b what / happen if the Earth suddenly stop / going round?

c what / happen if we not / have a Moon?

d what / happen if all the ice at the poles / melt?

e what / happen if there be / no more electricity?

f what / happen if aliens receive / messages from Earth and decide / to visit us?

a A You would fly out the other side into space.

B This would be impossible because the Earth's core is hot.

C You would fall to the centre and then stop.

b A We would enjoy longer and warmer days

B It would start moving in the opposite direction

C Even if the Earth stopped, we would keep moving!

c A There would not be any ocean tides.

B The Earth would spin more slowly

C The Sun would grow stronger.

d A Sea levels would fall.

B Sea levels would stay the same.

C Sea levels would rise.

e A The universe would no longer exist.

B People would use candles for light and fires for heat.

C The world would be a safer place.

f A They wouldn't know exactly where we were.

B They wouldn't arrive for millions of years, as they would be so far away.

C They wouldn't understand our messages anyway.



▲ Rewrite each sentence so that it contains *unless* or *as long as* and begins as shown.

a If you don't train hard, you won't succeed in sport.

You *won't succeed in sport unless you train hard.*

b If you train regularly, you can improve your performance.

You can improve

c If you enjoy your sport, it doesn't really matter whether you succeed or not.

It doesn't really matter

d If you don't eat and sleep properly you won't develop as an athlete.

You won't

Rewrite the sentence as a complaint, using *wish* with *would* or *wouldn't*. Use contractions.

- | | |
|--|---|
| a You never hand your work in on time! | I <u>wish you'd hand your work in on time</u> ! |
| b You always make so many mistakes! | I _____! |
| c You always drop litter on the floor! | I _____! |
| d You never pay attention! | I _____! |
| e You always talk during the test! | I _____! |
| f You never listen to what I'm saying! | I _____! |
| g You always interrupt people! | I _____! |
| h You always throw things across the room! | I _____! |
| i You never behave! | I _____! |
| j You always make so much noise! | I _____! |

Complete the text with the verbs in brackets.

Sloths live in trees and eat mainly leaves, twigs and fruit. In fact, if you a (be) were a sloth, you b (spend) _____ most of your life hanging upside down from a tree. This is the safest place for sloths. If a sloth c (stay) _____ completely still, predators d (not realize) _____ it is there, because it has green algae living on its skin, and it is difficult to see. Sloths move very slowly on the ground, but if they e (go) _____ in water, they f (swim) _____ extremely well. However, they have a low body temperature, and if they g (remain) _____ too long in hot sunlight, they h (die) _____. Sloths are not large animals, growing to about a metre in length. On the other hand, if you i (be) _____ in North America 20,000 years ago, you j (see) _____ a giant ground sloth, as large as an elephant! These giant sloths died out thousands of years ago. Modern sloths live in the rainforest of South America, and they are in danger, like many rainforest animals. If human beings k (continue) _____ to destroy the rain forest, sloths l (become) _____ extinct.



A sloth

the passive and its uses

FORM

Use **be** + **past participle** to form the passive.

present simple active	We find oil and gas beneath the ground or sea.
present simple passive	<i>Oil and gas are found beneath the ground or sea.</i>
present continuous active	The police are questioning two men.
present continuous passive	<i>Two men are being questioned by the police.</i>
past simple active	Teachers trained Aztec boys to fight.
past simple passive	<i>Aztec boys were trained to fight.</i>
present perfect active	Tourism has harmed some countries.
present perfect passive	<i>Some countries have been harmed by tourism.</i>
will active	We will choose a new class representative on Monday.
will passive	<i>A new class representative will be chosen on Monday.</i>

USE

Use the passive

- to move important information (the object of the active sentence) to the beginning.
*Two men **are being questioned** by the police.*
- when we want to be impersonal and not mention the name of the person who performs the action.
We often use the passive in scientific or technical processes.
*Oil and gas **are found** beneath the ground or sea.*
- when it is obvious who performed the action, eg teachers, or we do not want to use a general subject eg *people, they*.
*Aztec boys **were trained** to fight.*
*Two missing children **have been found** safe and well.*
- more often in formal speech and writing than in everyday speech.

transitive and intransitive

Verbs which have an object are called transitive verbs; verbs without an object are intransitive. Only transitive verbs can be made passive.

transitive	subject	verb	object	
	<i>I</i>	<i>lost</i>	<i>my wallet</i>	<i>on the way to school.</i>
intransitive	<i>I</i>	<i>swim</i>	–	<i>every day.</i>

Use **by**

- when it is important to know the 'agent' or person who performed the action
*Some countries have **been harmed by** tourism.*
- only when it is really necessary.
The two men were arrested. (by the police – this is obvious)

Use **with**

- for objects which perform actions.
*The game was played **with** a ball of solid rubber.*

causative *have*, verbs with two objects, passive reporting verbs

FORM

have + object + past participle

present simple	<i>I have my hair cut once a month.</i>
present continuous	<i>They're having their house decorated at the moment.</i>
past simple	<i>We had the computers checked last week.</i>
present perfect	<i>Tom has had his nose altered.</i>
going to future	<i>I'm going to have my photograph taken.</i>

Use causative *have*

- to describe a service eg painting, decorating, haircut, operation, etc that somebody does for us.
We do not usually say who performed the action unless this is important.
I'm going to have my photograph taken. (by a photographer – not necessary)
I'm going to have my photograph taken by a top fashion photographer. (important information)
- for unfortunate events eg accident, fire, theft etc.
Sally has had her car stolen.

