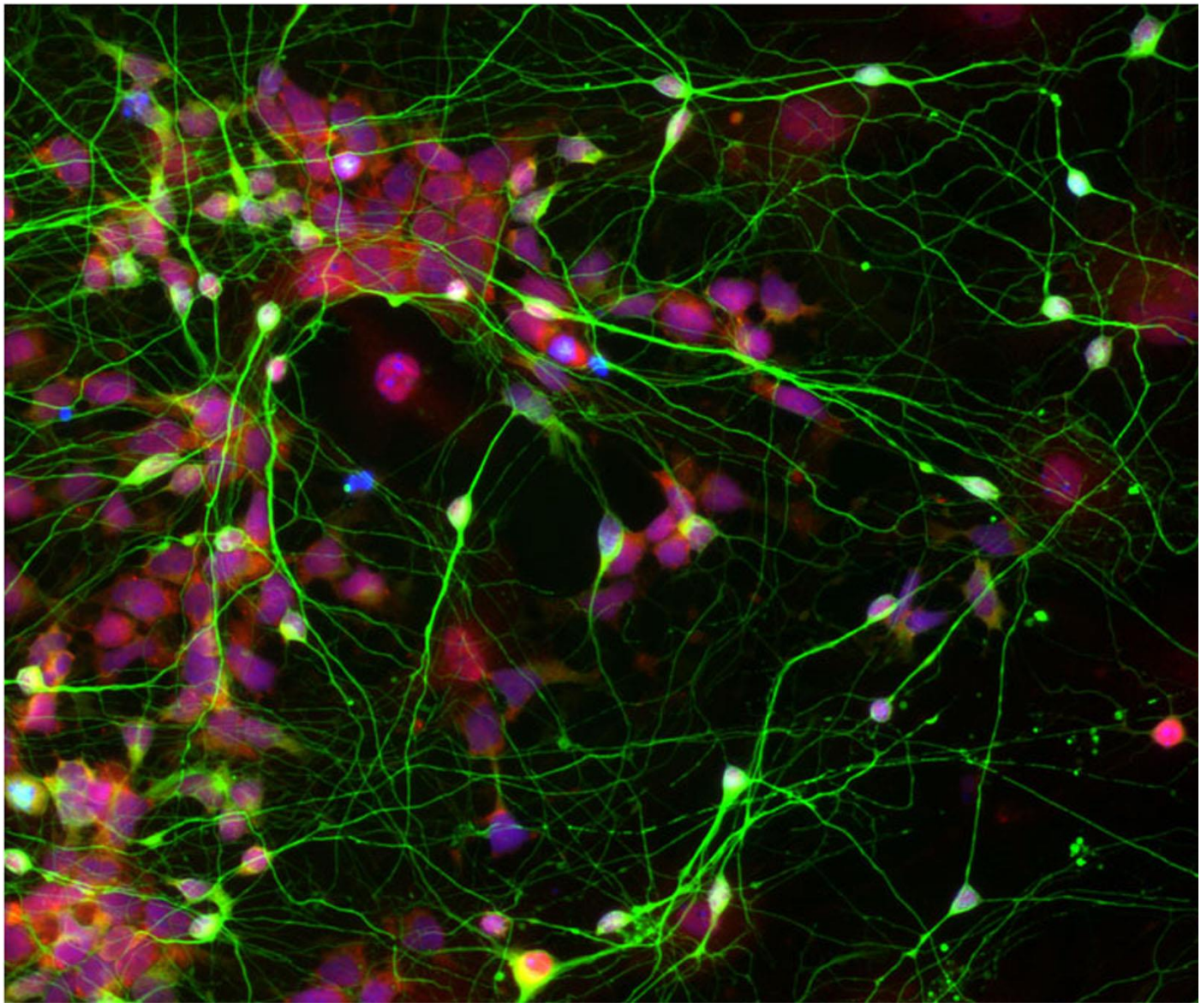
Year 7

Living Organisms

Revision Booklet

Name: _____

Teacher: _____

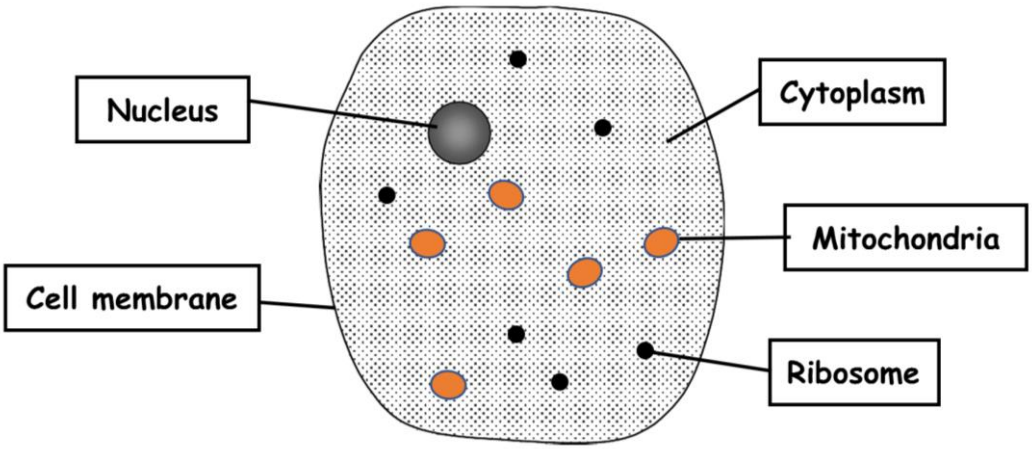


Contents

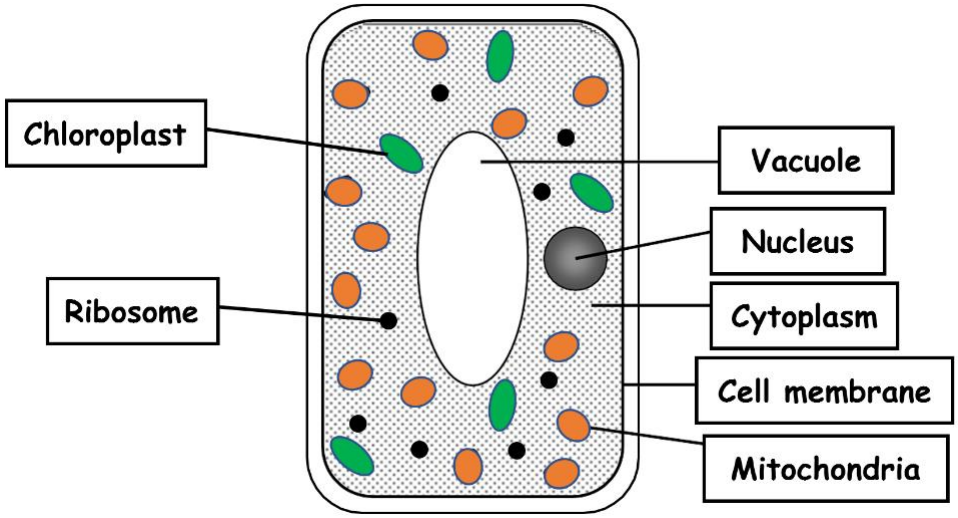
1. Cells

1.1 - Animal and plant cells

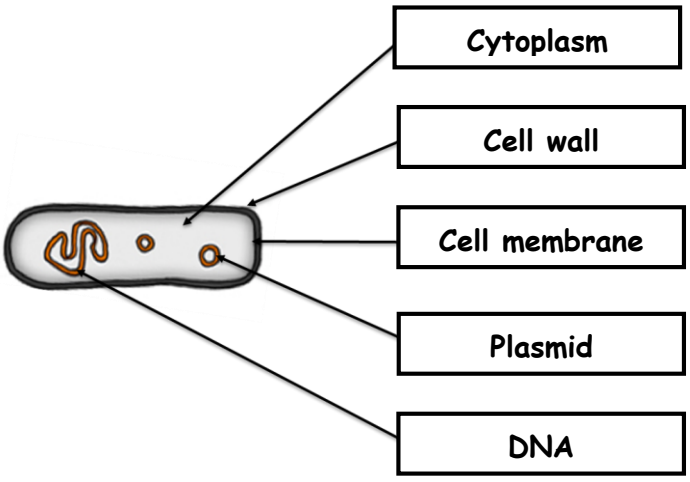
Animal cell



Plant cell



Prokaryote cell (bacterial cell)

