Reading: *On the Origin of Species*

READING

LEVEL	NUMBER	LANGUAGE
Advanced	C1_3057R_EN	English

Goals

- Can read and understand a challenging excerpt from Charles Darwin's *On the Origin of Species*.
- Can maintain an extended discussion on the natural world and evolution and evaluate a scientific theory.

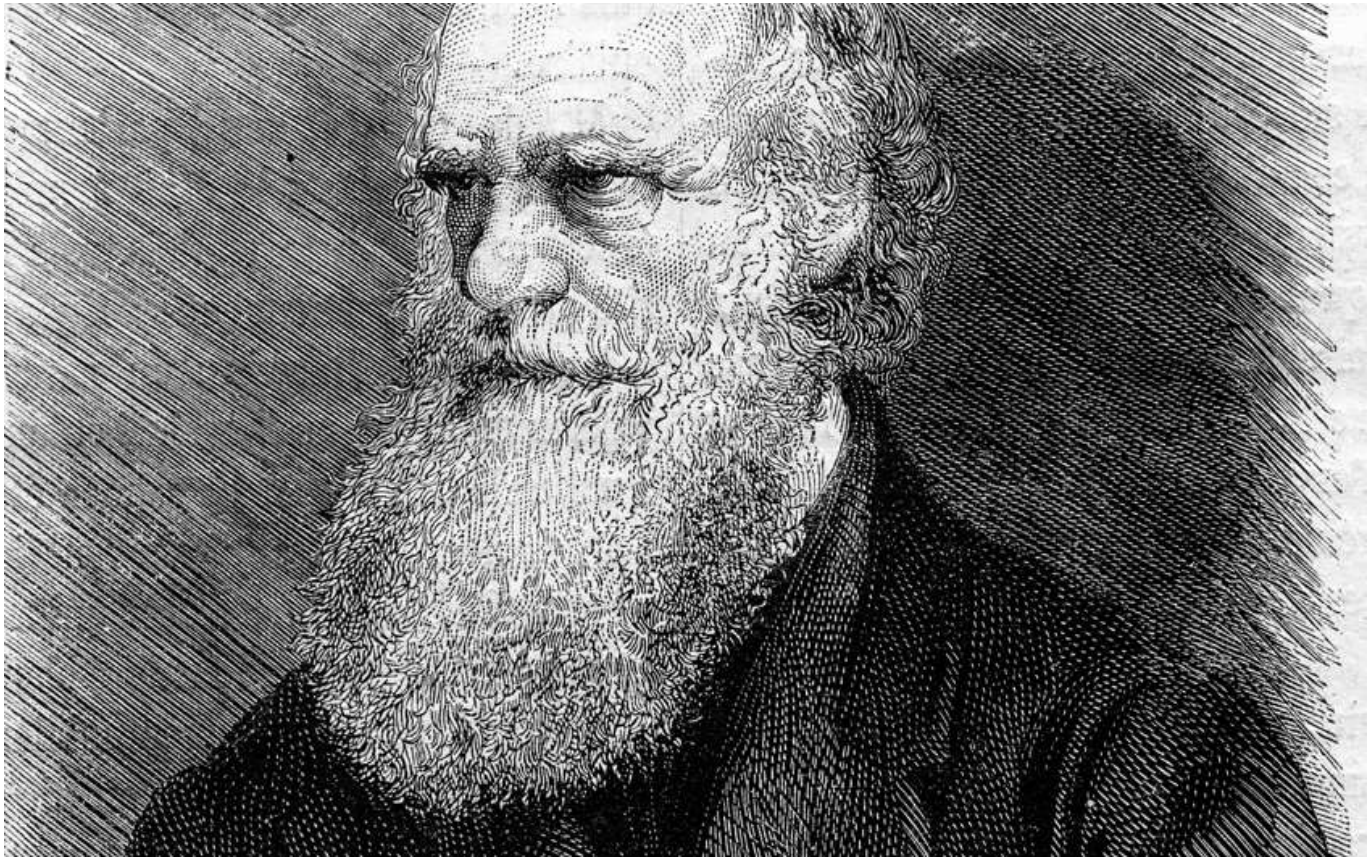
Where do we come from?