We can use *get* instead of *have* in everyday speech eg *I get my hair cut once a month.*

Note: *Get something done* can also mean *manage to do something*.

Did you get your project done?

We also use *get done* for unfortunate events when there is no agent.

Did anyone get hurt?

We can also use *get* instead of *be* in the passive in everyday speech with verbs such as *invite, offer, choose, take, send* etc.

We got invited to Jim's house. She got sent to France on a course.

FORM

Verbs with two possible objects

buy, give, lend, make something for someone, offer, prepare something for someone, promise, sell, send, take something to someone

give *Jim gave Alan some help. Jim gave some help to Alan.*

take *David took Susan a present. David took a present to Susan.*

Verbs with two possible objects have two passive forms, but one is more commonly used.

Alan was given some help by Jim. (more common)

Some help was given to Alan by Jim.

Susan was taken a present by David. (more common)

A present was taken to Susan by David.

FORM

Reporting verbs

believe, expect, know, report, say, think, suppose, understand

Present simple passive + *to do / to be doing* are used for reports about the present.

The missing painting is believed to be in Switzerland.

The government is said to be studying the proposal.

modals: ability, obligation (present / future)

ability: can, can't, cannot

Can't is the negative, with cannot as a formal and written form. There is no third person -s form. Question forms are *Can I*, *Can you* etc.

Use *can / can't*

- to describe ability or lack of it.
Many animals can see clearly in the dark. Human beings can't do this.
- to describe what is allowed or not allowed.
You can look at the animals in the zoo but you can't touch them.
- with a future meaning.
Sorry, but I can't come to the party next week.
- with verbs of perception: *hear, see, taste, feel, smell*.
What can you see? I can smell gas!

ability: be able to

This has the same meaning as *can*.

Use *be able to*

- instead of *can*.
Many animals are able to see in the dark.
- when *can* is unsuitable. Because *can* has only present and past forms, we use *be able to* for other tenses, and infinitive form.
I haven't been able to finish my project. We hope to be able to visit you next month.

obligation: have to / has to

The forms follow *have*: *I have to*, *he / she has to* etc; *do I have to*, *does she have to*; *I don't have to* etc.

Use *have to / has to*

- to describe what is necessary, a rule, or something we do because other people tell us to.
Baby birds have to learn how to fly or they won't survive.
Do we have to buy another ticket to see this part of the castle?

The negative form, *don't / doesn't have to*, is used to describe something unnecessary.

I don't have to go to work tomorrow. There's a holiday.

obligation: must / mustn't

The negative is *mustn't*, with *must not* as a formal and written form. There is no third person -s form.

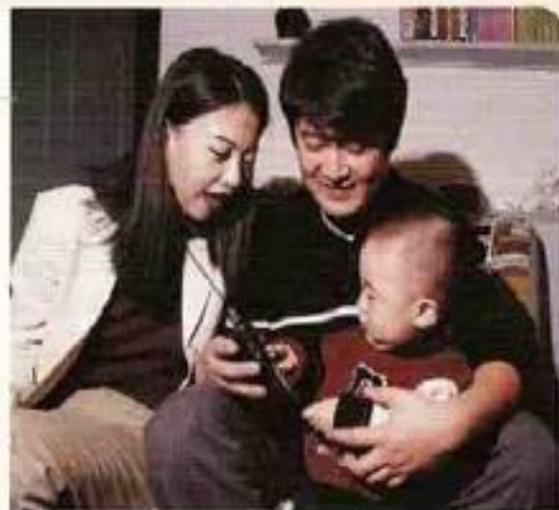
Question form is *must I*, *must you* etc.

Use *must* to describe something we personally think is necessary and important to do.

- There is sometimes little difference between first person *I must* and *I have to*.
Sorry, I really have to go now. Sorry, I really must go now!
- In other contexts, there is a difference.
You must be more careful! (= personal opinion of the speaker)
We have to wear safety goggles. (= an 'outside' opinion or rule)
- We usually use the question form of *have to* for *must*.
Do I have to sit here?
- We use *mustn't* when we think an action is against the rules.
You mustn't throw things in the science lab! It's dangerous!
- Compare *mustn't* and *don't have to*.
You mustn't use a pencil. (it's not allowed)
You don't have to use a pen. (it's not necessary – use a pen or a pencil)

Complete the text with the verbs in brackets and a form of *can* or *have to*.

