

- 2.1** Spend two minutes skim reading the passage below, so that you are familiar with the type of information it contains.

What is the main purpose of the passage?

- A to describe the habitat and eating habits of one specific animal
- B to explain the background to a proposed study into tropical animals
- C to argue that scientists can learn a great deal from studying nature
- D to give the findings of new research into an animal's behaviour

How geckos cope with wet feet



- A** Geckos are remarkable little lizards, clinging to almost any dry surface, and Alyssa Stark, from the University of Akron, US, explains that they appear to be equally happy scampering through tropical rainforest canopies as they are in urban settings. 'A lot of gecko studies look at the very small adhesive structures on their toes to understand how the system works at the most basic level,' says Stark. She adds that the animals grip surfaces with microscopic hairs on the soles of their feet, which make close enough contact to be attracted to the surface by the minute forces between atoms.
- B** However, she and her colleagues Timothy Sullivan and Peter Niewiarowski were curious about how the lizards cope on surfaces in their natural habitat. Explaining that previous studies had focused on the reptiles clinging to artificial dry surfaces, Stark says 'We know they are in tropical environments that probably have a lot of rain and geckos don't suddenly fall out of the trees when it's wet'. Yet, the animals do seem to have trouble getting a grip on smooth, wet, artificial surfaces, sliding down wet vertical glass after several steps. The team decided to find out how geckos with wet feet cope on both wet and dry surfaces.
- C** First, they had to find out how well their geckos clung onto glass with dry feet. Fitting a tiny harness around the lizard's pelvis and gently lowering the animal onto a plate of smooth glass, Stark and Sullivan allowed the animal to become well attached before connecting the harness to a tiny motor and gently pulling the lizard until it came unstuck. The geckos hung on tenaciously, and only came unstuck at forces of around 20N – about 20 times their own body weight. 'In my view, the gecko attachment system is over-designed,' says Stark.
- D** Next, the trio sprayed the glass plate with a mist of water and re-tested the lizards, but this time the animals had problems holding tight. The droplets were interfering with the lizards' attachment mechanism, but it wasn't clear how. And when the team immersed the geckos in a bath of room-temperature water with a smooth glass bottom, the animals were completely unable to anchor themselves to the smooth surface. 'The toes are super-hydrophobic,' (i.e. water repellent) explains Stark, who could see a silvery bubble of air around their toes. But, they were unable to displace the water around their feet to make the tight contact that usually keeps the geckos in place.
- E** Then the team tested the lizard's adhesive forces on the dry surface when their feet had been soaking for 90 minutes, and found that the lizards could barely hold on, detaching when they were pulled with a force roughly equalling their own weight. 'That might be the sliding behaviour that we see when the geckos climb vertically up misted glass,' says Stark. So, geckos climbing on wet surfaces with damp feet are constantly on the verge of slipping and Stark adds that when the soggy lizards were faced with the misted and immersed horizontal surfaces, they slipped as soon as the rig started pulling. Therefore geckos can walk on wet surfaces, as long as their feet are reasonably dry. However, as soon as their feet get wet, they are barely able to hang on, and the team is keen to understand how long it takes geckos to recover from a drenching.

- 2.2** Look at this task based on the Reading passage. For each question, underline the type of information you need to scan for. The first two have been done for you.

Which paragraph contains the following information?

N.B. You may use any letter more than once

Write the correct letter, A–E, next to questions 1–7 below.

- 1 visual evidence of the gecko's ability to resist water
- 2 a question that is yet to be answered by the researchers
- 3 the method used to calculate the gripping power of geckos
- 4 the researcher's opinion of the gecko's gripping ability
- 5 a mention of the different environments where geckos can be found
- 6 the contrast between Stark's research and the work of other researchers
- 7 the definition of a scientific term

- 2.3** It is important to fully understand what you are looking for in the passage. Answer these questions, based on Question 1 in the task above.

- 1 Which of the following do you think is 'visual evidence'?
 - A something the researchers believe
 - B something the researchers have seen
 - C something the researchers have read about
- 2 Which of the following means the same as 'ability to resist water'?
 - A soaks up water
 - B sinks in water
 - C stops water getting in
- 3 Scan the passage to find 'visual evidence' of an ability to resist water. Which paragraph contains this information?

- 2.4** Study Questions 2–7 in 2.2 carefully and match them to paragraphs A–E. Remember, the questions are not in the same order as the passage. This is because your task is to find out where the information is.

- 2.5** Look again at Questions 2–7 and underline the parts of the passage that gave you your answer.