Why do we look like we do?

Darwin attempted to answer these questions in his revolutionary volume on **evolution** by **natural selection**, ***On the Origin of Species***.

Darwin

What do you know about Charles Darwin and his theories? Can you explain his theory of evolution?



What competing explanations are there to evolution by natural selection?

On the Origin of Species

Charles Darwin's *On the Origin of Species* is the foundation text of evolutionary biology. Have you read it or would you be interested in reading it?

On the Origin of Species

When on board *H.M.S. Beagle*, as a **naturalist**, I was much **struck** with certain facts in the distribution of the inhabitants of South America, and in the geological relations of the present to the past inhabitants of that continent. These facts seemed to me to **throw some light on** the origin of **species** — that mystery of mysteries, as it has been called by one of our greatest philosophers. On my return home, **it occurred to me**, in 1837, that something might perhaps be made out on this question by patiently accumulating and **reflecting on** all sorts of facts which could possibly have any bearing on it. After five years' work I allowed myself to speculate on the subject, and drew up some short notes; these I enlarged in 1844 into a sketch of the conclusions, which then seemed to me **probable**: from that period to the present day I have steadily pursued the same object.

On the Origin of Species

I look at individual differences, though of small interest to the **systematist**, as of high importance for us, as being the first step towards such slight **varieties** as are barely thought worth recording in works on natural history. And I look at varieties which are in any degree more **distinct** and permanent, as steps leading to more strongly marked and more permanent varieties; and at these latter, as leading to sub-species, and to species.

On the Origin of Species

I **attribute** the passage of a variety, from a state in which it differs very slightly from its parent to one in which it differs more, to the action of **natural selection** in **accumulating** differences of structure in certain definite directions. Hence I believe a well-marked variety may be justly called an **incipient** species; but whether this belief be justifiable must be judged of by the general weight of the several facts and views given throughout this work.

On the Origin of Species

Can we doubt that individuals of animal and plant species having any advantage, however slight, over others, would have the best chance of surviving and of **procreating** their kind? On the other hand, we may feel sure that any variation in the least degree **injurious** would be rigidly destroyed. This **preservation** of favourable variations and the rejection of injurious variations, I call **Natural Selection**. Variations neither useful nor injurious would not be affected by natural selection, and would be left a **fluctuating** element.

Vocabulary

Match the words from the text with their meanings or synonyms.

fluctuate	noticeable
accumulating	developing
distinct	harmful
incipient	change
injurious	increasing

Fill in the gaps

Now put these words from the text into the correct gap below.

natural selection	**struck**	**throw some light on**	**procreating**

1. When animals or humans have babies, they are _____.
2. When I first read Darwin's book, I was _____ by how interesting it was.
3. In his book *On the Origin of Species*, Darwin explained the phenomenon of _____.
4. Darwin believed that looking at small variations in species could _____ our origins.

Step by step

Darwin is very clear that evolution happens over a long period of time. Use the words below to explain how he makes this point clear.