Rapid population growth **a** (cause) CAN CAUSE problems. The government **b** (provide) more hospitals, schools and jobs, farmers **c** (produce) more food and all the extra people **d** (have) homes. In a less economically developed country, the economy **e** (grow) fast enough to deal with the problems. Many countries realize that they **f** (control) population growth. Some countries believe they can encourage family planning through education and publicity. Other countries believe that they have such a serious problem that they **g** (take)



special measures to control the number of people. In China, for example, there is a 'one child' policy. Couples **h** (ask) permission from the government to marry, and women **i** (be) at least 25 years old. The couple then **j** (ask) permission to have a child, and are allowed only one.



Complete the text to give advice on how to deal with a snake bite using *should* or *shouldn't*. Check the factual answers on page 208.

- a You should stop the victim moving too much.
- b You _____ give the victim a painkiller.
- c You _____ check the person's temperature, breathing and blood pressure.
- d If the snake is dead, you _____ keep it for later examination.
- e You _____ cut into the bite.
- f You _____ keep the person calm.
- g You _____ try to suck out the poison with your mouth.
- h You _____ give them food and drink.

Add a comment to each situation, using the pronoun in brackets and an idea from the list with *had better*.

- | | | | |
|------------------|-------------------------|----------------------------|-------------|
| take an umbrella | don't play in the match | check it in the dictionary | leave now |
| wear a hat | don't wake him up | take some sandwiches | call a taxi |

- a I think it's going to rain. (we) We'd better take an umbrella.
- b It's a long way to the station. (you) _____
- c You don't look very well. (you) _____
- d We might get hungry later. (we) _____
- e It's going to be hot today. (you) _____
- f The last train leaves in fifteen minutes. (we) _____
- g He's still asleep. (we) _____
- h That word doesn't look right. (you) _____

modals: possibility, uncertainty, certainty (present / future)

possibility and uncertainty

Use *may*, *might*, *could* + bare infinitive

- to describe things that will possibly happen.

*The next earthquake **may / might / could happen** tomorrow.*

Use *may not* and *might not* + bare infinitive

- to describe things that will possibly not happen in the future.

*The next earthquake **may not / might not happen** for another fifty years. It's impossible to predict exactly.*

possibility

Use *can* + bare infinitive

- to describe a possibility in general, but not with a future time reference.

*During an earthquake, people **can suffer** injuries when parts of buildings fall into the street.*

certainty

Use *will* + bare infinitive

- when we are certain something will happen in the future.

*During a strong earthquake, some older buildings **will collapse**.*

Use *must* + bare infinitive

- when we are certain something is true (usually with *be*), or when we suppose what a situation is like.

*I've never been in an earthquake. **It must be** really frightening.*

(= I'm certain of that.)

*You've done a lot of work. You **must feel** really tired!*

(= I'm sure you do.)

negative certainty

Use *can't* + bare infinitive

- when we are certain something is **not** true (usually with *be*) or impossible.

*That **can't be** an earthquake! We don't have earthquakes here!*

*You **can't know** the answer already! That's impossible!*

Complete the sentence with *may* or *may not*.

- a The sky looks a bit grey. It may rain later.
- b I don't think the new secretary likes her job. She _____ stay very long.
- c If you leave right now, you _____ be on time.
- d In the future when technology has improved, it _____ be possible to build a spaceship that can travel to distant planets.
- e I'm not sure if Sue's at home today. She _____ have come back from her holiday yet.
- f The Prime Minister _____ fly to India later this week for talks on reducing global warming.
- g I _____ go to the party because I'm not feeling very well.
- h According to astronomers, there _____ be intelligent life on other planets. We don't know because we haven't travelled very far into space yet.
- i Jarek _____ have an mp3 player. Ask him if you can borrow it.
- j Juan _____ pass his exams if he revises every day.

Underline the correct form.

- a Even if you don't live in a Mediterranean country, you can / might already know about earthquakes.
- b They can / might be frequent in some countries, though most are too small to be noticed by humans and you may not / cannot even notice when one occurs.
- c Earthquakes are the result of movements of the Earth's tectonic plates, though human activity may / will be responsible.
- d Most earthquakes happen at depths of 20 or 30 km, though they will / can be as deep as 600 km.
- e What is it like to experience an earthquake? If the tremor is very small you might / couldn't feel nothing at all.
- f In a stronger tremor, there is more movement, and so the furniture in the room can / will move.
- g Tall buildings will / may definitely move a little, and, depending on how well the building is constructed, cracks will / might appear in the walls.
- h In a major earthquake, the building could / can collapse completely, though with modern earthquake-proof buildings, this is unlikely.



Rewrite the sentence so that it contains the word in capitals.

- a I'm sure you know the difference between a solid and a gas! MUST
You must know the difference between a solid and a gas!
- b If a substance does not contain hydrogen, then we are sure that it isn't an acid. CAN'T
- c If we put some litmus paper in a solution and it turns red, then we are sure that the solution is an acid. MUST
- d If we add a substance to a red-cabbage solution and it stays red, then we are sure the substance isn't an alkali. CAN'T
- e If we add a substance to a red-cabbage solution and it turns green, then the substance is sure to be an alkali. MUST
- f If we put some litmus paper in a solution and it turns red, then we are sure that the solution isn't an alkali. CAN'T
- g If it's not an acid, or an alkali, then it's sure to be neutral. MUST
- h If we use a universal indicator to check a substance, and it turns purple, then we are sure that the substance isn't an acid. CAN'T



Rewrite each sentence so that it begins as shown and contains the word in capitals.

