

Ardrossan Academy Science Faculty



S2 BGE

Scotland the Great Homework Booklet

Do not lose or write on this booklet. It should be handed back to your teacher when you are finished with it.

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1. Match the following words with the statements on the right.

DNA	Place where DNA is stored in the cell.
Chromosome	Chemical which contains genes.
Helix	Section of DNA which contains a code for an inherited characteristic.
Nucleus	Word used to describe the shape of a DNA molecule.
Gene	Structures within the nucleus made of DNA.

2. Write down the inherited characteristics.

hair colour

freckles

long fingernails

moustache

earlobe shape

ability to roll tongue

colour blindness

hairstyle

1. Give an example of an organism and describe the habitat that it lives in. (2)
2. What is meant by the word 'Ecosystem'? (1)
3. Give 3 examples of methods that can be used to sample the living things found in a habitat. (3)
4. Choose one of your examples and explain how
You would use it to sample a **living organism**. (2)
5. Choose one of your examples and explain how
You would use it to sample a non-living factor in the ecosystem (2)

1. Which of the following best describes the word organism? (circle the correct answer)

- plant
 - animal
 - any living things
 - insect
- (1)

2. The range (variety) of life on our planet is called _____ (1)

3. The place where an organism lives is called its _____ (1)

4. Choose an organism and explain how you would obtain a sample of it. (2)

5. Apart from water, what else do plants need to make their food? (1)

6. Name 3 things that can affect a plants growth rate. (3)

7. Using the internet

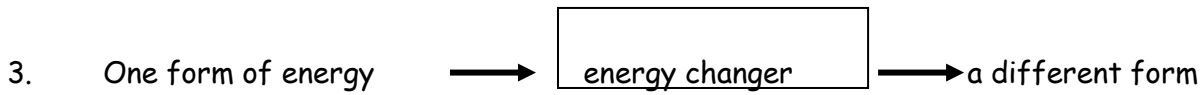
Name one animal and one plant native to Scotland and describe the habitat that it lives in including: the climate, what is found in the habitat (trees, water etc) and food sources (animal only). Describe 2 non-living factors that could affect the animal and plant in their habitats.

Animal:

Plant: (6)

1. Name six types of energy.

2. What is the unit that energy is measured in?



note the energy change is electrical to heat.

The energy changer is the kettle.

What are the energy changes in the following situations? There may be more than one energy produced.

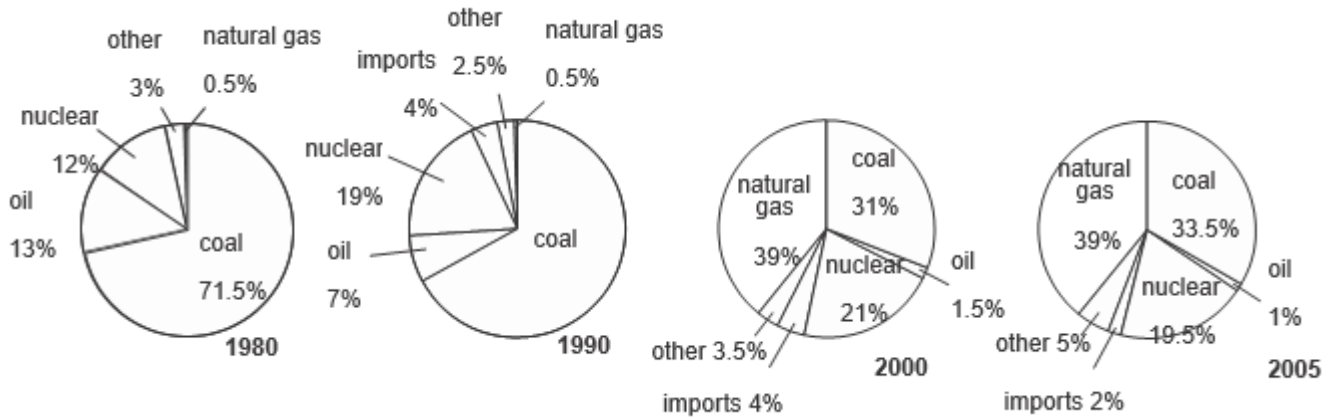
- a) Electric light bulb.
- b) A firework going off.
- c) A girl riding a bike.
- d) An electric fire alarm ringing.
- e) A lit match.

4. The table shows what a certain country uses as **resources** for its **energy** needs.

Source	Oil	Gas	Nuclear	Coal	Hydroelectric
Percentage	25	15	20	30	10

Use the data in the table to make a **bar graph** labelled 'Energy sources'.