Test Tip Make sure to note any plurals in the questions (e.g. two examples of / the different environments, etc). There may be parts of the passage that refer to only one of the things mentioned, so you need to find the paragraph that has more than one. .

3 How ideas are connected

Another type of question that requires you to match information is **matching sentence endings**. For this type of task, you need to understand how ideas are connected within the Reading passage.

3.1 Complete each sentence below with the correct ending, A–F.

- 1 When I pressed the switch,
 - 2 If you heat ice,
 - 3 The respondents to the survey
 - 4 Children who attend small schools
 - 5 Parents with overactive children
- A all came from similar economic backgrounds.
B tend to need more sleep at night.
C the light came on.
D reported that she has been successful.
E generally get more individual attention.
F it melts.

You were able to complete this task using only logic and your knowledge of grammar. In the IELTS Reading paper, you can do this to confirm or check your answers, but you will **not** be able to answer the questions without reading the passage.

3.2 Look at these matching sentence endings questions based on the passage in 2.1. Try using these techniques to answer the questions.

- 1 Scan the passage in 2.1 to locate the information in the sentence beginnings (1–4).
 - 2 Read the relevant part of the passage carefully, then choose the best sentence ending (A–F).
- 1 Other researchers have aimed to discover how
 - 2 The work of Stark and her team is different because they wanted to find out how
 - 3 Stark's experiments revealed that
 - 4 The researchers would still like to know when

- A geckos struggle to grip onto dry glass as well as wet glass.
B the gripping mechanism of geckos actually works.
C geckos have a weaker gripping mechanism than previously thought.
D geckos are able to grip in rainforest settings.
E geckos are able to recover their gripping abilities after getting wet.
F geckos can grip more easily if their feet are not damp.

5 Discursive passages

In this unit you will practise:

- reading discursive passages
- identifying theories and opinions
- matching features

1 Discursive passages

The texts in the Reading paper gradually become more difficult. They may present contrasting points in an argument or explain a complex theory. All Reading passages contain cohesive devices to help explain how the ideas are connected together.

1.1 Write the cohesive devices in the box into the correct column of the table to show why a writer would use them.

moreover	such as	although	for instance
indeed	therefore	despite	consequently
in spite of	in addition	thus	as a result
similarly	to illustrate this	nonetheless	in fact
whilst	hence	furthermore	though

to add more / clarify a point	to show contrast / present the opposite view	to give an example	to draw a conclusion / introduce a result
moreover			

1.2 Skim read the passage below. Find nine of the cohesive devices from the table in 1.1.

Aesop's fable 'The crow and the pitcher' more fact than fiction

New research indicates that rooks, members of the crow family, are able to solve complex problems using tools.

In Aesop's fictional fable 'The crow and the pitcher', a thirsty crow uses stones to raise the level of water in a jug to quench its thirst. A recent study demonstrates that rooks, birds belonging to the *corvid* (or crow) family, are in fact able to solve complex problems using tools and can easily master the same technique used in the story.

Christopher Bird of the University of Cambridge, who led the study, highlighted the importance of the findings, stating: 'Corvids are remarkably intelligent, and in many ways rival the great apes in their physical intelligence and ability to solve problems. The only other animal known to complete a similar task is the orang-utan. This is remarkable considering their brain is so different to the great apes. Although it has been speculated in folklore, empirical tests are needed to examine the extent of their intelligence and how they solve problems.'

In their first experiment, the researchers varied the height of the water in a tube and the four rooks, which were the subject of the research, used stones to raise the water level to reach a worm floating on top. The clever birds proved very adept and were highly successful, regardless of the starting level of the water or the number of the stones needed. Two of the birds were successful on their first attempt in raising the water to the correct height whilst the other two birds needed a second try.

In addition to the speed with which they completed the task, the birds were also highly accurate in their ability, adding the exact number of stones needed to reach the worm. Furthermore, rather than attempting to reach the worm after each stone was dropped in, they apparently estimated the number needed from the outset, and waited until the appropriate water level was reached before dipping their beaks into the tube.



In the second experiment, the rooks were presented with stones that varied in size. Here, the rooks selected larger stones over smaller ones (though they didn't do this straight away). The scientists speculate that the birds quickly realised that the larger stones displaced more water, and they were thus able to obtain the reward more quickly than by using small stones.

According to the team, in the final experiment, the rooks recognised that sawdust could not be manipulated in the same manner as water. Therefore, when presented with the choice between a tube half-filled with either sawdust or water, rooks dropped the pebbles into the tube containing water and not the sawdust.

