

Animals

1.1 Look at the following questions and decide how you would answer them.

- Do people in your country keep animals in their home? (Why? / Why not?)
- Do you think the way farm animals are kept is acceptable?
- Do you think we do enough to protect wild animals? (What type of things should we do?)
- Should animals be used in scientific experiments?

1.2 ▶ 18 Listen to three speakers and decide which question in 1.1 each of them is answering. Is their attitude negative or neutral?

Speaker	Question	Attitude
1		
2		
3		



1.3 ▶ 18 Listen again and note the adjectives in the box that you hear.

appalling cruel distressing dreadful horrifying hypocritical
impartial irresponsible objective outrageous upsetting

1.4 The adjectives in the box are all negative except two. Which are they?

1.5 Match the beginnings of these answers (a–f) with the endings (1–6).

- | | |
|--|--|
| a I think animals that are used in | 1 are kept well away from areas where endangered animals live and that their habitat is protected. |
| b I believe animal testing | 2 argue against using animals in cancer research, but I object to animal testing for cosmetics. |
| c I think it's common knowledge that | 3 are very popular and almost every household has a cat, dog or hamster. |
| d Not really. We should make sure people | 4 is perfectly acceptable because medical research is more important than animal welfare. |
| e Well, it is difficult to | 5 agriculture should have a good quality of life and a painless death. |
| f Yes, they do. Pets | 6 intensively reared livestock suffer horribly because of their cramped living conditions. |

1.6 Now match the answers with the questions in 1.1. Then answer the questions in your own words.

2.1 Cross out the odd one out in each of the following lists. Give a reason for your answer.

1 wasp ant cockroach deer
 the others are all insects

2 hive flock nest den

3 butterfly snail crab turtle

4 bear reindeer rhinoceros goat

5 cat tiger dog horse

6 fur scales feathers trunk

7 swarm herd pack burrow colony school

8 wasp fly bee scorpion mosquito

9 zebra giraffe tiger bee

10 emu ostrich penguin eagle

2.2 Match the descriptions (1–7) with the animals (a–g).

1 a domestic pack animal

2 a venomous arachnid

3 an aquatic invertebrate

4 a nocturnal, hibernating mammal

5 a flightless, nesting bird

6 a parasitic insect

7 a critically endangered primate

a penguin

b bat

c tarantula

d gorilla

e jellyfish

f mosquito

g llama

3.1 Read the passage about the pygmy shrew and choose up to ten words to look up in a dictionary.

Having evolved 45 million years ago and remaining virtually unchanged in North America for at least ten million years, shrews are some of the world's most ancient and widespread mammals. Their speed of life defies imagination – they have the fastest heartbeat (1,200 per minute) and shortest lifespans (11 to 13 months) of any mammal. They don't sleep for more than a few minutes at a time and never hibernate. Instead, their brief life is spent foraging. To stay alive, the pygmy shrew has to eat three times its body weight daily, which means capturing a prey every 15 to 30 minutes, day and night. In northern Montana, shrews manage to maintain their metabolism even in winter by building an extensive system of tunnels under the snow. Yet, at northern latitudes, they are unusually vulnerable to accelerated global warming: with their high-speed metabolism, they cannot survive exposure to temperatures higher than 77 degrees Fahrenheit (25°C). The shrew's Achilles' heel is its dependence on a habitat most affected by global climate change and interference from humans – in order to thrive, they require cool, dark coniferous bogs with dense understory, standing water and an abundance of decaying mossy logs.



Test tip

To help you prepare for the Reading test, try not to look up every word in a dictionary when you are reading a passage. Limit yourself to only ten words and try to work out the meaning of any other words from the context.

3.2 Are the following sentences **TRUE OR FALSE**? Use words from the passage to explain your answers.

- 1 Today's shrews are very different to those of ten million years ago.
- 2 Shrews are found within a limited area.
- 3 Shrews sleep through most of the winter.
- 4 Shrews spend most of their life looking for food.
- 5 Shrews construct a home underground to help shelter them from the cold.
- 6 Shrews are too small to be affected by global warming.
- 7 The ideal living conditions for the shrew are dry and warm.
- 8 Shrews are likely to be negatively affected by logging.

Vocabulary note

Nature refers to all the things in the world that were not created by people: I love wildlife and anything to do with nature. NOT ~~the nature~~

The countryside = areas of land where there are no houses or cities: We took a lovely walk in the countryside.

Landscape = the appearance (or view) of the countryside: The landscape was dotted with tents and caravans.