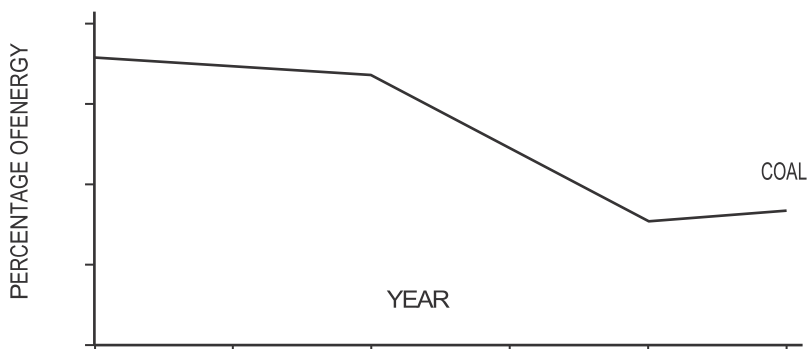
Electricity is not a fuel. Electricity is generated using other energy resources. The pie charts show which fuels were used to generate electricity in the UK in different years.



- 1 Which fuel was used the most in 1980?
- 2 Which fuel was used the most in 2005?
- 3 a Which fuels have we used more of since 1980?
b Which fuels have we used less of?
- 4 Draw a circle in your book and sketch a pie chart to show which energy resources you think we will be using to generate electricity in 2020
- 5 a Draw a line graph to show the information in the pie charts.

Use axes like this: (the line for coal has been drawn in, to help you).

FUELS USED TO GENERATE ELECTRICITY



- b Do you think the pie charts or the line graph show the changes most clearly?
- 6 Find out which fuels are used for generating electricity in:
 - a France
 - b a country in Africa
 - c India

Before 1991 all radios needed to be connected to the mains or use cells (batteries) to work. However, there are many parts of the world where there is no mains electricity and it is difficult to buy batteries.

Trevor Bayliss was born in London in 1937. He studied engineering at a local college after leaving school and then spent two years in the army. After leaving the army he became a salesman and quickly progressed to working in research and development. He was very interested in inventing things.

In 1991, Trevor watched a television programme about the spread of AIDS in Africa. He realised that many people in Africa were too poor to buy cells for radios and so they could not listen to radio programmes that told them how they could avoid getting AIDS. Trevor set out to develop a wind-up radio so they could listen without needing to buy cells. His first working example (or prototype) ran for 14 minutes. As the radio is wound up by hand, energy is stored inside the radio by winding up a spring - just like in clockwork toys. When the radio is used the stored energy is transferred to make the radio work.

Trevor needed money to set up a factory to make the radios, but he could not get anyone interested until 1994, when the radio was featured on a TV programme. The idea quickly caught on and a large company provided the money needed. Engineers from Bristol University helped to develop Trevor's invention so that it could be built in a new factory in South Africa. Charities bought radios to give to people in Africa.

In 1996, the radio featured in a documentary on television and it was awarded the BBC Design Award for Best Product and Best Design. The Freeplay radio was offered for sale in the UK in 1997. Later models have a solar cell to extend the play time. Since then the company has developed other products powered by humans or by sunlight. Its products include torches and mobile phone chargers.

Read the passage above and then answer the questions below.

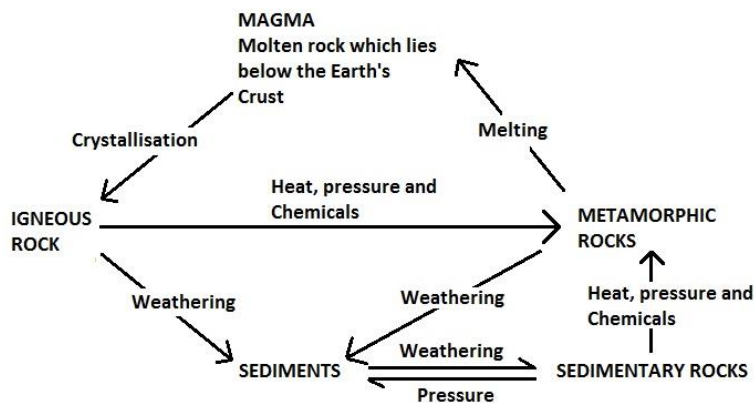
- 1 Why did Trevor Bayliss decide to invent a wind-up radio?
- 2 What is a prototype?
- 3 Why did Trevor need the help of engineers from Bristol University?
- 4 Why did he need money before he could start selling his radios?