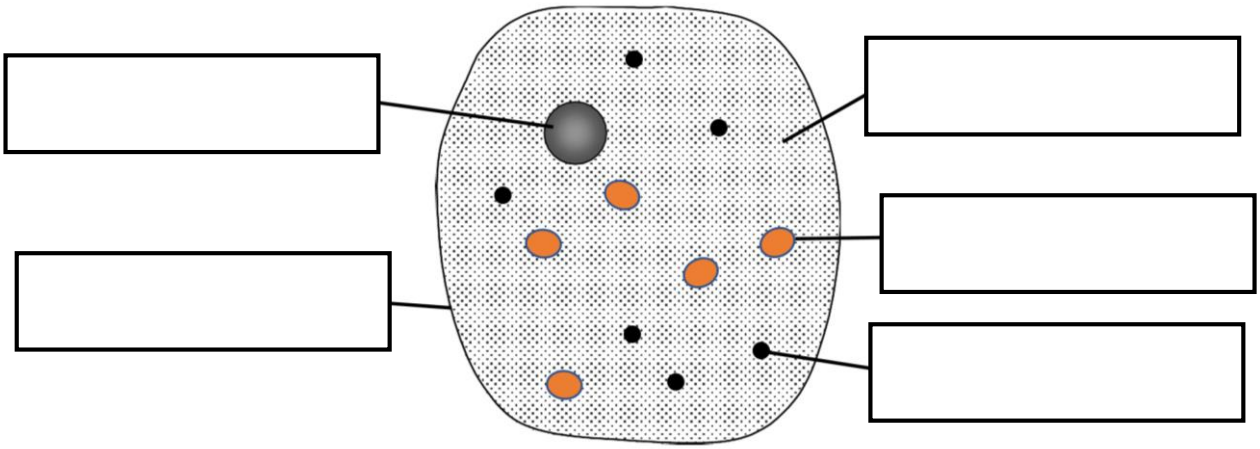


1.2 - Animal and plant cells – Label 1

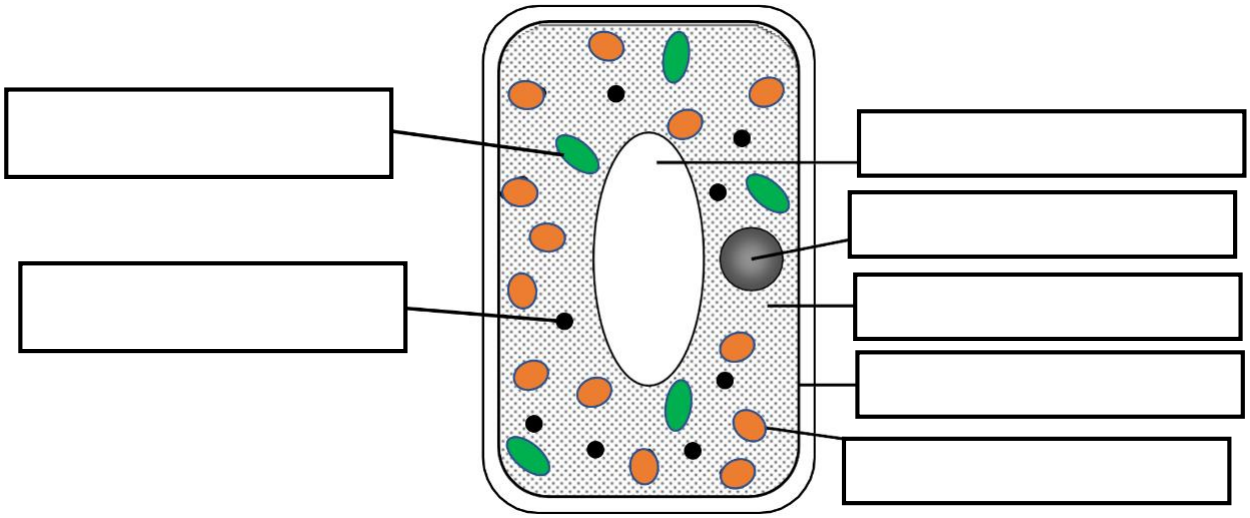
Task: Fill in the boxes below with the organelles found in each cell.

Challenge: On a piece of paper – draw and label each cell with its organelles.

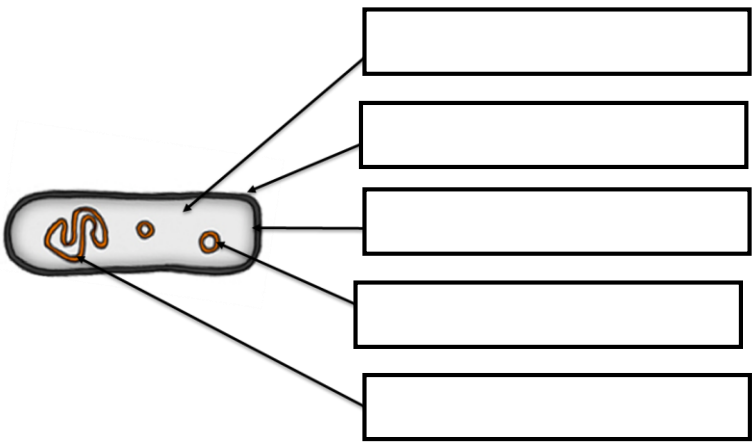
Animal cell



Plant cell



Prokaryote cell (bacterial cell)

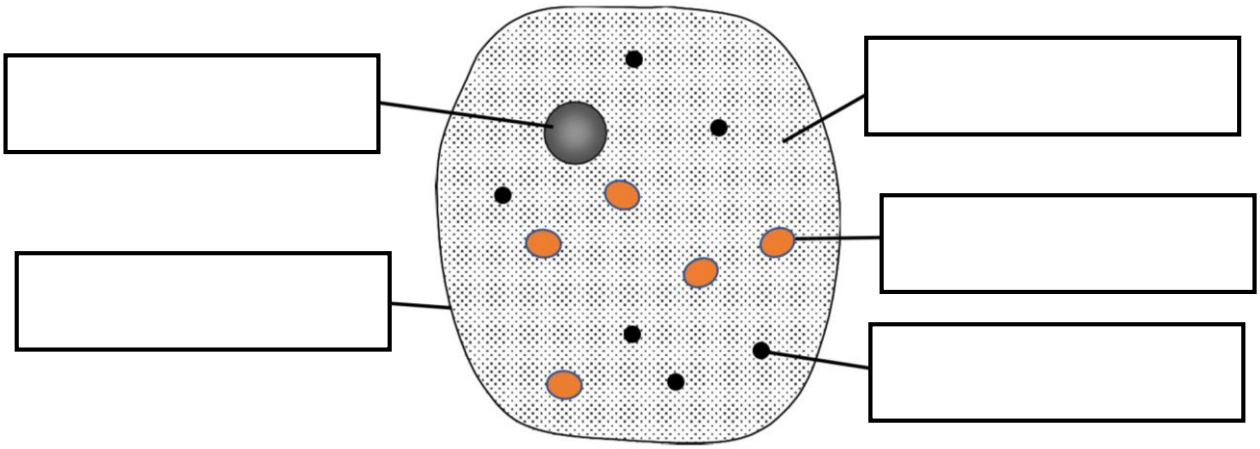


1.3 - Animal and plant cells – Label 2

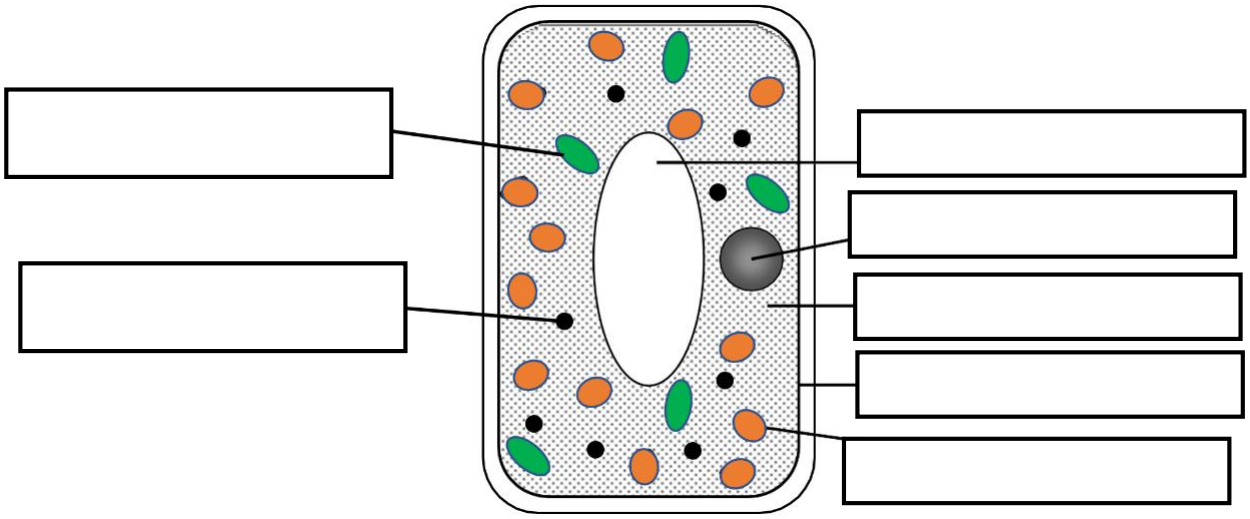
Task: Fill in the boxes below with the organelles found in each cell.

Challenge: On a piece of paper – draw and label each cell with its organelles.