Area = a more general term for a place, piece of land or country: Too many tourists are visiting this area. (NOT are visiting this landscape)

Conservation

4.1 Read the following passage as fast as you can. Highlight or underline the possible threats to animals caused by humans. Can you think of any more?

Extinction is part of evolution. It was the *demise* of the dinosaurs that let mammals *flourish*, and humans *emerge*. But with an estimated 130 species disappearing each day, the world is on the *brink* of another mass extinction that could *rival* the one that saw the dinosaurs disappear. Environmentalists warn that the record rate of extinction due to human activity is putting the natural systems necessary for our survival *at risk*. Threats such as habitat loss, overexploitation, pollution, invasive non-native species, disease and climate change are on the rise. 'There is a high risk of dramatic biodiversity loss and accompanying *degradation* of a broad range of ecosystem services if the Earth's system is pushed beyond a certain *threshold*.' These 'ecosystem services' include the most basic human needs: food, fuel, clean water, materials and medicines. It might be said that there is not one aspect of our lives that doesn't require other species.

4.2 **PARAPHRASE** Match the words in *italics* in the passage in 4.1 with the words in the box with a similar meaning.

ruin in danger thrive verge level match appear death

4.3 Complete the sentences below with the correct form of the words in the box.

damage risk devastation harm

- 1 The oil spill caused a great deal of _____ to seabirds.
- 2 The spider's bite is painful, but it is _____ to humans.
- 3 Heavy rains and _____ winds caused several trees to fall.
- 4 Farms were attacked by a swarm of locusts that _____ crops in the area.
- 5 The introduction of foxes to this area put many native species at _____ of extinction.
- 6 Pesticides may help control pests but they are also _____ to local wildlife.

Vocabulary note

We use *harm* for things or people but we use *damage* only for things: Luckily no one was *harm*ed in the accident, which *dam*aged two buildings.

Reading

You should spend about 20 minutes on **Questions 1–13**, which are based on the Reading Passage below.

Swarm theory

I used to think that ants knew what they were doing. The ones marching across my kitchen bench looked so confident that I figured they had a plan, knew where they were going and what needed to be done. How else could ants organise highways, build elaborate nests, stage epic raids and do all of the other things ants do? But it turns out I was wrong. Ants aren't clever little engineers, architects or warriors after all – at least not as individuals. When it comes to deciding what to do next, most ants don't have a clue. 'If you watch an ant trying to accomplish something, you'll be impressed by how inept it is,' says Deborah M Gordon, a biologist at Stanford University. How do we explain, then, the success of Earth's 12,000 or so known ant species? They must have learned something in 140 million years.

'Ants aren't smart,' Gordon says. 'Ant colonies are.' A colony can solve problems unthinkable to individual ants, such as finding the shortest path to the best food source, allocating workers to different tasks, or defending territory from neighbours. As individuals, ants might be tiny dummies, but as colonies they respond quickly and effectively to their environment. They do this with something called swarm intelligence. Where this intelligence comes from raises a fundamental question in nature: how do the simple actions of individuals add up to the complex behaviour of a group? How do hundreds of honeybees make a critical decision about their hive if many of them disagree? What enables a school of herring to coordinate its movements so precisely it can change direction in a flash, like a single organism? One key to an ant colony is that no one's in charge. No generals command ant warriors. No managers boss ant workers. The queen plays no role except to lay eggs. Even with half a million ants, a colony functions just fine with no management at all – at least none that we would recognise. It relies instead upon countless interactions between individual ants, each of which is following simple rules of thumb. Scientists describe such a system as 'self-organising'.

Consider the problem of job allocation. In the Arizona desert, where Deborah Gordon studies red harvester ants, a colony calculates each morning how many workers to send out foraging for food. The number can change, depending on conditions. Have foragers recently discovered a bonanza of tasty seeds? More ants may be needed to haul the bounty home. Was the nest damaged by a storm last night? Additional maintenance workers may be held back to make repairs. An ant might be a nest worker one day, a trash collector the next. But how does a colony make such adjustments if no one's in charge? Gordon has a theory.

