Science Home Learning Task

Year 9

Adaptation and Inheritance

Name

Tutor Group

Teacher

Given out:  Monday 7 December  Hand in:  Monday 14 December

Parent/Carer Comment

Staff Comment

Target
Investigating Science

Welcome to your Science homework booklet. This booklet is designed to give you some extra practice on the key areas in the “adaptation and inheritance” section of the course.

You need to carry out tasks 1, 2, 3, 4 and 5. Then choose either the bronze, silver or gold task – go on, challenge yourself!

Don’t forget to fill in the last page and ask a parent/carer to sign the box on the front.
**TASK 1- Competition and adaptation**

Plants and animals have to compete for resources. Answer the questions below using the keywords in the box to help.

<table>
<thead>
<tr>
<th>light</th>
<th>food</th>
<th>water</th>
<th>space</th>
<th>mates</th>
<th>minerals</th>
</tr>
</thead>
</table>

b) They need to compete for these because

________________________________________________________________________
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b) They need to compete for these because

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**TASK 1 continued**

Choose a plant or animal that lives in hot, dry conditions e.g. a desert. Write down the name of your plant or animal, the features that it has and how they help it to survive in those conditions. You can include a picture of your plant or animal. Use the space below.
**TASK 2 – Adapting to change**

A predator and its prey depend on each other for survival – there is an **interdependence** between them. The graph below shows one such relationship between the Canadian lynx (predator) and the snowshoe hare (its prey). **Hint:- try to use the words “increase” and “decrease” instead of “goes up” or “goes down”**.

![Graph showing the relationship between the Canadian lynx and the snowshoe hare](image)

a) Using the graph above, describe the pattern of the **predator** and **prey** numbers.

__________________________________________________________________
__________________________________________________________________
__________________________________________________________________
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__________________________________________________________________
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__________________________________________________________________
__________________________________________________________________
b) Give reasons for the changes in the **predator** and **prey** numbers that you have described above.

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c) For each of the keywords below, write down its definition (what it means) and give an example for each word and how it helps the plant or animal to survive.

**Adaptation**

**Definition:**
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

**Example:**
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
**Hibernation**

Definition:
_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________

Example:-
_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________

**Migration**

Definition:
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_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________

Example:-
_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________
**TASK 3 – Inheritance and variation**

a) The picture below shows the genetic material found in our cells.

![Cell diagram](image)

Use the words in the box to fill in the gaps in the sentences below.

<table>
<thead>
<tr>
<th>nucleus</th>
<th>genes</th>
<th>DNA</th>
<th>chromosomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>embryo</td>
<td>characteristics</td>
<td>46</td>
<td>23</td>
</tr>
</tbody>
</table>

Our genetic material is found in the ________________________ of the cell. The genetic material stored in the cell is made of a chemical called ____________. The genetic material is organised into long strands called __________________________. A small section of a chromosome is called a ____________.

Humans have _____ chromosomes in our body cells. The chromosomes contain the information needed for our __________________________. You inherit half of your __________________________ from your mother and half from your father. This is why you share some of your __________________________ with your mother and some with your father.
Egg and sperm cells are the only cells to have ______ chromosomes. During fertilisation, the egg and sperm cells join together to produce an ________________ with _____ chromosomes.

b) True or false? Read the following statements about variation and decide if they are true or false. Write your answer in the space provided at the end of the statement.

i) Differences in characteristics are known as variation _______.
ii) Variation is always inherited ______________ .
iii) Variation is caused by our surroundings only ____________ .
iv) Eye colour is an inherited characteristic ________ .
v) Variation can be caused by inheritance and the surroundings ________ .
vi) Variation can occur within a species ____________ .
vii) Variation occurs between different species ____________ .
viii) Variation does not occur in twins ____________ .
**TASK 4 – Natural selection**

The process of **natural selection** describes how living things evolve over time and has several stages. Complete the boxes to show the steps of the process in order.

a) **Variation** – describe variation.

b) **“Survival of the fittest”** - describe the process.
c) **Genes passed on** – describe how this happens.

d) **Evolution (new species)** – describe how this leads to evolution.
Many animal species have not been able to adapt and survive in a particular environment and have died out – they have become extinct. The dodo, dinosaurs, woolly mammoths and black rhino are just a few examples. Choose an animal that has become extinct and find out, in as much detail as you can, what led to the species becoming extinct. Use the space below.
**Task 6 – Bronze, silver or gold? Complete one task from below.**

**Bronze task**
Make a **word search** or a **crossword** using some of the science words you know or have learned. Use the grid provided.

**Silver task**
**Preventing extinction.** In your lessons you would have been taught about the use of gene banks (seed banks, tissue banks, pollen banks and cryobanks) to store genetic samples from different animal and plant species. Choose one of the types of gene bank listed and find out what they store and how their use can prevent extinction. Show the information you have collected on the last page.

**Gold task**
**Surviving the extreme.** Some plants and animals have adapted to survive in very extreme and unusual environments. Carry out some research on a plant or animal of your choice that does this and find out how it is adapted for its environment. Show the information you have collected on the last page.
Grid for your word search or crossword

Words to look for/ crossword clues:-
Blank page for silver or gold task
Self Evaluation of my Homework

A Responsible Learner.....
- takes responsibility for their own learning
- listens to others
- works well as part of team

A Resilient Learner.....
- does not give up
- rises to the challenge
- has the motivation to succeed

A Reflective Learner.....
- evaluates their learning
- learns from their mistakes
- knows how they are performing and what they need to do to improve

A Resourceful Learner.....
- is prepared to learn
- uses initiative and knows how to find out
- is prepared to think outside the box

I am a R____________________ learner.

I know this because:

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________

I believe that my **effort and attitude to learning** for this booklet is a:

1 2 3 4

I know this because:

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________