- a If the world becomes warmer, as some scientists predict, it is possible that Europe will change dramatically over the next century. COULD
If the world becomes warmer as some scientists predict, Europe could change dramatically over the next century.
- b It is possible that there will be no snow-covered mountains in Europe by then. MIGHT
There
- c And it's possible that areas in the south of Europe will become deserts. COULD
And areas
- d It's also possible that heavy rain will become normal in northern Europe. MIGHT
- e While it's possible that southern Europe will be always short of water. COULD
While southern Europe

noun + noun, 's or of

noun + noun

Nouns are often used before other nouns as adjectives. The noun that comes first does not have plural -s. This is called a compound noun.

power station (a building that contains machines that produce power)
export earnings (earnings from exports)

A noun as adjective often explains

- what a thing is part of *a computer screen*
- where the thing is found *the bathroom window*
- what a thing is for *a bottle opener*
- what type of thing it is *a seat belt*
- what a thing contains *a teapot*

Words which are always plural eg *clothes, news*, keep the plural form in compounds.

a clothes brush *a news broadcast*

Two short nouns usually join together as one word, eg *teapot*. Other compounds are written as two words, eg *a bottle opener*, or may have a hyphen, eg *a bus-stop*. Check in a dictionary as the use of hyphens varies greatly.

A noun can have two nouns as adjectives.

shop window displays *Christmas tree lights*

possessive apostrophe, of

Use the apostrophe and -s at the end of a singular noun or name to show that something belongs to someone, eg *Helen's bike*.

Use only an apostrophe after a plural -s, eg *the junior girls' team*.

With names ending in -s, use either an apostrophe, or an apostrophe with -s.

St James' Park *St James's Park*

We generally use *of* when we describe one thing belonging to another.

the bottom of the sea *the rotation of the Earth*

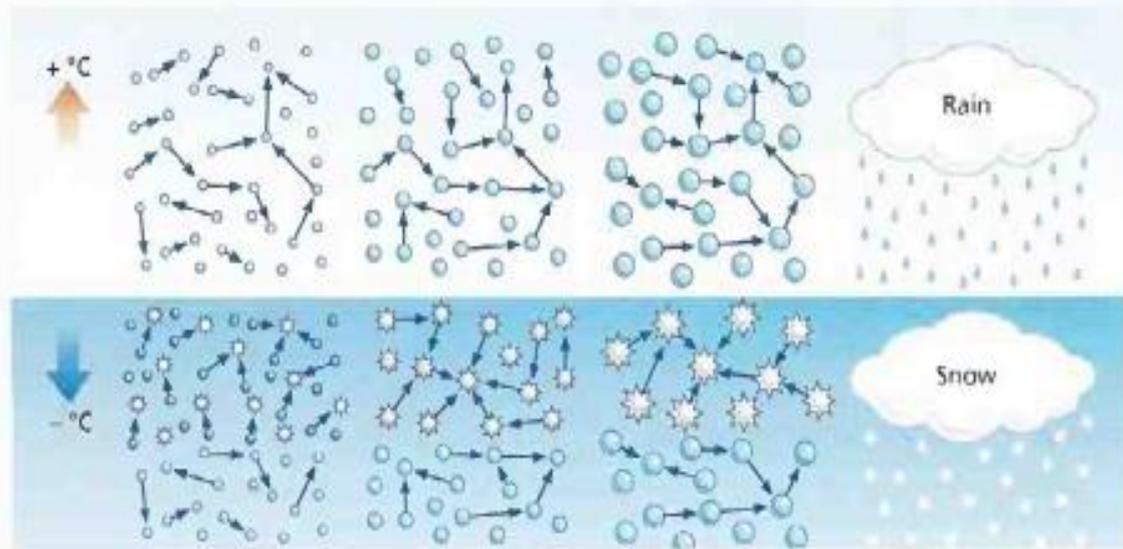
Note that usage varies, and other forms are possible, depending on the context. When you are uncertain, use *of*.

the sea bottom *the Earth's rotation*

Note: the apostrophe is also used in contractions, eg *it isn't*. This is not a possessive apostrophe.

Rewrite the underlined words as a phrase with of. You may have to change plural and singular forms.

The a air temperature in a cloud determines b rain and snow formation. In tropical areas where the c cloud temperature is mainly above 0°C, rain is formed by a process called coalescence. The clouds are made up of millions of d water droplets, and as these droplets collide, they form larger droplets. Gradually the e droplet size increases until they are too heavy to be kept in the air by f air currents, and fall as g raindrops. In cooler areas, clouds may stretch up into air which is below freezing. These clouds are a mixture of water droplets lower down, and h ice crystals and special supercooled water droplets higher up. The supercooled droplets exist as water even though the temperature is below freezing. As well as coalescence at the bottom, a process called accretion happens higher up in these clouds. The ice crystals attract the supercooled droplets, which freeze onto them. As the crystals grow and stick to others, i snowflakes form. When they become too heavy to be held up, they fall.