Ants communicate by touch and smell. When one ant bumps into another, it sniffs with its antennae to find out if the other belongs to the same nest and where it has been working. (Ants that work outside the nest smell different to those that stay inside.) Before they leave the nest each day, foragers normally wait for early morning patrollers to return. As patrollers enter the nest, they touch antennae briefly with foragers. 'When a forager has contact with a patroller, it's a stimulus for the forager to go out,' Gordon says. 'But the forager needs several contacts more than ten seconds apart before it will go out.' To see how this works, Gordon and her team captured patroller ants as they left a nest one morning. After waiting half an hour, they simulated the ants' return by dropping glass beads into the nest entrance at regular intervals – some coated with patroller scent, some with maintenance worker scent, some with no scent. Only the beads coated with patroller scent stimulated foragers to leave the nest. Their conclusion: foragers use the rate of their encounters with patrollers to tell if it's safe to go out. (If you bump into patrollers at the right rate, it's time to go foraging. If not, it's better to wait. It might be too windy, or there might be a hungry lizard out there.) Once the ants start foraging and bringing back food, other ants join the effort, depending on the rate at which they encounter returning foragers. 'So nobody's deciding whether it's a good day to forage. The collective is, but no particular ant is.' That's how swarm intelligence works: simple creatures following simple rules, each one acting on local information.

When it comes to swarm intelligence, ants aren't the only insects with something useful to teach us. Thomas Seeley, a biologist at Cornell University, has been looking into the uncanny ability of honeybees to make good decisions. With as many as 50,000 workers in a single hive, honeybees have evolved ways to work through individual differences of opinion to do what's best for the colony. Seeley and others have been studying colonies of honeybees to see how they choose a new home. To find out, Seeley's team applied paint dots and tiny plastic tags to all 4,000 bees in each of several swarms that they ferried to Appledore Island. There, they released each swarm to locate nest boxes they had placed on one side of the island. In one test, they put out five nest boxes. Scout bees soon appeared at all five boxes. When they returned to the swarm, each performed a dance urging other scouts to go and have a look. These dances include a code to give directions to a box's location. The strength of each dance reflected the scout's enthusiasm for the site. After a while, a small cloud of bees was buzzing around each box. As soon as the number of scouts visible near the entrance to a box reached about 15, the bees at that box sensed that a decision had been reached and returned to the swarm with the news. The bees' rules for decision-making – seek a diversity of opinions, encourage a free competition among ideas, and use effective mechanisms to narrow choices – so impressed Seeley that he now uses them at Cornell in his role as chairman of his department.

Questions 1–5

Choose the correct letter **A**, **B**, **C** or **D**.

- In the first paragraph, what does the writer conclude about ants?
 - They are invasive pests in the home.
 - They can achieve great things working alone.
 - They form social groups that are similar to human ones.
 - They are less impressive as individuals than she thought.
- According to the second paragraph, what is the 'fundamental question' in nature?
 - How do large groups of animals appoint a leader?
 - How do large groups of animals reach an agreement?
 - Do different species of animals use similar behaviour?
 - Why are small insects better organised than larger mammals?
- What is the focus of Deborah Gordon's research?
 - The effects of bad weather on ant colonies.
 - The number of ants required to maintain the nest.
 - The methods ants use to assign different jobs.
 - The role of the queen ant in organising the colony.
- In the fourth paragraph, what are we told about forager and patroller ants?
 - A colony needs more forager ants than patroller ants.
 - Patrollers' movements determine what foragers will do.
 - Patrollers are the first ants to bring food back to the nest.
 - Foragers spend more time out of the nest than patroller ants.

- 5 In an experiment, Deborah Gordon's team
- A mimicked patroller ants returning to the nest.
 - B left a trail of food for patroller ants to follow.
 - C followed patroller ants to see where they went to.
 - D changed the scent of patroller ants to that of forager ants.

Questions 6–9

Complete the following sentences using **NO MORE THAN TWO WORDS AND/OR A NUMBER** from the passage.

- 6 Approximately different types of ant have been identified.
- 7 Ants use their to identify another ant.
- 8 A is one animal that preys on ants.
- 9 Ant colonies use to reach a decision.

Questions 10–13

Complete the summary using the list of words, A–G, below.

Appledore Island honeybee study

First, the scientists 10 each of the bees involved in their experiment. Next the bees were 11 The scientists placed several nest boxes in an area away from the bees. Scout bees inspected the nest boxes and 12 to other bees where the boxes were. They chose their nest box once enough bees had 13 there.

- | | | | |
|-------------|----------|-------------|-----------|
| A attracted | B found | C gathered | D located |
| E signalled | F marked | G relocated | |



Test tip

Summary completion items with a box of answers will usually feature paraphrase, not words from the passage. Before you start, use the heading to locate the part of the passage which is being summarised.