- 5 Why is a wind-up radio useful in remote areas of the world?
- 6 What are the disadvantages of using a wind-up radio?
- 7 Would the solar cells always extend the playing time? Explain your answer.
- 8 Why might a person in this country want to use a Freeplay torch or mobile phone charger?

HOMEWORK

Rocks

Study the following cycle then answer the questions below:



- Q1. How do igneous rocks become sediments?
- Q2. What causes sedimentary rocks to become sediments?
- Q3. What cause sediments to become sedimentary rocks?
- Q4. It is possible for igneous rock to become metamorphic rock. State the two possible ways that this could happen.
- Q5. Where do you think the heat energy comes from to melt metamorphic rocks?
- Q6. Match the words with the correct explanations.

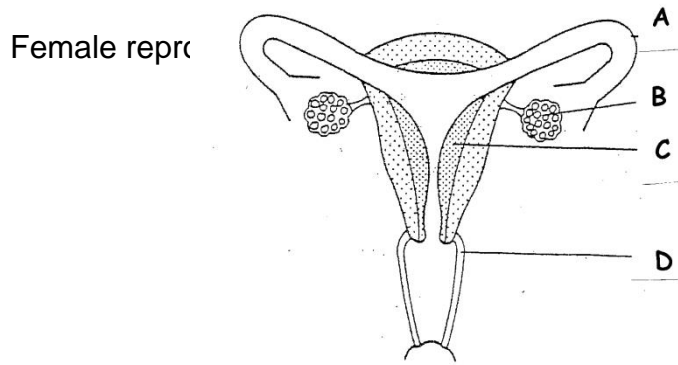
- | | |
|----------------|---|
| 1. Magma | A. Breaking down of rocks by the effect of wind, rain, ice, heat etc. |
| 2. Igneous | B. Rocks formed by heat pressure and chemicals on other rocks. |
| 3. Metamorphic | C. Rocks formed by crystallisation |
| 4. Sedimentary | D. Molten rocks below the Earth's crust |

5. Weathering

E. Rocks formed by the effect of pressure on weather rock particles.

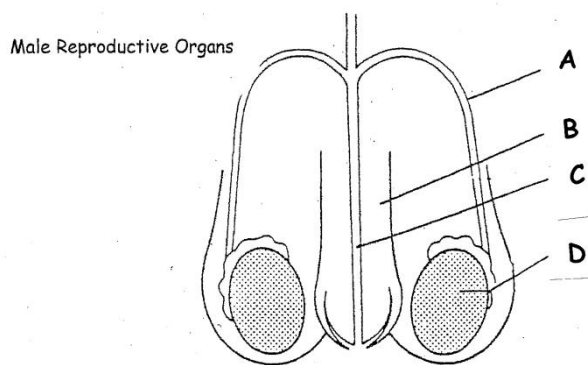
HOMEWORK **Reproduction 1**

1. Use the diagram to help complete the table below to name the structure and correct function of the female reproductive system.



Structure	Function
A-	
B-	
C-	
D-	

Now do the same for the male reproductive organs.



Structure	Function
A-	
B-	
C-	
D-	

HOMEWORK

Reproduction 2

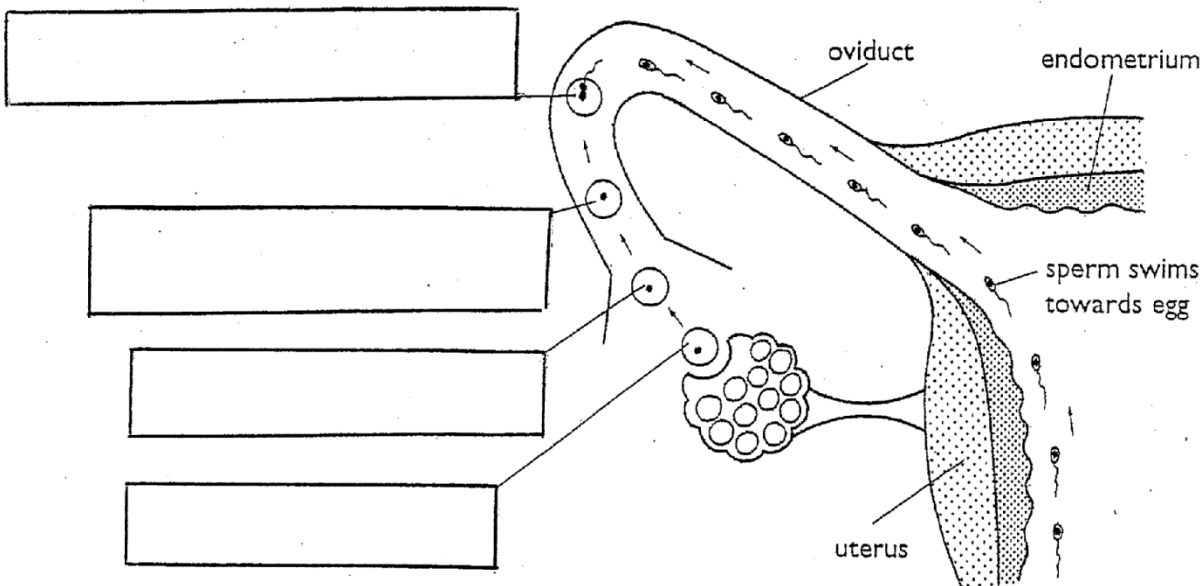
1 a) Use the following phrases to complete the correct boxes on the diagram below.