- a the temperature of the air
- b the _____
- c the _____ the _____
- d _____
- e _____

- f _____
- g _____
- h _____
- i _____



Make a noun + noun compound using two of the words. You may have to change a word from plural to singular.

- a the same temperature as there is in the room
- b fumes which come from exhausts
- c salts which come from minerals
- d chemicals present in food
- e generations which will exist in the future
- f disease suffered by the heart
- g a solution of salt
- h pollution carried in the air
- i change in the climate
- j a bill you receive for your use of electricity

room temperature

Complete the text with a / an or the.

Memo checklist

a The word memo is short for memorandum and it means b a note to help as c a reminder.

It is only used within d a business and so there is no need for e a full external address of f a person you are sending it to. However, you might need to show g a internal office address, eg room number and building.

There are usually just spaces for h the names of the person sending and the person receiving i a memo. However, copies might be sent to other people in j a company for reference.

The subject is clear from k a heading and l a text is brief.

There is no formal signature. Sometimes m a originator will sign their name freehand at n a bottom.

Business letter checklist

o a language used in p a business letter tends to be formal eg 'We regret to inform you ...'

q a letterhead includes r a full address and telephone number of s a business.

t a address of u a recipient is also included in full on v a left-hand side above w a text.

Everything is left justified (starts at x a left-hand edge) except y a letterhead.

Letters starting 'Dear Sir' end in 'Yours faithfully'. If you start with z a name of the person you are writing to, for example 'Dear Mr Brown', you end l a letter with 'Yours sincerely'.

2 a date and any reference number are shown at 3 a top of 4 a letter.

Complete the text with a / an, the or leave blank for zero article.

Energy

a a waves are vibrations that transfer energy from place to place without b a matter (solid, liquid or gas) being transferred. For example, think of c a Mexican wave in d a crowd at e a football match. f a wave moves around g a stadium, while each spectator stays in their seat, only moving up then down when it's their turn.

Some waves must travel through h a substance. This substance is known as i a medium, and it can be solid, liquid or gas. j a sound waves and seismic waves are like this. As the waves travel through it, k a medium vibrates.

Other waves do not need to travel through l a substance. They may be able to travel through m a medium, but they do not have to. n a visible light, infrared rays, and microwaves are like this. They can travel through o a empty space.



Complete the text with a / an, the or leave blank for zero article.

Glaciers

Most of a the world's glaciers are found near b the Poles, but c some glaciers exist on all of d the world's continents. e Some glaciers need f a special kind of climate. Most are found in g certain areas of high snowfall in winter and cool temperatures in summer. These weather conditions ensure that h the snow that falls in the winter isn't lost by i the melting, or j the evaporation in summer.

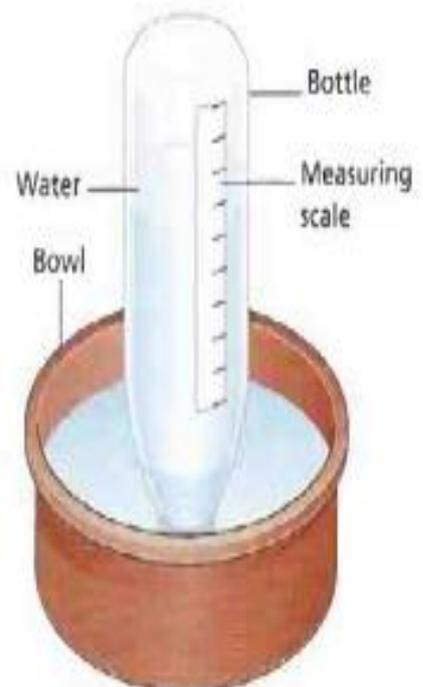


Such conditions typically occur in polar and high alpine regions. There are two main types of k two glaciers: l two valley glaciers and m two continental glaciers or ice sheets. n Some glaciers depend on o the snow or p the freezing rain to survive. In Antarctica, for example, although q the temperature is low, there is little snow or rain, and this causes r the glaciers there to grow very slowly.

A glacier forms when s the snow builds up over time, turns to t the ice, and begins to flow outwards and downwards because of u the pressure of its own weight. v the buried layers slowly grow together to form a thickened mass of w the ice. x the thickness of y the glacial ice usually makes it seem a little blue in colour.

Complete each sentence with *the*, *a* / *an* or zero article.

- Last week at school we learned how to make a barometer.
- This is some cardboard which we used to make our barometer.
- And this is a bottle we used. We attached the cardboard to it.
- We made a measuring scale and attached it to the side of the bottle.
- This is a bowl we also used as part of our barometer.
We filled the bowl with water, and filled the bottle three quarters full, and then turned the bottle upside down in the bowl.
- The pressure of air has an interesting effect on the water you put in the bowl.
- The pressure makes the water in the bottle rise.
- We used a measuring scale on the side of the bottle to measure the air pressure.



time (1)

at, in, within, on

Use **at** with clock time and *midday, midnight* and *night*. Note: we cannot say *at last-night*.

at 5.12 am at midday at midnight at night

Use **at** with *Christmas, Easter* and *New Year*.