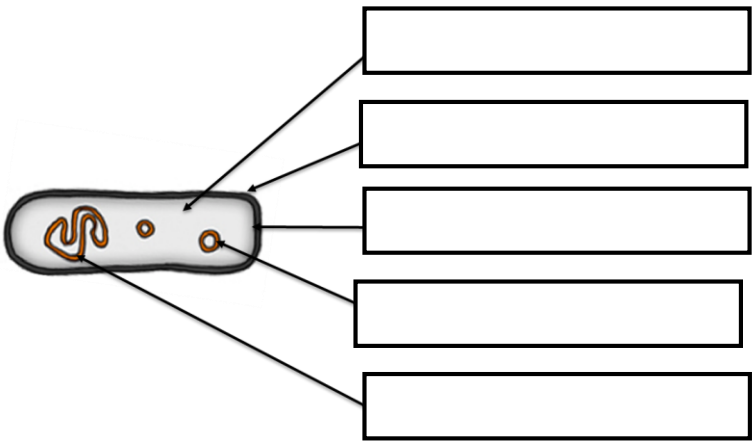
Animal cell



Plant cell



Prokaryote cell (bacterial cell)



1.4 - Animal and plant cells – Organelles

Organelle	Function	Found in…
Cell membrane	• Controls what substances can get into and out of the cell.	Plant and animal cells
Cytoplasm	• Jelly-like substance, where chemical reactions happen. • **In plant cells there's a thin lining, whereas in animal cells most of the cell is cytoplasm.**	Plant and animal cells
Nucleus	Controls the functions of the cell Carries genetic information called DNA. In exams **DO NOT** call the nucleus the 'brain' of the cell. That is not a good description and will not get you marks.	Plant and animal cells
Chloroplast	• Where photosynthesis happens – **chloroplasts contain a green substance called chlorophyll**.	Plant cells only
Vacuole	• Contains a liquid called cell sap, which keeps the cell firm.	Plant cells only
Cell wall	• Made of a tough substance called cellulose, which supports the cell.	Plant cells only
Ribosome	• Where protein is made (synthesised) .	Plant and animal cells
Mitochondria	• Where respiration takes place to produce energy.	Plant and animal cells

1.5 - Animal and plant cells - Look → Cover → Write → Check 1

Easy – look, cover, write the keyword, and check.

Medium – look, cover, write the definition, and check.

Hard – look, cover, write the definition for all the keywords in 5 minutes.

Keyword	1st try	Check	2nd try	Check	3rd try	Check
Cell membrane						
Cytoplasm						
Nucleus						
Chloroplast						
Vacuole						
Cell wall						
Ribosome						
Mitochondria						

1.6 - Animal and plant cells – Questions 1

Exercise 1 – Fill in the missing words in the passage below.

The bodies of all plants and …… are made up of tiny living units called …… Some microscopic organisms consist of only a …… cell but the bodies of most plants and animals are made up of …… of cells. There are many different …… of plant and animal cells. The diagrams below show the …… that they usually contain.

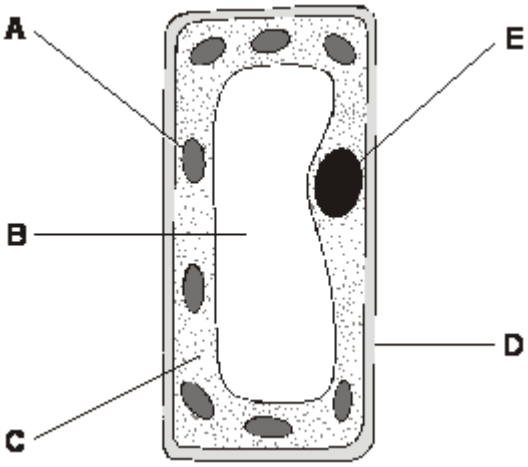
Exercise 2 – Join up the cell parts below to their correct jobs.

Organelle	Job
Cell membrane	Made of cellulose. It supports and protects the cell.
Cytoplasm	Site where proteins are made (protein synthesis).
Nucleus	A jelly like substance where most of the chemical reactions happen within the cell.
Chloroplast	Controls the functions of the cell and contains genetic material (DNA).
Vacuole	The site of aerobic respiration which produces energy for the cell.
Cell wall	Allows substances to move in and out of the cell.
Ribosome	The site where photosynthesis takes place.
Mitochondria	Contains a liquid called sap. It keeps the plant cell rigid.

Exercise 3 – Shade the organelles and the jobs they have, that are only found in plant cells.

1.7 - Animal and plant cells – Exam questions 1

The diagram shows a plant cell.



(a) Give the name of part A.

.....

Give the function of part A.

.....

.....

2 marks

(b) Give the name of part E.

.....

Give the function of part E.

.....

.....

2 marks

(c) Give the letters of **two** parts that are present in plant cells but **not** in animal cells.

..... and .....

1 mark

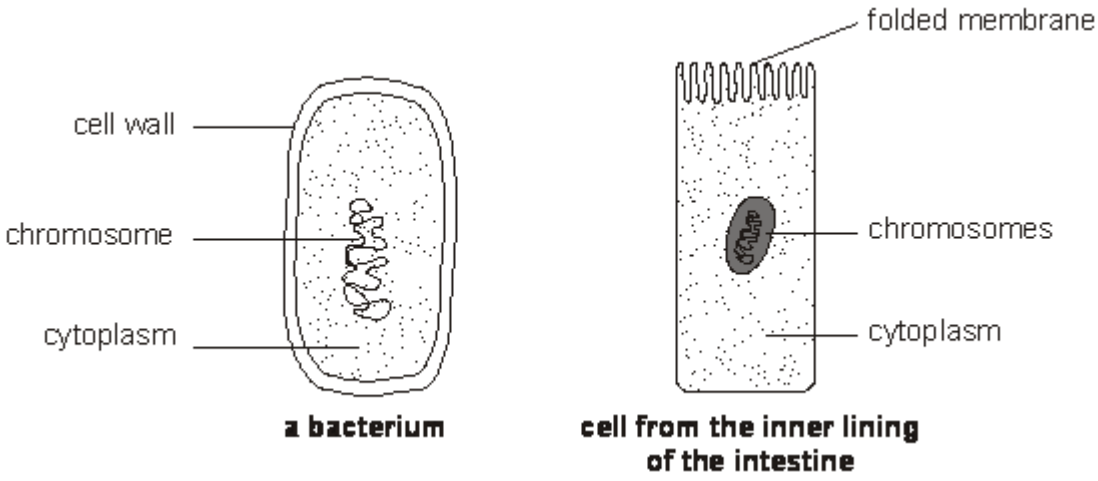
(d) How can you tell that the cell in the diagram is from a leaf and **not** from a root?

.....

1 mark

1.8 - Animal and plant cells – Exam questions 2

The diagrams below show two other cells.



a bacterium

cell from the inner lining of the intestine

(i) Look at the diagrams above.

What is the difference between the location of the genetic material in the bacterium and in the cell from the lining of the intestine?

.....

.....

.....

1 mark

(ii) What is the function of the genetic material in a cell?

.....

.....

1 mark

1.9 - Animal and plant cells - Look → Cover → Write → Check 2

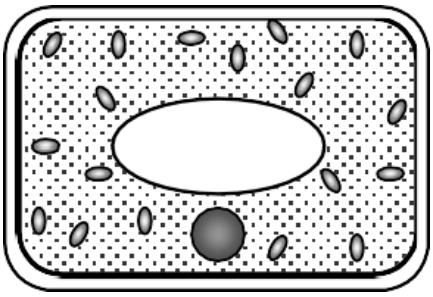
Easy – look, cover, write the keyword, and check.

Medium – look, cover, write the definition, and check.

Hard – look, cover, write the definition for all the keywords in 5 minutes.

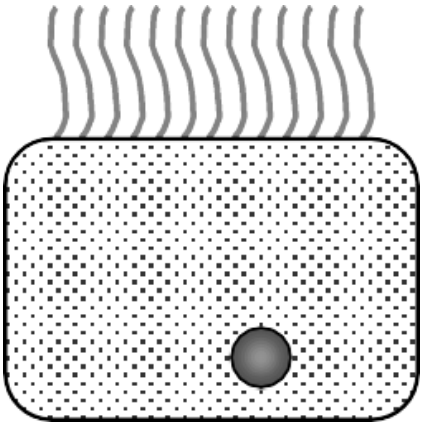
Keyword	1st try	Check	2nd try	Check	3rd try	Check
Cell membrane						
Cytoplasm						
Nucleus						
Chloroplast						
Vacuole						
Cell wall						
Ribosome						
Mitochondria						

1.10 – Specialised cells



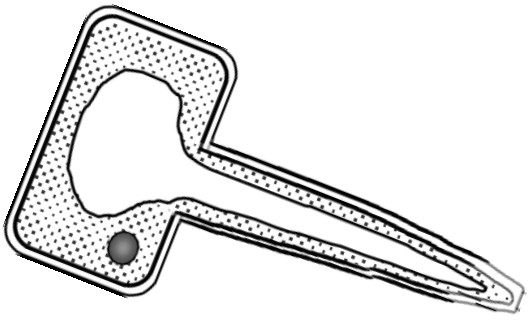
Palisade cell

- Found on the top side of **leaves**.
- Contains loads of **chloroplasts** for **photosynthesis**.
- They are on the top side of the leaf to absorb **as much sunlight as possible**.