variety

distinct and permanent varieties

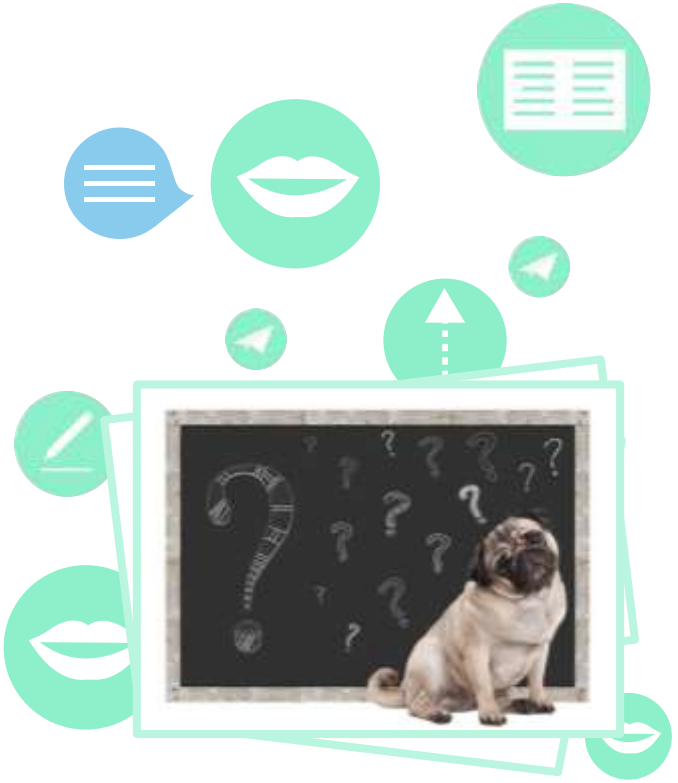
sub-species

incipient species

The mystery of mysteries

Do you agree with the quotation below? Why do you think so many people are fascinated with how life began?

> The origin of species is the mystery of mysteries.



Travel

Before formulating his theory, Darwin **travelled around the world**. Do you think he would have been able to come to the same **conclusions** without travelling?

On the Origin of Species

We shall best understand the probable course of natural selection by taking the case of a country **undergoing** some physical **change**, for instance, of climate. The **proportional** numbers of its inhabitants would almost immediately **undergo a change**, and some species might become extinct. We may conclude, from the intimate and complex manner in which the inhabitants of each country are **bound together**, that any change in the **numerical proportions** of some of the inhabitants (independently of the change of climate itself) would most seriously affect many of the others. If the country were open on its borders, new forms would certainly immigrate, and this also would seriously **disturb** the relations of some of the former inhabitants.

On the Origin of Species

Let it be remembered how powerful the influence of a single **introduced** tree or mammal has been shown to be. But in the case of an island, or of a country partly surrounded by **barriers**, into which new and better **adapted** forms could not freely enter, we should then have places in the economy of nature which would assuredly be better filled up, if some of the original inhabitants were in some manner **modified**; for, had the area been open to immigration, these same places would have been **seized** on by **intruders**.

On the Origin of Species

In such case, every slight **modification**, which in the course of ages chanced to arise, and which in any way **favoured** the individuals of any of the species, by better adapting them to their **altered** conditions, would tend to be preserved; and natural selection would thus have **free scope** for the work of improvement.

Vocabulary

Do you know what these words from the text mean? Look back to see them in context.

to undergo change	bound together	to disturb
barrier	seize	intruder
to favour	to alter	free scope

Fill in the gaps

Fill in the gaps with the words on the right.

1. The cane toad is an _____ species in Australia. It is originally from South and Central America.
2. Species are _____ by natural selection.
3. Species which are better _____ to their environment should emerge from the process of natural selection.
4. Darwin claims that all species are _____ together, and that one change can affect them all.
5. Darwin states that some places, like islands, are surrounded by _____ which keep out intruder species.

modified

bound

introduced

barriers

adapted

Introduced species

What effect does Darwin say an introduced species has on the environment it enters?

Can you think of any countries where an introduced species has had a negative effect?

Animals and plants

Think of some animals or plants which are very well adapted to their environment. What makes them so well adapted?

Earth is changing

Brainstorm ways in which our world is undergoing physical changes at the moment and the effects they are having.

Rising sea levels

Global warming

Our changing Earth

Earth is changing

Think about these places in the world and write sentences about how they are undergoing physical changes.
Use your ideas from the previous page to help you.

the Arctic Circle

the Amazon Rainforest

southern Europe

Adapting

For the three places mentioned on the previous page, how do you think animal and plant life might adapt to the changing climate?

changing diet and consumption

ability to conserve water

thinner or thicker coats

migration

Give a presentation

Choose one animal or plant and give a short presentation about it.
Talk about how that animal is adapted to its environment and how you think it might change in the future.

- Think about its physical characteristics and abilities.
- Imagine what effects a rapidly changing Earth might have on it.

