Environmental Biology

Science Homework Booklet

Level 3/4

Name _____

Homework number	Due date	On time	Mark	Parental/Guardian signature
1			/6	
2			/7	
3			/50	

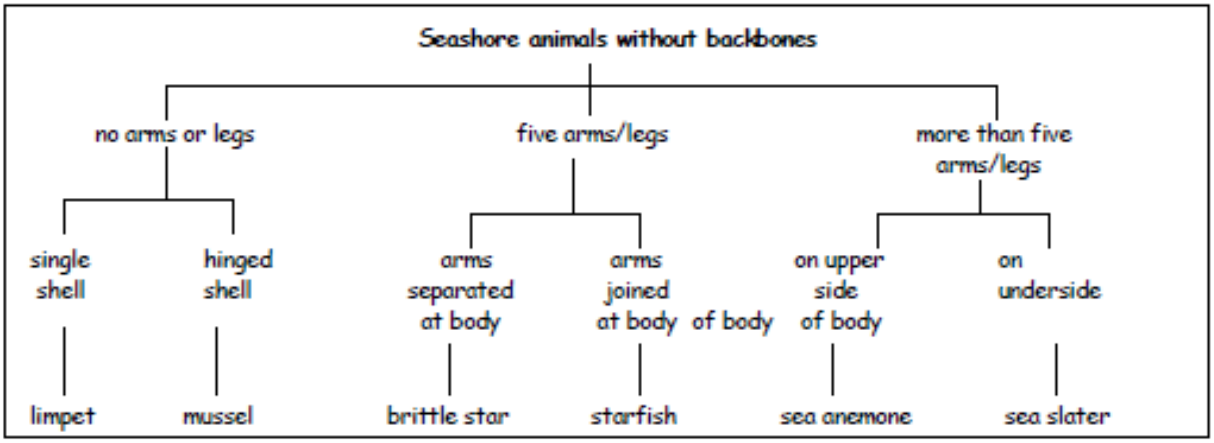
Glossary

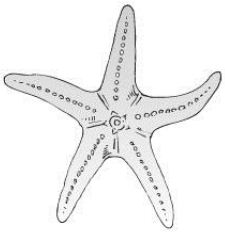
Word	Meaning
Adaptation	Any feature of an organism's body or behaviour that helps it to survive
Beating	Using a stick to hit a tree so that the insects fall out onto a white sheet below
Biological key	A chart used to identify an unknown species
Carnivore	Eats only animal material
Community	**All** members of **all** species
Distribution	How an organism is spread out within an area
Ecosystem	Habitat + Community + Abiotic factors
Habitat	Place where organisms live
Herbivore	Eats only plant material
Light meter	Piece of equipment used to find out how strong light is
Moisture meter	Piece of equipment used to find out how wet soil is
Niche	The role of a species within its ecosystem (e.g. what it eats, predators and behaviour)
Omnivore	Eats both plant and animal material
pH meter	Piece of equipment used to find out how acid/alkali soil is
Pitfall trap	A container which is sunk into the ground to collect ground living insects
Pooter	A tube with a tube at each end, used to suck up small insects
Population	Members of **one** species
Quadrat	Piece of equipment made up of small squares and is used to sample plants
Soil thermometer	Piece of equipment used to find out the temperature of soil

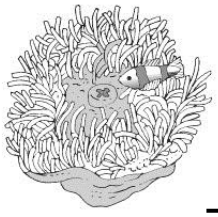
S 1 SCIENCE

Environmental Biology - Homework 1

1. Use this key to identify the two animals in the drawings and write their names in the spaces provided.







_____ _____ (2)

2. Give an example of a biotic factor and an abiotic factor which may affect the distribution of animals.

BIOTIC FACTOR _____ (1)

ABIOTIC FACTOR _____ (1)

3. What is meant by the term "distribution"?

_____ (1)

4. Which piece of equipment could be used to sample the number of plants growing within an area?

_____ (1)

(1)

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Environmental Biology - Homework 2

1. For each of the following animals name their habitat, one adaptation that helps them survive in their habitat, and the function of this adaptation in aiding survival.

CAMEL

Habitat _____

Adaptation _____

Function of adaptation _____

_____ (3)

POLAR BEAR

Habitat _____

Adaptation _____

Function of adaptation _____

_____ (3)

2. Give a reason why it may be of advantage to birds to breed in the early spring.

_____ (1)

(1)

S 1 SCIENCE

Environmental Biology - Homework 3

Using your A3 information sheet, produced in class, and resources such as the internet/ books write a short essay (250 words minimum) entitled:

"Development of the Amazon for tourism – user viewpoints".