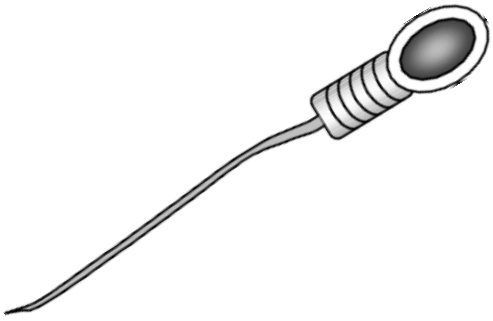
Ciliated cell

- Found lining the wind pipe (trachea).
- Covered in **tiny hairs** called **cilia**.
- These **waft** trapped **bacteria** and **dust** to the throat (**gullet**) to be **swallowed**.



Root hair cell

- Found on the surface of **roots**.
- It absorbs **water** and **minerals** from the **soil**.
- It is long and thin to provide a **large surface area** to absorb water.



Sperm cell

- Uses its **tail** to swim to the **egg** (**ovum**).
- It has loads of **mitochondria** to provide **energy** for the tail to work.
- Contains a **chemical** that **breaks down** cell membrane of the egg.

1.11 – Specialised cells - Look → Cover → Write → Check 1

1. Try to do as much as you can from memory.
2. In a different colour, add in the pieces of information or diagrams that you could not remember.

Name	Diagram	Where is it found?	Adaptations
Palisade cell			
Ciliated cell			
Root hair cell			
Sperm cell			

1.12 – Specialised cells - Look → Cover → Write → Check 2

1. Try to do as much as you can from memory.
2. In a different colour, add in the pieces of information or diagrams that you could not remember.

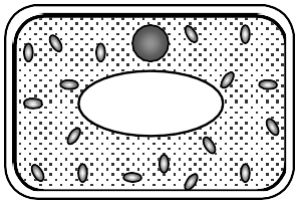
Name	Diagram	Where is it found?	Adaptations
Palisade cell			
Ciliated cell			
Root hair cell			
Sperm cell			

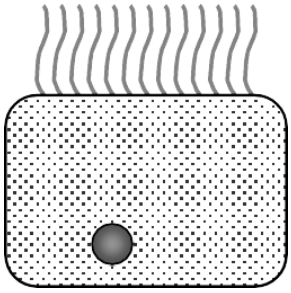
1.13 – Specialised cells – Questions

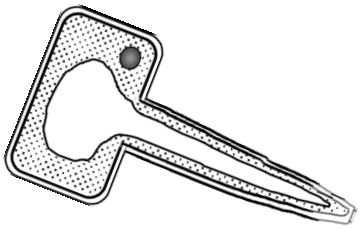
Exercise 1 – **Fill in the missing words in the passage below.**

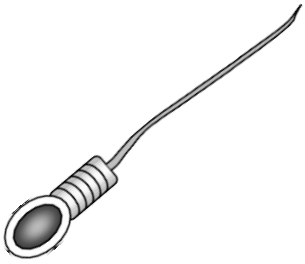
Nearly all cells contain a cell membrane, …… and cytoplasm. There are many …… types of cells. They vary in their shape and …… depending on their functions (jobs). Each type of cell is well …… (suited) to its function. In the human …… there are about twenty different types of cell, each has a certain …… to do. This makes the body work much …… than if each cell was trying to do everything.

Exercise 2 – **match the picture to its name and match the name to its definition.**





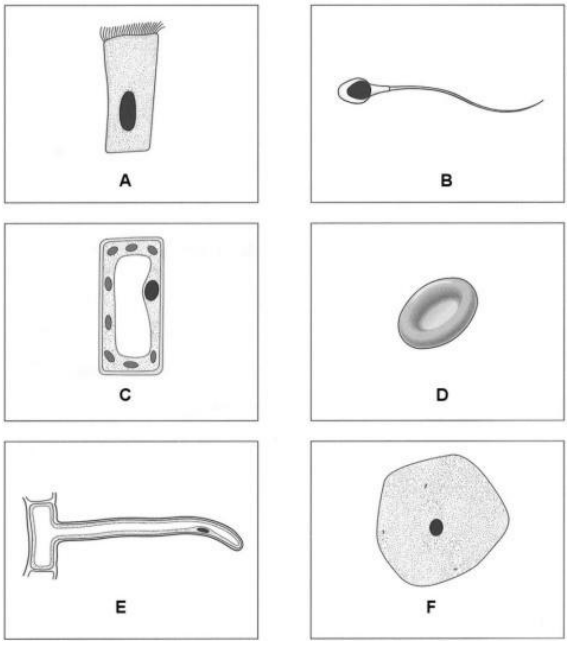




Sperm cell	On the surface of plant cells. Have loads of chloroplasts.
Root hair cell	Uses its tail to swim towards the egg.
Ciliated cell	Found on the surface of roots. Absorbs water and minerals.
Palisade cell	Found in the wind pipe (trachea). Trap dust and bacteria and use hairs to waft mucus to the stomach.

1.14 – Specialised cells – Exam questions

The diagram below shows six cells.



(a) (i) Give the letters of the **two** plant cells in the diagrams.

..... and .....

1 mark

(ii) Which **one** of these plant cells contains chloroplasts?
Give the letter.

.....

1 mark

(iii) Give the function of chloroplasts.

.....

.....

1 mark

(b) (i) Give the letter of the ciliated cell.

.....

1 mark

(ii) In which part of the body are ciliated cells found?

.....

1 mark

(iii) What is the function of ciliated cells in this part of the body?

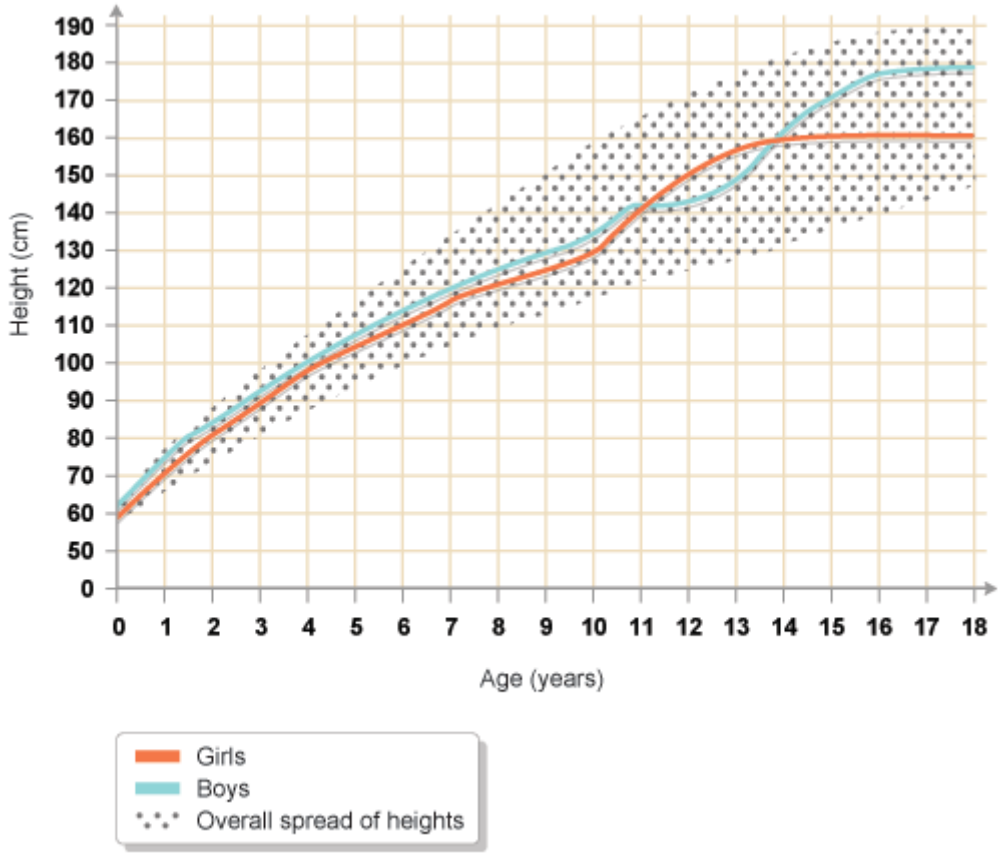
.....

.....

2. Reproduction

2.1 - Puberty

Puberty is the time when a child begins to change into an adult. In boys it begins between the ages of about 12-14 years. In girls it begins between the ages of about 11-13 years. Special chemicals called **SEX HORMONES** are released into the blood. These chemicals cause many of the changes that happen in the body. Emotional changes also happen now.



A graph showing how height changes as age increases.

Changes in boys at puberty	Changes in girls at puberty
1) The testes begin to make sperms. 2) A hormone called **TESTOSTERONE** is produced by the testes. 3) The voice becomes deeper. 4) Hair grows on the face and body. 5) The body becomes more muscular. 6) Changes in attitude and behaviour.	1) The ovaries begin to produce ova. 2) A hormone called **OESTROGEN** is produced by the ovaries. 3) The monthly menstrual cycle starts. 4) Hair grows on parts of the body. 5) The hips widen. 6) The breasts begin to develop.

2.2 - Puberty - Questions

Exercise 1 - Fill in the missing words in the passage below.