Egg picked up by funnel of oviduct

Sperm fertilises egg

Egg moved along oviduct by cilia

Egg released from ovary



1 b) Give **two** differences between sperm and eggs;

Difference 1 _____

Difference 2 _____

(3)

HOMEWORK

Reproduction 3

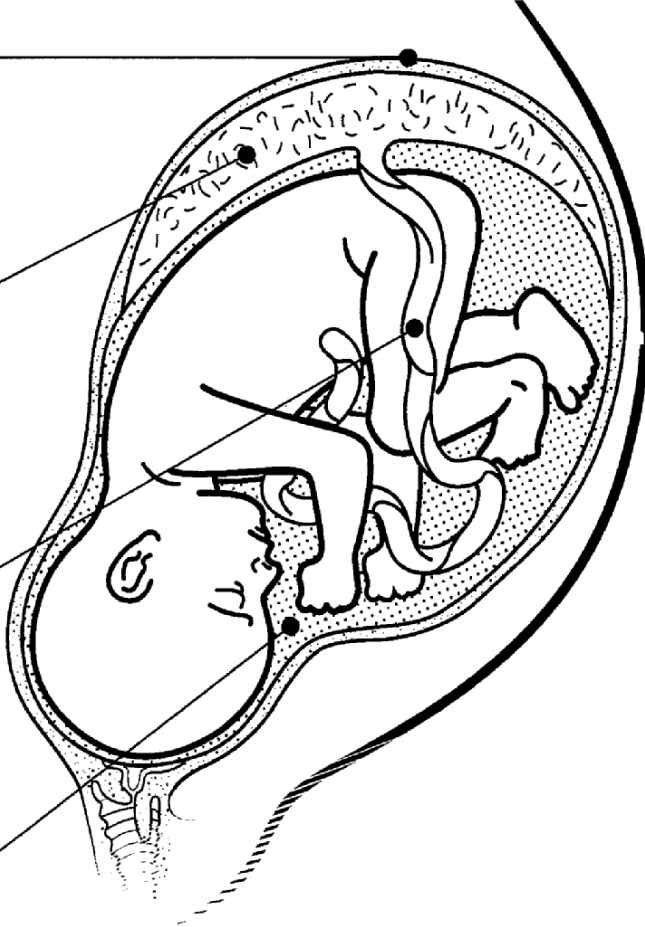
1a) Label the diagram of the developing foetus and give the function of the parts.

Name of Part	
Function	

Name of Part	
Function	

Name of Part	
Function	

Name of Part	
Function	



b) Name **one** substance that passes from the mother to the foetus?

c) Name **one** substance that passes from the foetus to the mother?

1 Draw lines to match the questions with the correct answers.

a In what female organ does a developing baby grow?

bag of fluid

b What attaches the placenta to the baby?

carbon dioxide

c Give an example of a waste material the baby makes.

cord

d What is the name of the male sex cell?

oviduct

e Where does fertilisation take place?

placenta

f What gas from the air does the baby get from its mother?

oxygen

g What is the baby surrounded and protected by?

sperm cell

h What puts waste from the baby into the mother's blood?

uterus

2 Write down a question for which 'fertilisation' is the answer.

3 Draw lines from the diagram on the left to the correct name and then to the correct job.



Name

Job

bag of fluid

carries oxygen, food and waste between mother and baby

placenta

takes oxygen and food from the mother's blood

cord

protects the baby