The assessment rubric can be found on the next page. For this essay you will also be assessed on a literacy outcome.

Amazon Development Essay Rubric

	10 points	7 points	5 points	3 points
User viewpoints	The viewpoints of the four main user groups are given in detail.	The viewpoints of the four main user groups are given, but are lacking in detail.	The viewpoints of some of the main user groups are given.	The viewpoints of only one of the user groups is given.
Arguments for/against development	The arguments for/against development are written in a compelling manner. **I can persuade, argue, evaluate, explore issues or express and opinion using a clear line of thought, relevant supporting detail and/or evidence. LIT 3-29**	The arguments for/against development are given in detail, but fail to evoke understanding in the reader. **I can persuade, argue, evaluate, explore issues or express and opinion using a clear line of thought, relevant supporting detail and/or evidence. LIT 3-29**	Limited arguments for/against development are given. These lack detail, only providing a brief summary.	Very limited arguments for/against development are given. These lack considerable detail.
Spelling and Punctuation	There are minimal spelling or punctuation errors. Uses multiple sentence structures and word choice effectively for stylistic effect.	There are limited spelling or punctuation errors. Uses varied sentence structure and word choice effectively, may occasionally display some wordiness.	There are several spelling and punctuation errors. Uses sentence structure and word choice that are limited or simplistic.	There are many spelling and punctuation errors. Uses sentence structure and word choices that are extremely limited or simplistic.
Accuracy of Facts	All facts presented are accurate.	Almost all facts are accurate.	Most facts are accurate.	There are several factual errors.
Organisation	Effectively organizes ideas in a clear, logical, detailed, and coherent manner enhancing the central idea.	Organizes ideas clearly and coherently using structures appropriate to the purpose.	Organizes ideas in a satisfactory manner with adequate coherence and logic	Displays minimal organization; contains irrelevancies, rambles and/or lacks logic

Teacher's comments

Total Attained - /50 Outcome Achieved (25+) / Outcome not yet Achieved (24-)

Literacy outcome – Achieved? Yes/No

JUST FOR FUN!

Design a mythical creature that is adapted to live in the habitat of Planet LA.

On planet LA, the climate is very strange. There are many dangers that the organisms living there must be able to cope with, including:

- Swirling storms that sweep away anything that isn't stuck down
- Constant sunshine and temperatures of 80ºC
- Mountains and lakes with salty water
- The planet is a green colour with silver stripes and is very dusty

Some other creatures that are able to survive on planet LA are:

- A plant called Hawestron. This is bright pink and is covered in golden poisonous spikes. Underneath the protective spines there are juicy sweet yellow pods.
- A massive and very scary beast called a Ginnsasaurus . This impressive beast stands 6 metres high and has 2 million teeth. It will eat anything it can catch. It has an amazing sense of smell, but cannot see very well.

Your creature has to be able to survive on this planet. It must be able to eat and protect itself both from the environment and other creatures.

Use the blank page to design your creature, adding the following information:

- The name of your creature
- A drawing of your creature
- Label the drawing to show your creature's adaptations and why they are important
- Write down where your creature lives and what it eats

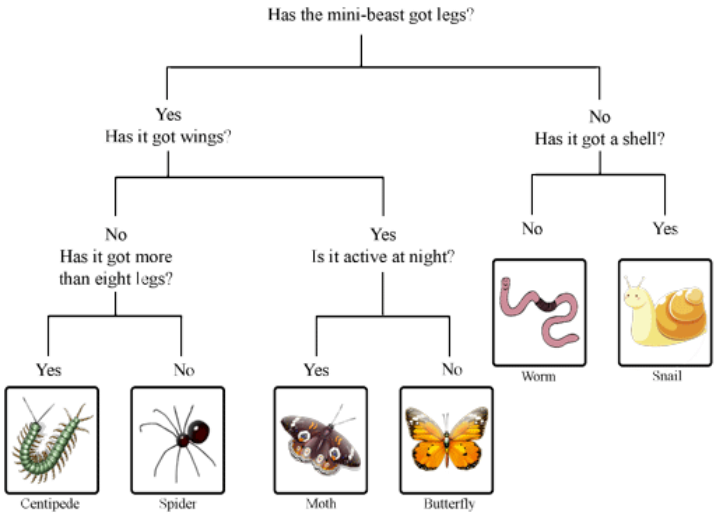
S1 Environmental Biology

Revision Notes

Biological Keys

Keys are used to help identify an unknown species (or subset within a species). Keys can either be **branching, paired statement** or **lateral.**

A branching key to identify invertebrates would be:



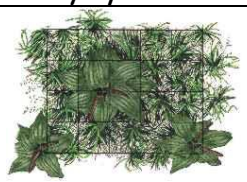
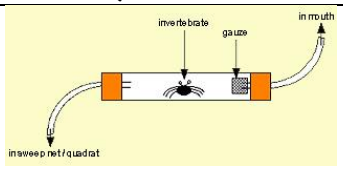
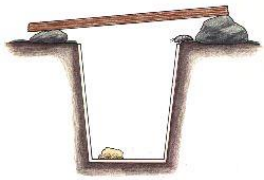
A paired statement key to identify simple farm animals would be:

1. Does the animal have four legs	Yes – go to statement 2 No – go to statement 4
2. Does the animal have a curly tail?	Yes – pig No – go to statement 3
3. Does the animal have a hoof divided into two parts?	Yes – cow No - horse
4. Does the animal have webbed feet?	Yes – duck No - human

A lateral key to identify breeds of dogs would be:

Dog	**Size**	**Spots**	**Colour**
Saint Bernard	Large	No	White & tan
Boston bull terrier	Small	No	Black & white
Border collie	Medium	No	Black & white

Sampling

SAMPLING LIVING THINGS		
Equipment	*Used to sample…*	*How to use it*
 QUADRAT	number of plants	Place the quadrat in **random** places. Take several samples to obtain an average.
 POOTER	invertebrates	One tube is placed over an insect. You suck through the other tube to draw the insect into the chamber.
 PITFALL TRAP	ground- living invertebrates	The top of the carton should be level with the soil surface. To prevent some organisms from eating other organisms **check the traps regularly** or **add a preserving liquid**.
 BEATING	invertebrates	A sheet is held underneath a tree. The tree is hit with a stick, causing any invertebrates in the tree to fall onto the sheet. **Beat several areas.**
SAMPLING NON-LIVING (PHYSICAL) FACTORS		
Equipment	*Used to sample…*	*How to use it*
 LIGHT/MOISTURE METER	Light intensity/ moisture content	A probe is placed next to/into the area to be measured. A reading appears on the screen.
 SOIL THERMOMETER	soil temperature.	A probe is placed into the soil.
 PH METER	soil pH	The probe is stuck into the soil.

Distribution

The distribution of living organisms in a particular habitat may be affected by **physical factors** such as:

- Temperature
- Amount of light
- Availability of water
- Availability of nutrients
- Availability of oxygen and carbon dioxide.

For example, daisy plants need light energy from the sun to make their own food using photosynthesis. Therefore more daisies will be found where there is plenty of available light, rather than in shady places.

Adaptations

Every organism has certain features or **characteristics** that allow it to live successfully in its habitat. These features are called **adaptations**, and we say that the organism is adapted to its habitat.

Cold Climates

The polar bear is adapted to life in a cold climate

Polar bears are well adapted for survival in the Arctic. Their adaptations include:

- **White fur** to act as camouflage from prey
- Thick **layers of fat and fur** for insulation against the cold
- **Large furry feet** to distribute their load and increase grip on the ice.

Hot Climates

The camel is adapted to life in a hot climate. Camels live in deserts that are hot and dry during the day, but cold at night. Their adaptations include:

- **large, flat feet** to spread their weight on the sand
- **thick fur** on the top of the body for shade, and thin fur elsewhere to allow easy heat loss
- **hump,** to store a water-fat mixture that allows them to go for a long time without water or food
- **closeable nostrils and two rows of eyelashes** to help keep out sand.

A cactus is adapted to life in a hot climate. Cacti are well adapted for survival in the desert. Their adaptations include:

- **stems** that can store water
- **widespread root systems** that can collect water from a large area.
- **spines** instead of leaves to minimise water loss

Responding to the Environment

All animals have to react to changes in their environment if they are to survive. In every case the response of an animal to an environmental stimulus is important for its survival.

Many animals move towards (or away from) the smell of different chemicals. This may allow them to find food, avoid danger, or find potential mates.

Here are some examples:

Organism	**Stimulus**	**Response + Importance**
Maggots	light	moves away from light, hidden from predators
Woodlouse	moisture	moves towards moisture, prevents drying out

Ecosystems

- Ecosystem = Habitat + Community + Abiotic factors
- Habitat - place where organisms live
- Community – **all** members of **all** species
- Population – members of **one** species
- Omnivore – eats both plant and animal material
- Herbivore – eats only plant material
- Carnivore – eats only animal material
- Niche - the role of a species within its ecosystem. This includes what it eats, its predators and how the species behaves.

Food Webs

A food web is a diagram showing the feeding relationships in an ecosystem.

An increase, decrease or extinction of one species in a food will affect other species in the food web.