All …… eventually grow up to be men and women. The time when the body is changing is called …… Changes happen all over the …… Emotional changes also happen at puberty and we feel …… to others. A …… called testosterone is made by the testes in a boy and this causes some of the …… in his body. In a girl the ovaries make a hormone called …… which causes many of the changes in her body.

body **changes** **oestrogen** **hormone** **puberty** **children** **attracted**

Exercise 2 - In the table below there is a list of changes which happen at puberty. Tick the right-hand columns to show which changes happen to boys, girls or both.

Changes at puberty	Boys	Girls
The breasts grow larger.		
The body becomes more muscular.		
The monthly periods start.		
The voice becomes deeper.		
Hair grows around the sex organs.		
The hair and skin become greasier.		
Sperms are produced.		
Ova are produced.		
Feel attracted to the opposite sex.		

Exercise 3 – Complete the exam question below.

During adolescence, boys' bodies change. Describe **two** of the changes.

……

……

……

……

2.3 - Male reproductive organs

The male reproductive system contains these parts:

- **testes (pronounced "test-eez")**
- **glands**
- **sperm ducts**
- **penis**
- **urethra**

Testes

The two testes (one of them is called a testis) are contained in a bag of skin called the scrotum. They have two functions:

- to produce millions of male sex cells called sperm
- to make male sex hormones, which affect the way a man's body develops.

Sperm duct and glands

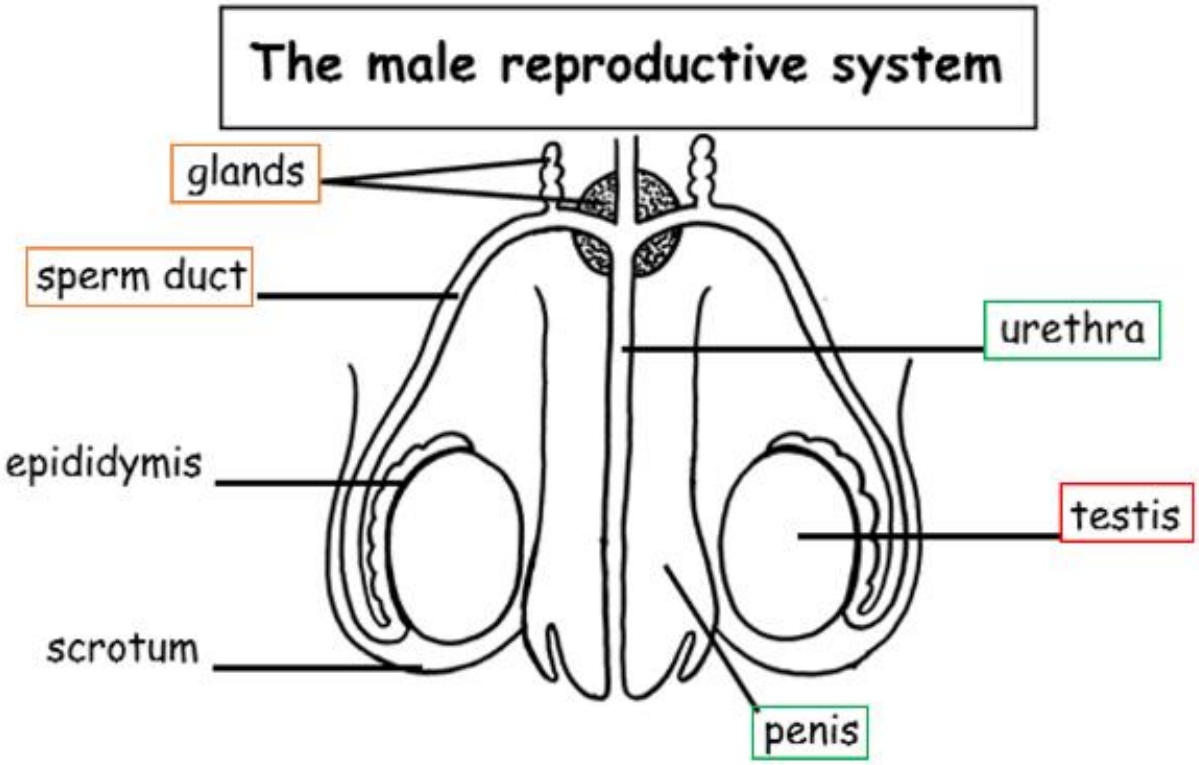
The sperm pass through the sperm ducts, and mix with fluids produced by the glands. The fluids provide the sperm cells with nutrients. The mixture of sperm and fluids is called semen.

Penis and urethra

The penis has two functions:

- to pass urine out of the man's body
- to pass semen into the vagina of a woman during sexual intercourse.

The urethra is the tube inside the penis that can carry urine or semen. A ring of muscle makes sure that there is no chance of urine and semen getting mixed up.



2.4 - Female reproductive organs

The female reproductive system contains these parts:

- ovaries
- oviduct or Fallopian tube
- uterus (pronounced "yoo-ter-russ")
- cervix
- vagina

Ovaries

The two ovaries contain hundreds of undeveloped female sex cells called egg cells or ova. Women have these cells in their bodies from birth - whereas men produce new sperm continually.

Oviduct or Fallopian tube

Each ovary is connected to the uterus by an egg tube. This is sometimes called an oviduct or Fallopian tube. The egg tube is lined with cilia, which are tiny hairs on cells. Every month, an egg develops and becomes mature, and is released from an ovary. The cilia waft the egg along inside the egg tube and into the uterus.

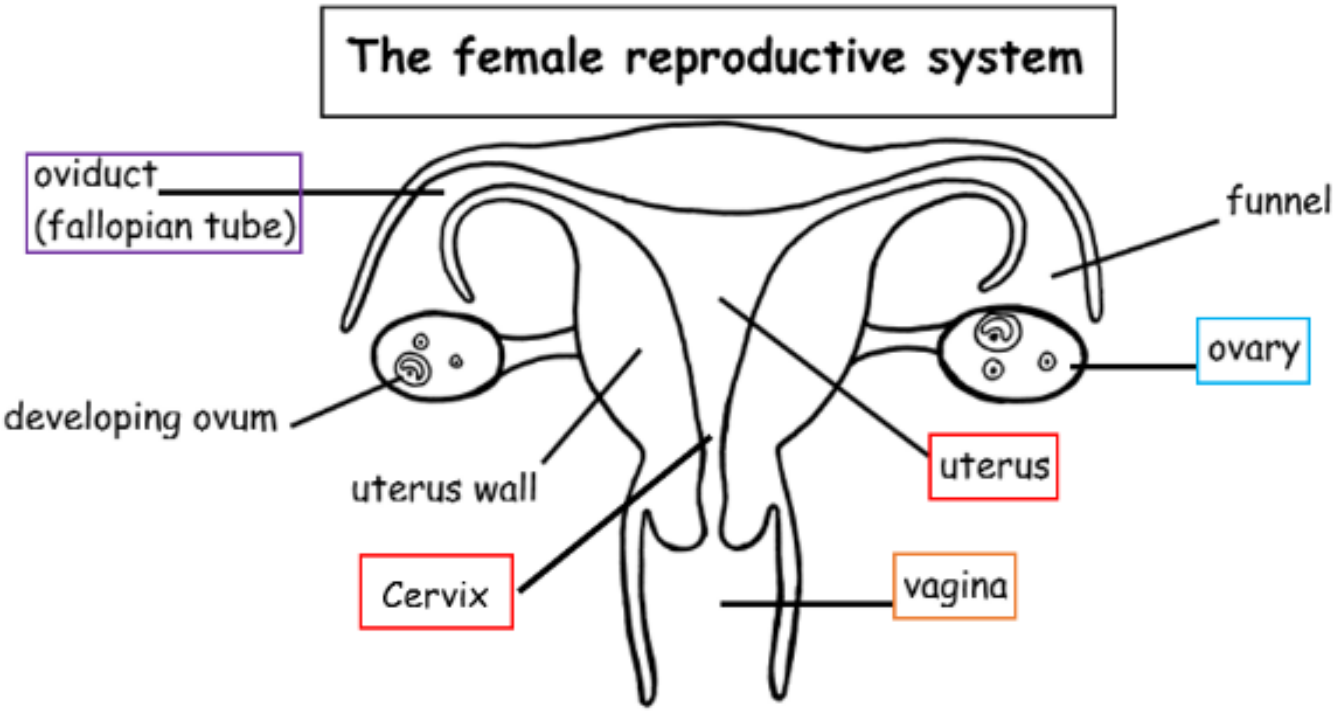
Uterus and cervix

The uterus is also called the womb. It is a muscular bag with a soft lining. The uterus is where a baby develops until its birth.

The cervix is a ring of muscle at the lower end of the uterus. It keeps the baby in place while the woman is pregnant.

Vagina

The vagina is a muscular tube that leads from the cervix to the outside of the woman's body. A man's penis goes into the woman's vagina during sexual intercourse. The opening to the vagina has folds of skin called labia that meet to form a vulva. The urethra also opens into the vulva, but it is separate from the vagina, and is used for passing urine from the body.