What are you doing at Christmas?

Use **at** with expressions showing definite times.

What are you doing at the moment? I'll see you at the end of the week.

Ms Graham is busy at present. What were you doing at the time of the robbery?

Use **in** with months, years, seasons, and *morning, afternoon, evening*.

in April in 1906 in spring / summer / autumn / winter

in the morning in the afternoon in the evening

Use **in** with units of time (*week, hour, moment* etc) to refer to future points.

I'll be back in a week. I'll see you in a moment.

If we use *time*, we usually add an apostrophe.

I'll see you in six months' time.

Within means inside or during a period of time.

The work must be completed within a month. Four other cases have been reported within the past week.

Use **on** with dates, days of the week and expressions with *day*. Note: we don't say 'on next-friday'.

on April 18th on Tuesday

on the last day of August We're going out on my birthday.

next, last

Use **next** for the future, and **last** for the past with *week, month, year, summer* etc.

I'll see you next week. Last summer was the driest for twenty years.

since, for, ago, ages

Use **since** with a point in time and **for** with a period of time.

I've been waiting since six o'clock I've been waiting for two hours

Use **ago** to measure time in the past.

The earthquake took place more than 100 years ago.

For ages means for a long time. It follows present perfect simple as it describes a period of time up to the present eg *I haven't seen you for ages*.

It's ages since ... is followed by a past simple verb, as *since* describes a point in time.

It's ages since I last went to the theatre.

from, to, till, until / till

Use **from** and **to** for the start and finish of a period of time eg *I'll be there from 5.00 to 6.30*.

Until means up to a point in time, and then stopping. **Till** is an informal form of **until**.

I waited until seven o'clock, and then left.

Some people were trapped under buildings until the following day.

Use **not + until** to show when something finally happens.

Helen didn't arrive at the party until 11.30. It wasn't until much later that the truth finally came out.

by, by the time

Use **by** to mean at some point in the period of time before.

The city was rebuilt by the end of the following year.

Use **by the time** to describe events which will be, or were, too late.

By the time we get to the party, it will be over! (We'll be too late)

By the time (that) we got to the station, the train had left. (We were too late)

during

Use **during** to mean 'in a period of time', either at one point, or for the whole period.

During the night, people felt a sudden shock. (one point)

During winter, some animals in cold countries sleep for long periods. (whole period)

Complete each question with *at*, *in* or *on*.

What happened ...

- a *in* 1918 _____ November 11th _____ 5 am?
- b _____ 1937 _____ the 26th of April _____ the late afternoon?
- c _____ 1793 _____ about 11 o'clock _____ January 21st?
- d _____ 1865 _____ about 10 o'clock _____ the evening _____ the 14th of April
- e _____ 1928 _____ November 18th?
- f _____ 1969 _____ 20th July _____ about 3.00 am GMT?
- g _____ 1903 _____ Dec 17th _____ about 10.30 _____ the morning?
- h _____ July 16th _____ the early morning _____ 1945?
- i _____ the evening _____ the 26th November _____ 1962?
- j _____ 2004 _____ about 1.00 am GMT _____ the 26th December?

Complete the sentence with *at*, *in*, *on*, *next* or *last*.

- a The *next* _____ time you visit us, you must stay for dinner.
- b Wait here, and I'll be back _____ a few minutes.
- c I haven't seen Helen since _____ month.
- d Are you having a party _____ your birthday?
- e Your salary will be paid _____ the end of the month.
- f We didn't take a trip abroad _____ summer, but we're going to Crete this summer.
- g Peter managed to break his leg _____ the first day of his skiing holiday.
- h Are you going to university _____ year?
- i Take some warm clothes, because the temperature drops _____ night.
- j _____ two weeks' time, the school year will be over!

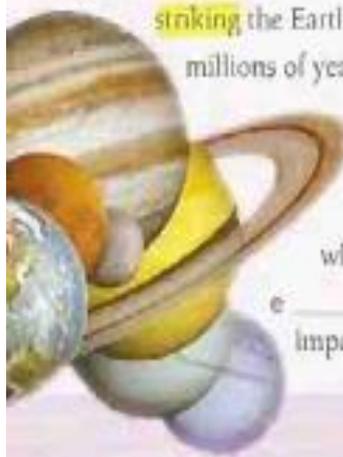


So how was the skiing holiday?

Complete the text with *next, last, since, for, and ago*.

Visitors from space

Scientists believe that the a ~~last~~ _____ time a large object from outer space hit the Earth was in 1908. Luckily it landed in a sparsely-populated area of Siberia, but people 60 km away from the crash site were thrown to the ground. When it happened, just over a hundred years b _____, scientists thought the explosion might have been caused by part of a comet. c _____ then, research has shown that it was a stone meteorite which exploded in the atmosphere. Objects of this kind have been



striking the Earth d _____ millions of years, but serious explosions are rare. Astronomers are trying to predict when the e _____ serious impact might be.