Reflect on this lesson

Take a moment to review any new **vocabulary**, **phrases**, **language structures** or **grammar points** you have come across for the first time in this lesson.

Review them with your teacher one more time to make sure you don't forget!

Answer key

Exercise p. 11

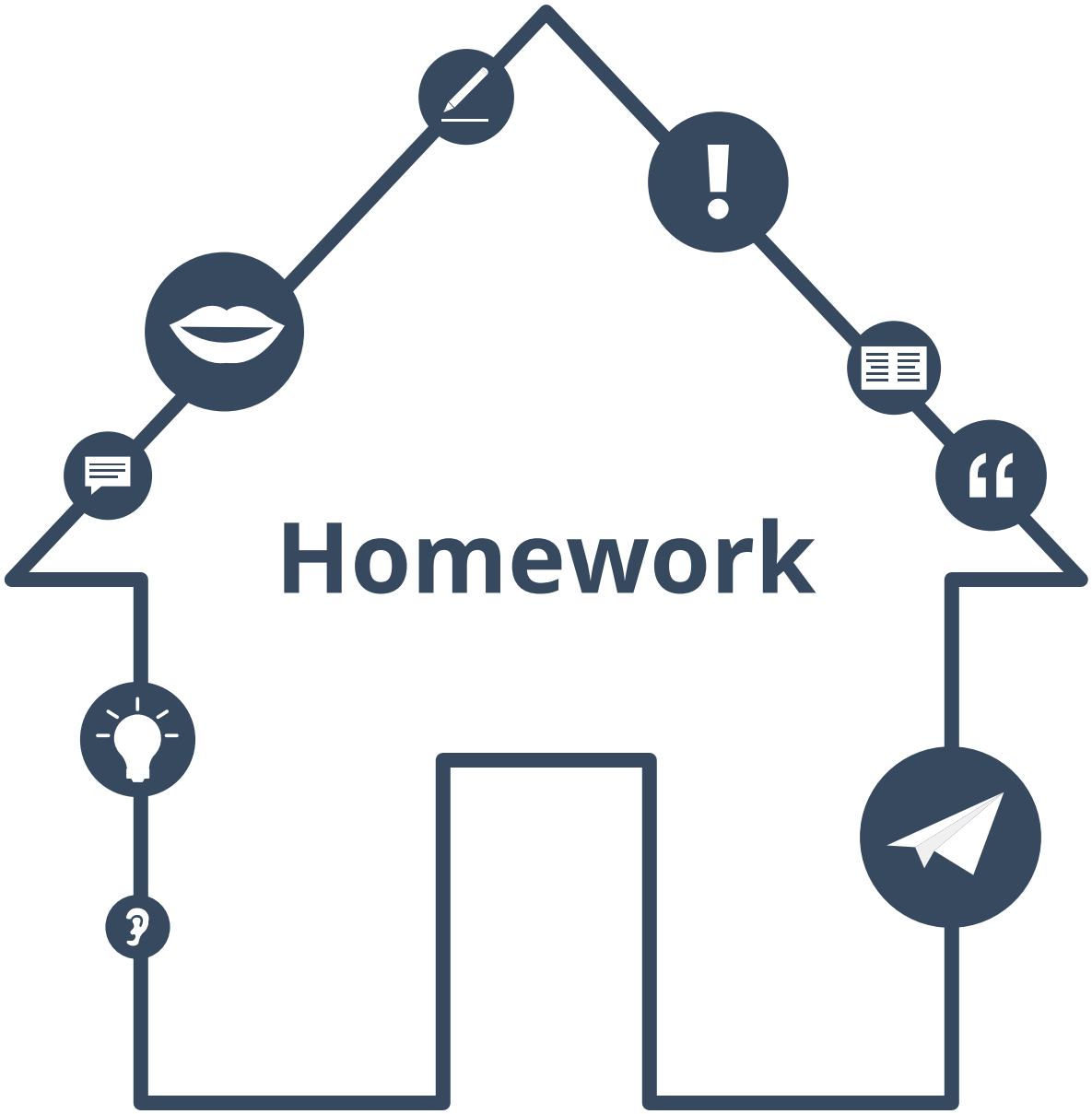
fluctuate – change, accumulating – increasing, distinct – noticeable, incipient – developing, injurious - harmful