2.5 - Male and female reproduction organs - Questions

Exercise 1 - Fill in the missing words in the passage below

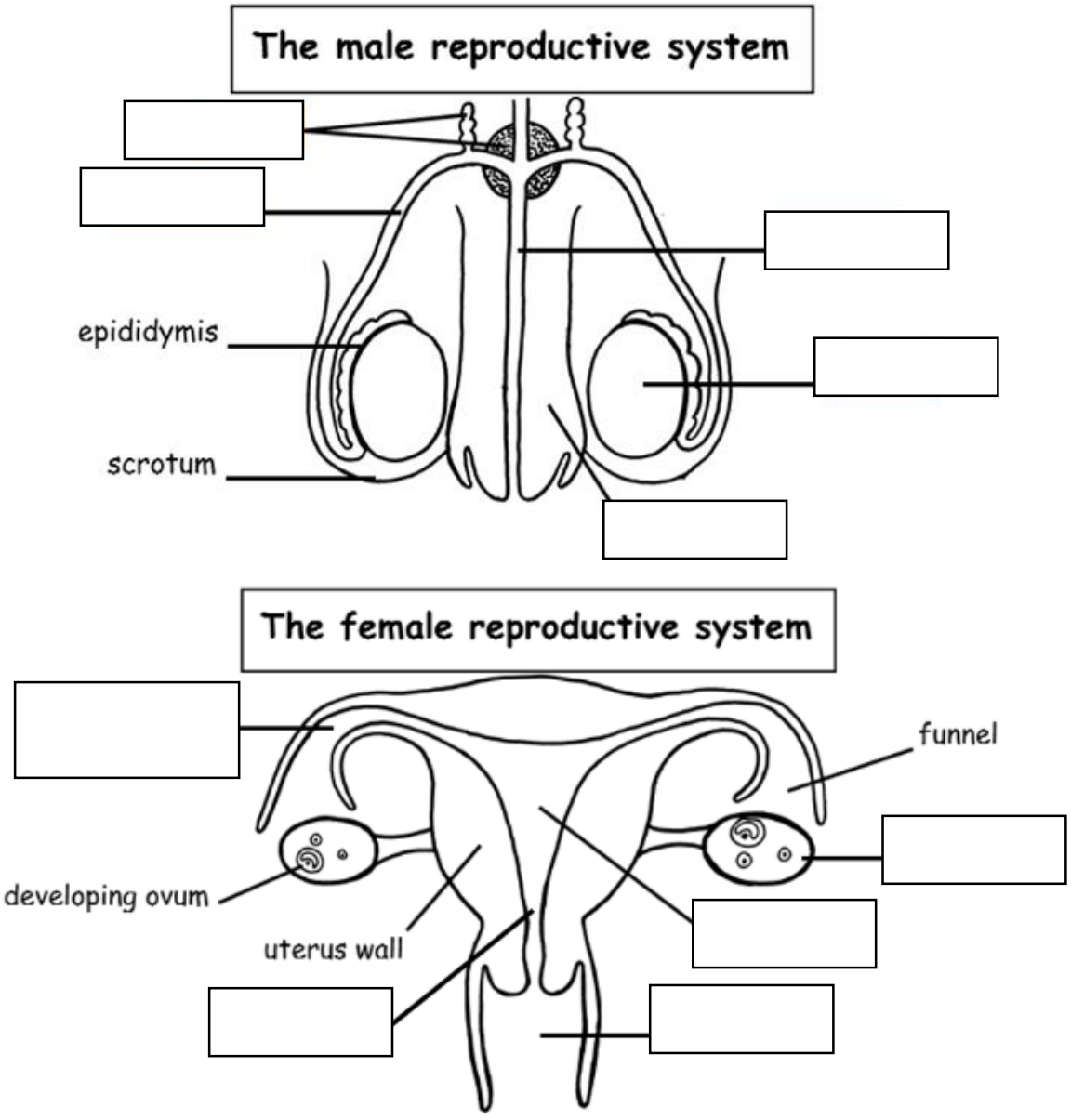
In the man the testes make the …… cells. The sperms are stored in a coiled …… called the epididymis. The …… becomes erect during sexual intercourse. The sperms are carried through a long tube called the sperm …… to the top of the penis. Here glands make fluids that help the sperms to …… The urethra is a tube that carries sperms and

…… out of the body.

In the woman the ovaries make the …… (egg cells). One ovum is produced every …… The ovum is carried along the …… (fallopian tubes) down to the uterus (womb). The placenta grows in the uterus wall during pregnancy. This gives the developing baby …… and oxygen.

duct urine ova food sperm tube month swim oviduct penis

Exercise 2 – Fill in the boxes with the correct names



2.6 - Male and female reproductive organs - Look → Cover → Write → Check

Easy – look, cover, write the keyword, and check.

Medium – look, cover, write the definition, and check.

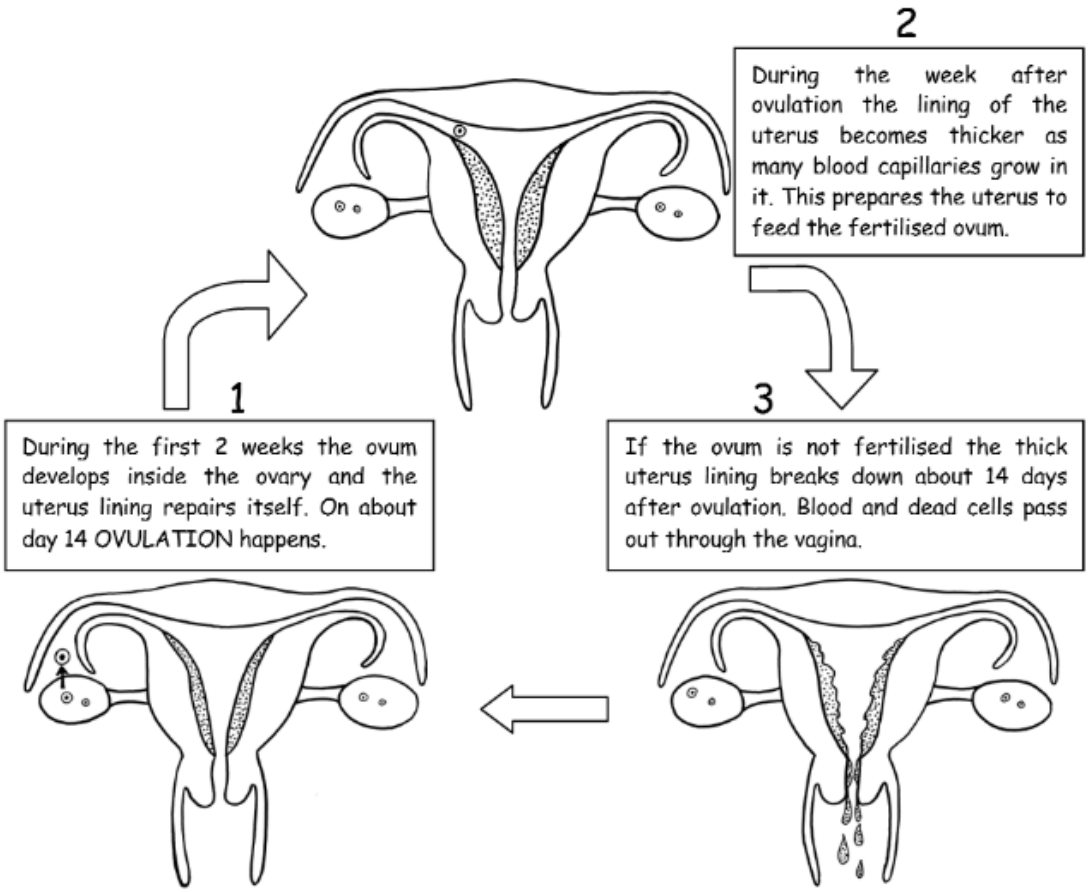
Hard – look, cover, write the definition for all the keywords in 5 minutes.

Keyword	1st try	Check	2nd try	Check	3rd try	Check
Testes						
Glands						
Sperm ducts						
Penis						
Urethra						
Ovaries						
Oviduct or Fallopian tube						
Uterus						
Cervix						
Vagina						

2.7 - The Menstrual Cycle

The female reproductive system includes a cycle of events called the menstrual cycle. It lasts about 28 days, but it can be slightly less or more than this. The cycle stops while a woman is pregnant.

Once every month a woman's body releases an ovum (egg cell) into the oviduct (fallopian tubes). Usually the ovum is not fertilised and it dies. The woman has her period when the lining of the uterus breaks down and blood and dead cells pass out through the vagina. Them diagram below shows what happens during a woman's monthly cycle.



Several hormones control this cycle, which includes controlling the release of an egg each month from an ovary, and changing the thickness of the uterus lining. These hormones are secreted by the ovaries and pituitary gland.

FSH

The hormone FSH is secreted by the pituitary gland. FSH makes two things happen: it causes an egg to mature in an ovary; it stimulates the ovaries to release the hormone oestrogen

Oestrogen

The hormone oestrogen is secreted by the ovaries. Oestrogen makes two things happen: it stops FSH being produced - so that only one egg matures in a cycle; it stimulates the pituitary gland to release the hormone LH

LH

The hormone LH causes the mature egg to be released from the ovary. Progesterone is another hormone secreted by ovaries: it maintains the lining of the uterus and stays high during pregnancy.