The Transit of Venus

A Transit of Venus is an astronomical event, when the planet Venus is exactly between the Earth and the Sun, so it is seen crossing the face of the Sun as a small black disc. The f _____ Venus Transit took place in 2004 and the g _____ one will occur in 2012. Nearly 400 years h _____, the astronomer Kepler predicted the event would take place in 1631, but did not realize it could not be seen in Europe. i _____ then, there have been transits in 1639, 1761, 1769, 1974, 1882 and 2004. Obviously such events have been taking place j _____ millions of years, but the event was not seen by astronomers until 1769, when two astronomers in England both observed it. If you missed it in 2004, and miss it in 2012, there will be another Venus Transit in 2117, but that is a long time to wait!

GLOSSARY

Complete the sentence with *from, to, until, by, or during*.

- Some animals cannot survive from autumn _____ spring because of the cold weather.
- They hibernate (which means they sleep through the winter) as a way of keeping themselves alive _____ the spring.
- Another reason for hibernation is that it is hard to find food _____ the winter.
- _____ the time winter comes, they need to have enough body fat to keep them alive while they hibernate.
- _____ autumn, hibernating animals collect food for storage, and eat more food than usual.
- If there is a shortage of food at that time, the animal might not live _____ spring when it can find its food again.
- _____ the end of hibernation, the animals live off their body fat.
- _____ hibernation, they lower their metabolic rate – the rate at which they use energy.
- Animals may hibernate for several months, but they do not remain completely inactive _____ this time.
- Some hibernate in a series of short periods lasting _____ a few days _____ a few weeks.

Rewrite the second sentence so that it means the same as the first sentence, and contains the word in capitals.

- a Paula only arrived at school at 12.30. DIDN'T
_____ *Paula didn't arrive at school until 12.30.* _____
- b My library card runs out at the end of July. ON

- c We arrived at the cinema, but the film had finished. BY

- d What were you doing when the accident happened? TIME

- e It's three o'clock now, and I've been waiting since two. FOR

- f At some time in the night there was an earthquake. DURING

- g I waited but I left at 4.30. UNTIL

- h I'll have finished in a week's time. WITHIN

- i I haven't seen George for ages. SINCE

- j It's Monday today, so I'll see you next Monday. IN

6 Complete the text with words from page 156.

Lenses have been used **a** _____ **for** _____ hundreds of years to light fires. As long **b** _____ as 424 BC, a burning-glass is mentioned in Aristophanes' play *The Clouds*. **c** _____ that there are **references** to lenses in Roman writing, but mainly to glass **spheres** filled with water. The Arabian mathematician Ibn Sahl who lived **d** _____ about 940 **e** _____ 1000 AD wrote about lenses. Another Arabian scholar, Alhazen (965-1038), who lived slightly **f** _____ than Ibn Sahl, wrote the first description of how the lens in the human eye forms an image on the **retina**. Recent **excavations** in Sweden have also shown that the Vikings used lenses **g** _____ the 11th and 12th centuries. True glass lenses were not invented **h** _____ the 13th century, probably in Italy. **i** _____ then, lenses have been used in reading glasses and other **optical** instruments, such as telescopes and microscopes. The telescope seems to have been invented by Dutch lens makers **j** _____ the 17th century. The microscope seems to have been invented **l** _____ about the same time.



time (2)

now

Now means 'at the present time'.

Helen is **now** the new student representative.

By now means 'at some time before now'.

We should have heard some news **by now**.

From now on means 'from the present moment'.

From now on, this class will meet in Room 2.

then

Then means 'at a particular time in the past'.

Einstein was **then** working in a government office in Zurich.

We could also say *at the time / at that time*. We can also use **then** with future reference.

'Let's meet outside the cinema at 8.00.' 'Ok, I'll see you **then**.'

Until then, **by then**, **before then** are also possible.

I'm leaving on Saturday morning. **Until then**, I'm staying in a hotel.

Phone Maria at 6.00. She should have finished work **by then**.

You can come on Thursday? Can't you come **before then**?

Then also introduces the next thing that happens.

First open the back of the radio. **Then** remove the batteries.

soon

Soon means 'in a short time from now'.

If it doesn't stop raining **soon**, we'll go home.

Soon after the match began, a fight started behind us.

Please call me back as **soon** as you can / as **soon** as possible.

once, at once, immediately

Once refers to a point in the past when something happened.

We **once** spent Christmas in Thailand.

Once also describes a situation in the past, usually before a change that has taken place.

Helen was **once** national judo champion. (She isn't now)

At once and **immediately** mean 'without delay'.

Stop doing that **at once!**

When Jim saw the men go into the bank, he **immediately** called the police.

on time, in time

On time refers to a timetabled event which happened as planned.

The train arrived **on time**. Dina handed in her project **on time**.

In time refers to an event which happens early enough. We can also say *just in time*, and *in plenty of time*.

We got home **just in time** to watch the TV news.

Our bus was delayed, and we didn't reach the airport **in time**.

at the end, in the end

At the end describes the final point of a period of time.

At the end of the film, everyone clapped. I'll see you **at the end** of the week.

In the end means the same as *finally*, or 'after a period of time'.

I was thinking of buying a new bike, but **in the end** I decided I couldn't afford it.

later, after, afterwards, before

Later is an adverb and means 'at a later time'. We can also say *later on*.

