Spring Term 1

B15 -Genetics and evolution

&

B16 Adaptations, interdependence, and competition.

Aiming for Grade 6

Extended Homework Assignment

Name: _____

Set: _____

Instructions

A printed copy should be handed into your teacher.

The knowledge required to complete this assignment will be supported in class in lessons of the half term.

Aiming for Grade 6

Aims

The aim of this homework is to help you revise the main topics in B15 Genetics and evolution and B16 Adaptations, interdependence, and competition.

Learning outcomes

After completing this Task, you should be able to:

- describe different theories of evolution
- describe some causes of extinction
- explain how antibiotic resistance develops in bacteria.
- state some abiotic and biotic factors
- calculate population size
- describe some things that animals and plants compete for
- explain some adaptations of animals and plants to their environment.

B15 Genetics and evolution

Task

There are three tasks to complete. Each Task will help you to revise different material from Chapter B15, *Genetics and evolution*.

Task 1 – Theories of evolution (triple only)

You will be completing a table on the ideas of Darwin, Lamarck, and Wallace.

Task 2 – Fossils and extinction

You will be answering questions on fossils and extinction.

Task 3 – Antibiotic resistance

You will be drawing a flowchart to explain how antibiotic resistance develops in bacteria, and stating some ways to avoid antibiotic resistance developing.

Tasks:

1 Theories of evolution (triple only)

a Copy the table. Complete the table using your notes and your own research to help you.

	Lamarck	Darwin	Wallace
What was their big idea? Explain it in detail.			
Was there any evidence for their ideas? What was the evidence?			
What were the similarities and differences between each scientist's ideas?			

b Imagine you are a priest in a church. Write a letter to explain how you feel about the theory of evolution by natural selection.

2 Fossils and extinction

Answer these questions on fossils and extinction. You can use your notes, the digital textbook and your own research to help you.

a Describe how fossils form.

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b Give reasons why we do not have a complete fossil record.

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c Describe some reasons why a species might become extinct.

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3 Antibiotic resistance

a Use your notes, the digital textbook and your own research to help draw a flowchart to describe how antibiotic resistance develops in bacteria. You can draw diagrams to help your description.

b **i** Describe and explain ways we can avoid the development of antibiotic resistance.

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ii Write down ways we can reduce the spread of antibiotic resistant bacteria such as MRSA (Methicillin-resistant *Staphylococcus aureus*).

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B16 Adaptations, interdependence, and competition

Questions/task output

Task 1 – Abiotic and biotic factors

Write down all the abiotic factors you can remember. Check them against your notes/the digital textbook. Did you get them all? Repeat with biotic factors.

Task 2 – Estimating population size

Ruby wanted to see how many dandelions were growing in her garden. She took 10 quadrat samples. The quadrat size was 1 m^2. Her garden was 250 m^2. The table shows her results.

Quadrat number	1	2	3	4	5	6	7	8	9	10
Number of dandelions	6	0	2	1	7	0	3	2	0	9

Estimate the total number of dandelions in Ruby's garden by answering these questions.

1 Calculate the mean number of dandelions per 1 m^2.

2 Multiply the mean number of dandelions per 1 m^2 by the number of 1 m^2 quadrats that would fill Ruby's garden (this will give an estimate of the dandelion population in the garden).

3 Suggest why the actual number of dandelions will be different than your answer to question **2**.

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4 Can you suggest ways to make your estimate more accurate?

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Task 3 – Competition

Without looking at your notes, make a list of the factors that animals compete for. When you can't think of anymore, check against your notes/digital textbook to see if there are any you have missed.

Repeat this with factors that plants compete for.

Task 4 – Adaptations of animals and plants

Look at the photos of a camel, a polar bear, and a cactus.

Write down as many adaptations to their environment that you can think of.

Task 5 – Adaptations of teeth to diet

Look at the skulls / photos of teeth. Remember that herbivores are plant eaters that have flat teeth for grinding. Carnivores are meat eaters that have pointed teeth for tearing meat.

Sort the skulls into which ones you think are herbivores and carnivores. Give reasons for your decisions.

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