2.8 - The Menstrual Cycle - Questions

Exercise - Complete the sentences below.

1) Only one ovum is released every ……..

2) The release of an ovum from the ovary is called ……..

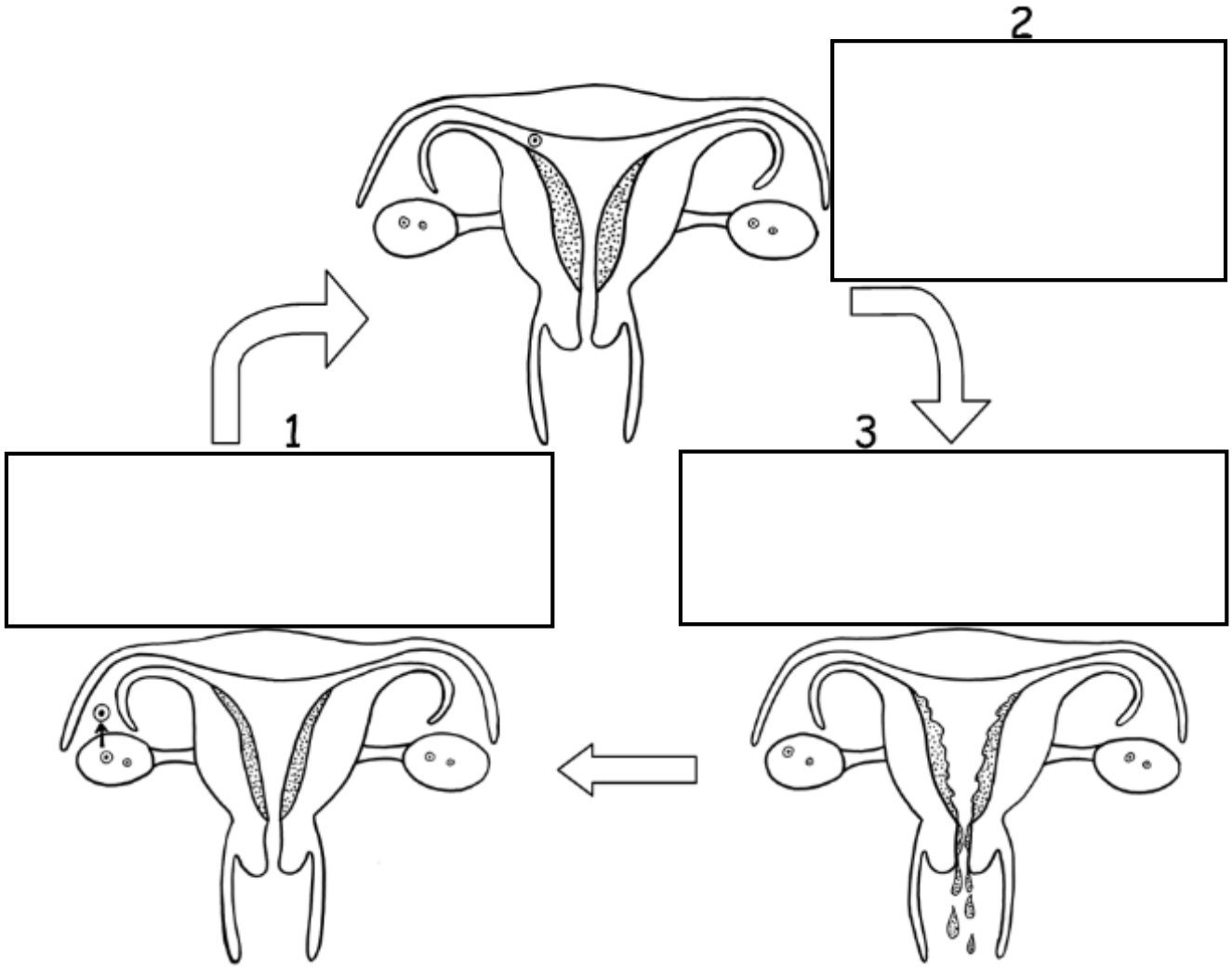
3) Ovulation happens after about …… days.

4) The uterus lining …… the fertilised ovum.

5) If the ovum is not fertilised it will ……..

6) A woman has her period when the …….. lining breaks down.

Exercise – Fill in the sections of the menstrual cycle.



2.9 - The Menstrual Cycle – Exam questions

Diagram 1 shows the female reproductive system.

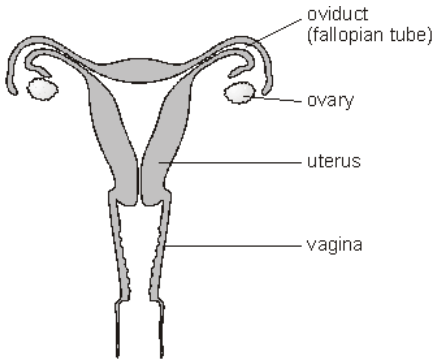


diagram 1

(a) **Diagram 2** is a graph showing how the thickness of the uterus changed over a 28-day cycle.

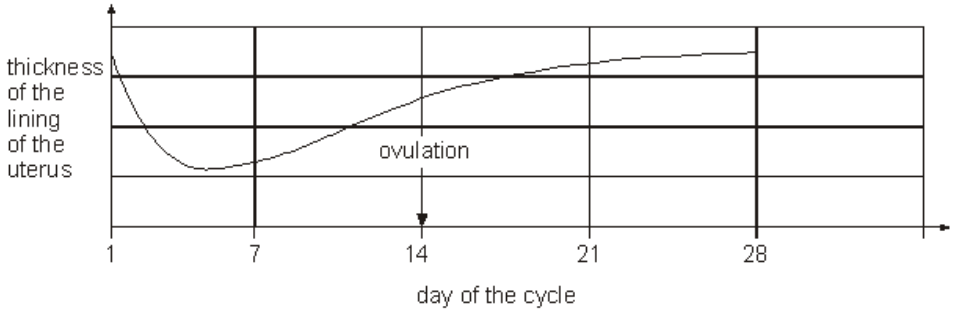


diagram 2

(i) Why did the thickness of the lining of the uterus decrease between day 1 and day 5 of this cycle?

.....

.....

1 mark

(ii) Suggest which day in this cycle an ovum (egg) is most likely to be fertilised.

day .....

What evidence is there for this in the graph?

.....

.....

1 mark

(iii) The graph shows that the lining of the uterus builds up again between day 5 and day 14.

Why is this necessary?

.....

.....

1 mark

(b) (i) Continue the line on the graph to show what would happen to the thickness of the lining of the uterus after 28 days if an ovum was fertilised.

1 mark

(ii) Explain your answer.

.....

.....

1 mark

maximum 5 marks

(a) This question is about the menstrual cycle. Choose words from the list to complete the sentences.

a daily **the uterus** **the middle** **an ovary** **a weekly**

the beginning **a monthly** **the end** **the vagina**

Menstruation is part of ..... cycle.

The cycle begins when the lining of ..... breaks away.

An ovum (egg) is released from ..... at about

..... of each cycle.

4 marks

(b) During adolescence, boys' bodies change. Describe **two** of the changes.

.....

.....

.....

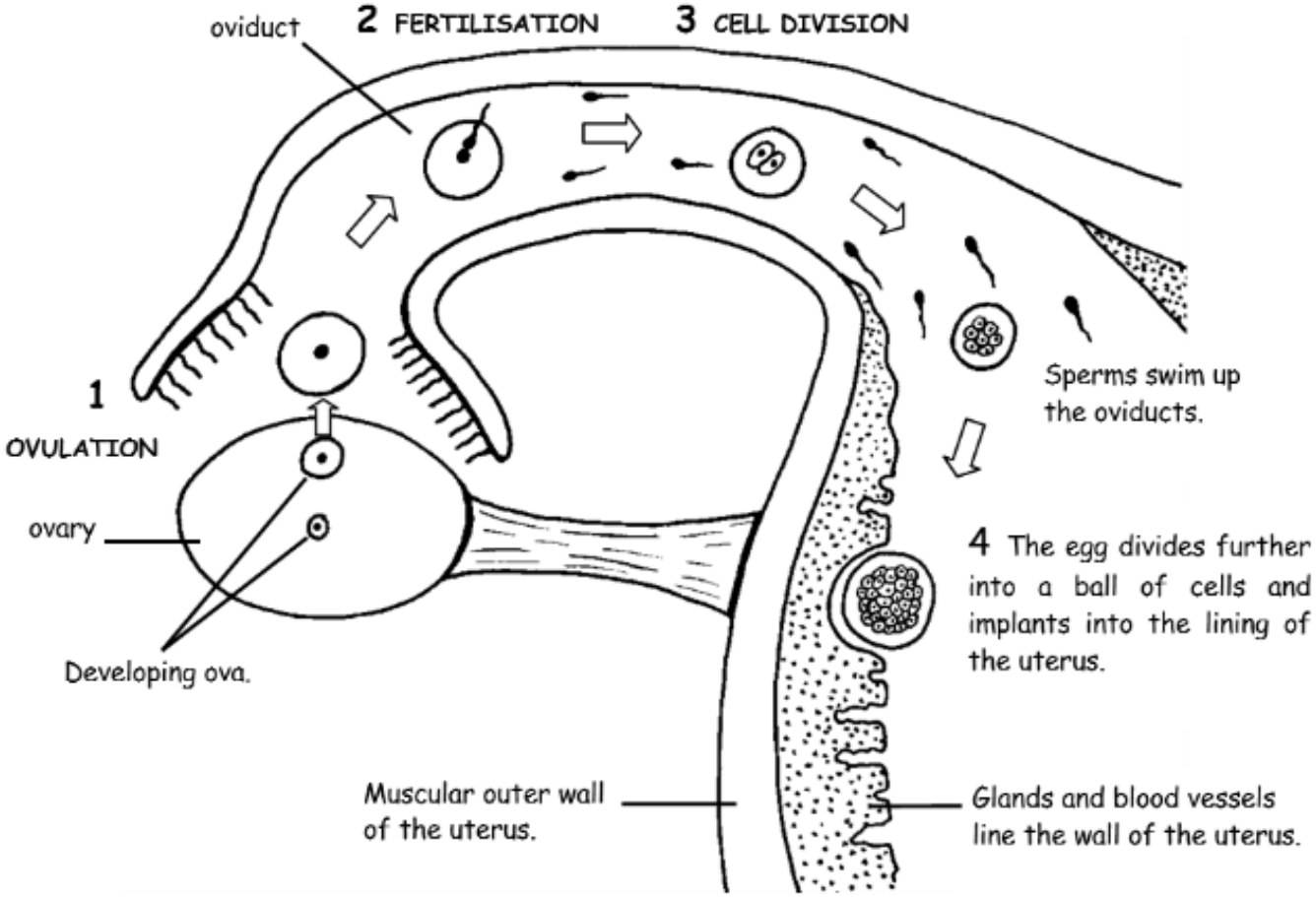
.....