Despite the fact that the study clearly demonstrates the flexible nature of tool use in rooks, they are not believed to use tools in the wild. 'Wild tool use appears to be dependent on motivation,' remarked Bird. 'Rooks do not use tools in the wild because they do not need to, not because they can't. They have access to other food that can be acquired without using tools.' As Bird noted, that fits nicely with Aesop's maxim, demonstrated by the crow: 'Necessity is the mother of invention.'

1.3 Read the passage again and complete sentences 1–6 with endings A–H.

- 1 A new study has actually
- 2 The intelligence of birds has been suggested in stories, but
- 3 Half of the birds in the experiment were immediately successful; however,
- 4 The birds promptly realised the advantage of using big stones, and so
- 5 The research showed rooks can use tools with ease, though
- 6 The rooks worked out the properties of different materials and as a result.

- A others needed several attempts.
 B experts think that they don't do this in their natural habitat.
 C they achieved their goal sooner.
 D confirmed a fictional account.
 E helped us to understand a mysterious event.
 F only scientific studies can prove this.
 G they were able to protect themselves.
 H consistently rejected one particular type.



Study Tip There are several ways of linking ideas in a text. Look at the following examples: *the findings*; *This is remarkable ...*; *Here, the rooks ...*

Remember, it is important to study all aspects of language when preparing for the IELTS exam. As you read through longer, complex passages, try to be aware of how the ideas are connected. This can also help improve your writing.

1.4 Find synonyms in the passage for the cohesive devices that are underlined in questions 1–6.

2 Identifying theories and opinions

Many academic texts contain the theories or views of different people or experts. Direct quotations are easily recognised by quotation marks, but a person's views or ideas can also be referred to indirectly.

In this extract from the Reading passage, the verbs *highlighted* and *stated* are both used to draw attention to the words of Christopher Bird.

Christopher Bird of the University of Cambridge, who led the study, highlighted the importance of the findings, stating: 'Corvids are remarkably intelligent, and in many ways rival the great apes in their physical intelligence and ability to solve problems.'

Bird's views could also be expressed indirectly.

2.1 Which verb in this sentence tells us that this is Bird's view and not the writer's?

Christopher Bird of the University of Cambridge, who led the study, believes that Corvids are remarkably intelligent, and in many ways rival the great apes in their physical intelligence and ability to solve problems.

2.2 Find three more verbs and one preposition in the passage that refer to the views or theories of an expert.

2.3 Statements A–F paraphrase opinions or theories that appear in the Reading passage. Match them to the same idea in the passage, then put them in the order they appear.

- A** We imagine that the rooks were soon able to appreciate the advantage of using different-sized tools.
- B** Tool use in rooks demonstrates a common English saying.
- C** Using tools in their natural habitat is simply not necessary for rooks.
- D** Rooks are as intelligent as the most intelligent of animals.
- E** In their natural setting, rooks can obtain food without using tools.
- F** The ability of rooks is surprising, given the lack of similarities between the brains of birds and mammals.



Study Tip Look online or find out if your local library has copies of international newspapers and magazines. Read the Education, Health or Science sections of newspapers such as *The Times*, *The Guardian*, *The Australian*, *The New Zealand Herald*, *The New Yorker* and *The Washington Post* for reports on academic studies.

3 Matching features

Matching features tasks are used with Reading passages that contain theories or comments about different people, places, years and things.

For these tasks, the different options are listed in a box and you need to match them to the questions (sentences that paraphrase the information in the passage). The questions will **not** be in the same order as the passage.

For some questions, you may need to match a person to a study or an action, rather than a theory or opinion.

3.1 Scan the passage on the following page for these names and highlight them each time they appear.

- Page 1
- Lieberman
- Gray

3.2 Look at the following statements (Questions 1–5) and the list of researchers below. Match each statement with the correct researcher, A, B or C.

Researchers

- A** Pagel
- B** Lieberman
- C** Gray

- 1 We are able to recognise certain words used by people in other cultures.
- 2 Regardless of what happens in the world, there appear to be fixed rules that govern the way words alter over time.
- 3 Words that don't follow a standard pattern will remain that way if they are used often.
- 4 Certain words have kept a similar sound across many years and many countries.
- 5 We focused on the historical changes that have occurred in one particular language.

3.3 Put Questions 1–5 in the order they appear in the passage.

3.4 Remember that some of the questions are based on comments made about the researchers.

- 1 For which question in 3.2 did you need to match a person to the study that they carried out?
- 2 Which verbs in the text are used to show that a person other than the writer expressed a particular theory or idea?