I'll see you **later**. Can you phone me **later on**?

After can be used as a preposition with an object, or as an adverb without. **Afterwards** is an adverb and can stand alone.

I'll see you **after** the lesson. It's a long film. What are you doing **afterwards**?

Use **before** as an adverb or as a preposition.

I saw her **before** the lesson. (preposition) I've seen this film **before**. (adverb)

just, yet, already, still

Use **just** for very recent events. I've **just** had an idea!

Use **yet** in negative sentences and questions for possible future actions.

Have you finished **yet**? Not **yet**! I haven't started **yet**!

Use **already** to describe actions before now. In questions, **already** expresses surprise that something has been done so quickly.

I've **already** seen this film. (before now)

Have you done your homework **already**? (this surprises me)

Use **still** when we describe actions that are continuing.

I'm **still** reading your book. I haven't finished it.

1 Choose the correct option, A, B, C or D, to complete the sentence.

- a It seems that the Olympic Stadium will not be finished ~~at~~ _____ for the Games.
- b I haven't eaten _____, so I feel really hungry.
- c I won't be long, I'll be back _____.
- d Could you let me have my book back _____?
- e I've _____ had an idea. Why don't we go and see Kate?
- f _____ I wanted to be an engineer, but now I want to study computers.
- g I thought I had caught a cold, but _____ it was nothing.
- h Marla promised to return my books _____ she could.

- | | | | |
|------------------------|-------------------|------------------|-----------------------------|
| a A <i>immediately</i> | B <i>in time</i> | C <i>yet</i> | D <i>soon</i> |
| b A <i>now</i> | B <i>soon</i> | C <i>at once</i> | D <i>yet</i> |
| c A <i>already</i> | B <i>just</i> | C <i>once</i> | D <i>soon</i> |
| d A <i>in the end</i> | B <i>after</i> | C <i>yet</i> | D <i>as soon as you can</i> |
| e A <i>already</i> | B <i>soon</i> | C <i>just</i> | D <i>now</i> |
| f A <i>by then</i> | B <i>later on</i> | C <i>once</i> | D <i>just</i> |
| g A <i>in the end</i> | B <i>at once</i> | C <i>in time</i> | D <i>still</i> |
| h A <i>as soon as</i> | B <i>before</i> | C <i>in time</i> | D <i>just</i> |

2 Underline the correct option.

- a You should have finished your project *soon* / *by now*.
- b I nearly dropped the eggs, but managed to catch them *just in time* / *on time*.
- c Let's meet *after* / *later* school and talk about it.
- d From *now on* / *later on*, things are going to be different!
- e The results come out next week, so *before* / *until* then, you'll have to wait.
- f 'The meeting starts at 7.30.' 'Right, I'll see you *at once* / *then*.'
- g Our teacher *once* / *at once* sang in a rock band.
- h *At* / *In* the end of the match, the spectators ran onto the pitch.
- i Mix the butter and sugar and *then* / *after* add the eggs.
- j *Immediately* / *As soon as* she came into the room, I knew we were going to be friends.

Choose the correct option, A, B or C, to complete the sentence.

- a Alexander Fleming is usually described as the scientist who discovered penicillin in 1928, but in fact at least two other scientists had noticed its antibiotic effect ~~B~~ he did.
- b The antibiotic effects of penicillin had _____ been recorded in France by a Costa Rican scientist.
- c Fleming **conducted** experiments with penicillin, but _____ decided that it would not work as an antibiotic in humans.
- d Luckily, other scientists continued with the research and were _____ making progress when the Second World War began in 1939.
- e However, at that point they had not **treated** any patients.
- f A few years _____, in 1942, Bumstead and Hess became the first doctors in the world to save a patient using penicillin.
- g At this point, Dorothy Hodgkin had _____ described the **chemical structure** of penicillin, so it was now possible for penicillin to be produced in large quantities.
- h Penicillin is _____ used to treat many infections.
- i However, _____ in the 1940s, the first cases of **resistance** to the drug had been reported.
- j Because bacteria can change, they grow **resistant** to antibiotics, and scientists have not found a solution to this problem.

- | | | |
|-------------|--------------|-----------|
| a A after | B before | C already |
| b A already | B later | C still |
| c A after | B later | C just |
| d A after | B afterwards | C still |
| e A yet | B just | C still |
| f A after | B later | C yet |
| g A just | B still | C yet |
| h A still | B yet | C already |
| i A yet | B still | C already |
| j A later | B yet | C already |



Dorothy Hodgkin

Rewrite each sentence so that it contains the word or words in capitals.

- a They'll be back after twelve. IN
 They'll be back in the afternoon.
- b Can you do it now, please? AT
- c When the lesson finished, Helen asked the teacher a question. AT
- d My head hasn't stopped aching. STILL
- e Jan wasn't late for his music lesson. TIME
- f It's eight o'clock and I've been waiting for two hours. SINCE
- g The film began, and a few minutes later all the lights came on. SOON AFTER
- h Lunch isn't ready yet, so before that we'll sit in the garden. THEN

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