Exercise p. 12

1. procreating, 2. struck, 3. natural selection, 4. throw some light on

Exercise p. 20

1. introduced, 2. modified, 3. adapted, 4. bound, 5 barriers


Homework

Fill in the gaps

1. Darwin's theory of _____ states that species change gradually over time, preserving their _____ traits.
2. When animals _____, their beneficial characteristics are passed on to their young.
3. Changes in generations gradually become more _____ until they eventually form a new species.
4. The inhabitants of each place are _____ together and they have an influence on each other.
5. Animals which enter a new environment where they were not previously seen are called an _____ species.

distinct

advantageous

intruder

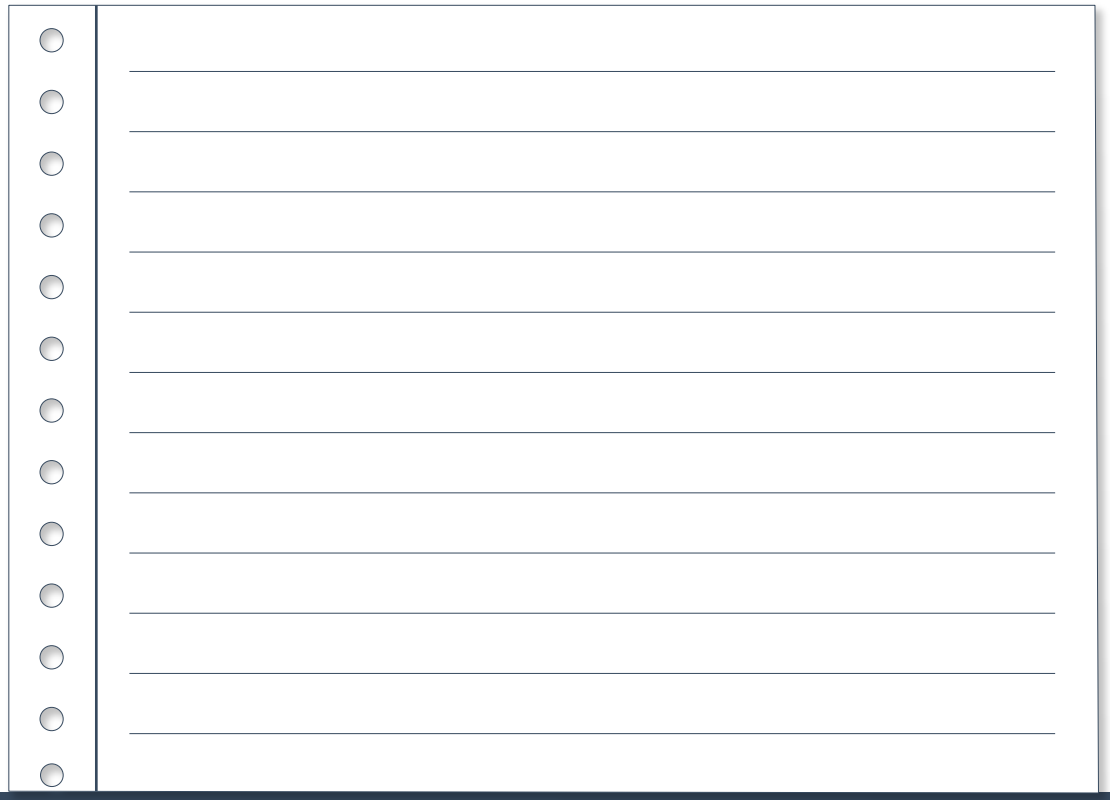
natural selection

procreate

bound

Writing

Write a text about the animal or plant which you gave a presentation about during the lesson. Expand on what you talked about in your presentation.



Homework answer key

Exercise p. 30

1. natural selection/advantageous, 2. procreate, 3. distinct, 4. bound, 5. intruder

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