3.5 For further practice in matching sentence endings, complete sentences 1–3 with endings A–E.

- 1 For a long time, language experts have asked why
- 2 The English verb 'help' proves that
- 3 While cultures vary a great deal around the world,

- A** regular and irregular verbs change at different rates.
- B** there are surprising similarities in the way different languages evolve.
- C** eventually, some irregular verbs become regular.
- D** some words stay the same over hundreds of years while others change quite quickly.
- E** some verbs gradually become irregular over time.



Test Tip For matching features tasks, the questions will not be in the same order as in the passage. The people mentioned may appear in several different sections. You need to scan the whole passage carefully. Some of the people in the list may be distractors, and you may not need to use all of the letters.

Maths shows why words persist over time

In a finding that parallels the evolution of genes, researchers have shown that the more frequently a word is used, the less likely it is to change over long periods of time.

The question of why some words evolve rapidly through time while others are preserved – often with the same meaning in multiple languages – has long plagued linguists. Two independent teams of researchers have tackled this question from different angles, each arriving at a remarkably similar conclusion.

“The frequency with which specific words are used in everyday language exerts a general and law-like influence on their rates of evolution,” writes Mark Pagel, author of one of two studies published this week.

Anyone who has tried to learn English will have been struck by its excess of stubbornly irregular verbs, which render grammatical rules unreliable. The past tense of regular verbs is formed by adding the suffix ‘-ed’, but this luxury is not afforded to their irregular kin. Over time, however, some irregular verbs ‘regularise’. For instance, the past tense of ‘help’ used to be ‘holp’, but now it is ‘helped’.

Mathematician Erez Lieberman, from Harvard University in Massachusetts, US, performed a quantitative study of the rate at which English verbs such as ‘help’ have become more regular with time. Of the list of 177 irregular verbs they took from Old English, only 98 are still irregular today. Amazingly, the changes they observed obey a very precise mathematical description: the half-life of an irregular verb is proportional to the square root of its frequency. In other words, they found that the more an irregular verb is used, the longer it will remain irregular.

A separate group of academics, led by evolutionary biologist Mark Pagel from the University of Reading, in the UK, used a statistical modelling technique to study the evolution of words from 87 different Indo-European languages.

“Throughout its 8,000-year history, all Indo-European-language speakers have used a related sound to communicate the idea of ‘two’ objects – duo, due, deux, dos, etc.” Pagel commented. “But,” he adds, “there are many different and unrelated sounds for the idea of, for example, a bird – uccello, oiseau, pouli, pajaro, vogel, etc.”

Before now, however, nobody had proposed a mechanism for why some words should evolve more quickly than others. According to Pagel, “our research helps us to understand why we can still understand bits of Chaucer [a medieval poet]” and points out that this likely explains “why we can instinctively recognise words in other Indo-European languages, just from their sounds”.

Psychologist and language expert Russell Gray, from the University of Auckland in New Zealand, was impressed by both findings.

“Despite all the vagaries and contingencies of human history, it seems that there are remarkable regularities in the processes of language change,” he commented.

Reading skills

6 Multiple-choice questions

In this unit you will practise:

- understanding longer pieces of text
- different types of multiple-choice questions
- answering multiple-choice questions
- identifying a writer's purpose

1 Understanding longer pieces of text

To answer **multiple choice questions**, you often need to carefully read two or more connected sentences or several connected sentences.

- 1.1** Look at this extract from an IELTS Reading passage. Read it quickly to find out the main points and then re-read it more carefully to get a more detailed understanding.

Linguists agree that language is needed during reading, but at which stage language becomes a necessity has come under debate. Past research has shown that animals have the ability to discriminate letters from one another, but previously, experts thought the ability to recognise written words was dependent on an ability to understand language. Findings recently published in the journal *Science* challenge this long-held notion, showing that despite having no linguistic skills, monkeys are able to tell the difference between sequences of letters that form real English words, and those that do not.

- 1.2** Without looking back at the extract, try to explain what it is about, in your own words.

Some multiple-choice questions begin with a direct question and then have four possible answers. Some begin with an incomplete sentence and then have four possible endings.

- 1.3** Look at the question below and choose the best answer, A–D.

- I According to the paragraph, what point do linguists have different views on?
- A animals are intelligent enough to learn how to read
 - B our ability to read words is linked to our writing ability
 - C when our language ability begins to affect reading ability
 - D when early humans developed the ability to read and write