2 marks

Maximum 6 marks

2.10 - Ovulation and Fertilisation

Every month an ovum (egg cell) is released from an ovary into the oviduct. This is called **OVULATION**. If there are sperm cells in the oviduct the ovum may join with one of them. This is called **FERTILISATION**. The fertilised ovum then travels down to the uterus where it grows into a baby. The diagram below shows what happens to the ovum after it is released from the ovary if it is fertilised.



Exercise – **Complete the sentences below.**

1) O _ _ _ _ _ _ _ _ means when the ovum is released from the ovary.

2) The joining of the ovum and sperm is called F _ _ _ _ _ _ _ _ _ _ _ _ _

3) Fertilisation usually happens in the O _ _ _ _ _ _

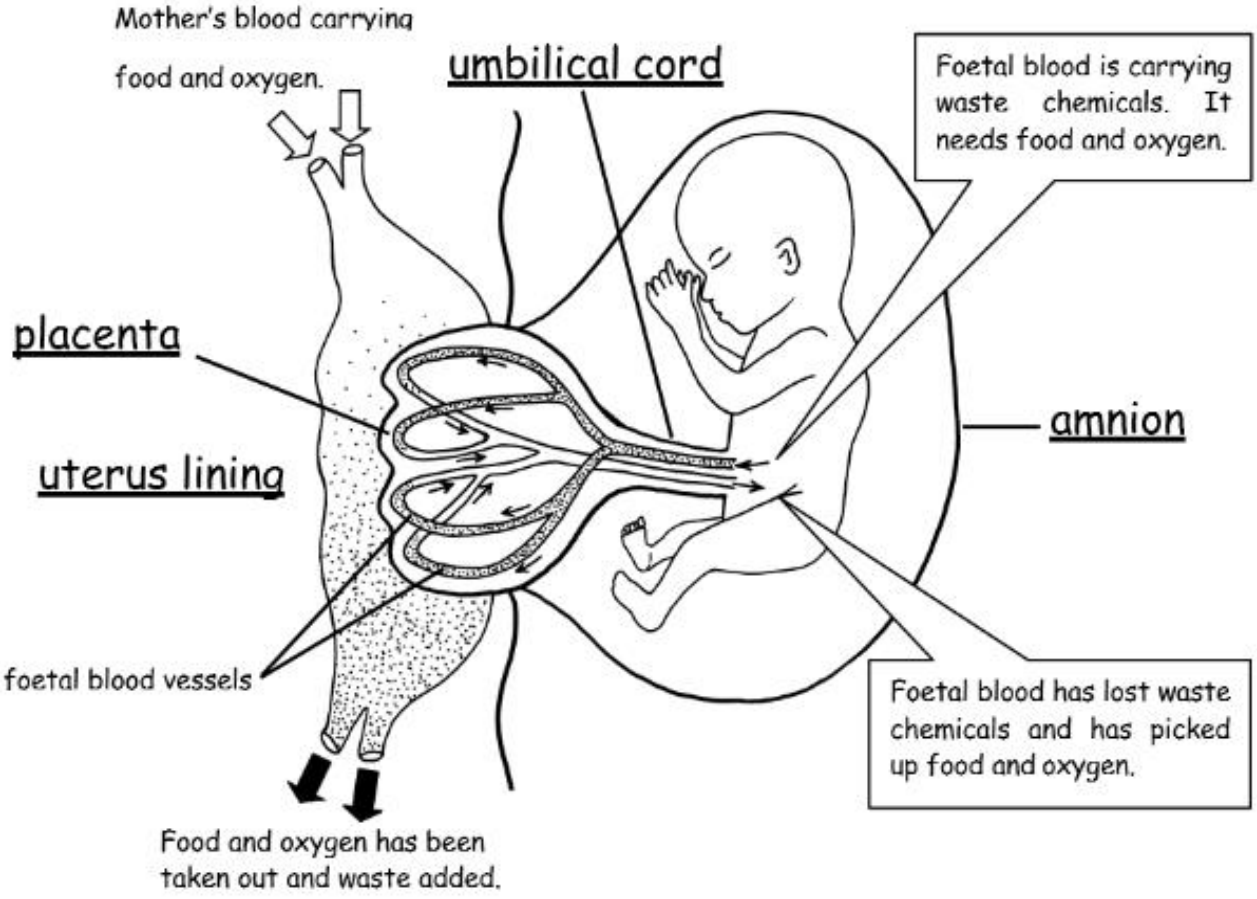
4) After fertilisation the egg begins to D _ _ _ _ _

5) The egg develops into a ball of C _ _ _ _

6) The baby develops in the U _ _ _ _ _

2.11 - The developing baby

When the baby starts to grow inside the uterus it is called an **EMBRYO**. By the time it reaches 9 weeks old it looks like a tiny human being and it is then called a **FOETUS**. The **PLACENTA** is a special organ that develops in the wall of the uterus. It gives the baby food and oxygen. The placenta also removes waste chemicals such as carbon dioxide and urea from the baby. The baby is attached to the placenta by the **UMBILICAL CORD**. This contains blood vessels that carry chemicals to and from the baby. The diagram below shows how this happens.



Exercise – **Complete the sentences below.**

1) When the baby reaches 9 weeks old it is called a _ _ _ _ _ _

2) The baby is surrounded by a bag of fluid called the _ _ _ _ _ _

3) The amnion _ _ _ _ _ _ _ _ the baby if the mother is knocked.

4) The placenta gives the baby food and _ _ _ _ _ _

5) The palcenta takes _ _ _ _ _ chemicals away from the baby.

6) The U _ _ _ _ _ _ _ _ c _ _ _ attaches the baby to the placenta.

3. Inheritance and variation

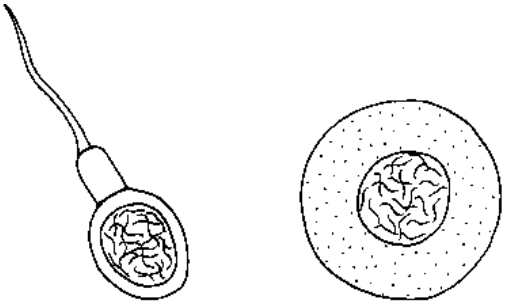
3.1 - Variation

All animals and plants are different from each other. Even members of the same species (type) show small differences and no two humans are exactly alike. This is called **VARIATION**. Some features that vary which are easy to study in humans are height, mass, hair colour, eye colour and shoe size. **CONTINUOUS VARIATION** is when a feature shows many different types eg. height. **DISCONTINUOUS VARIATION** is when a feature only shows a few different types eg. human blood groups and whether a person can roll their tongue or not.

Variation is caused partly by different **GENES** (instructions) that individuals inherit from their parents and partly by different **ENVIRONMENTS** (surroundings) that individuals live in:

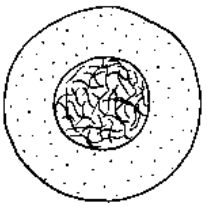
GENETICS

The chromosomes hold the **GENES** that control a person's features and how they develop. All sperms and ova contain a different set of genes therefore every person receives a different combination from their parents.



ENVIRONMENT

FOOD SUPPLY affects the growth rate of young animals. Two identical twins have the same genes but one may be heavier than the other due to eating more food. Plants also grow better in soil that has a good water and mineral supply.



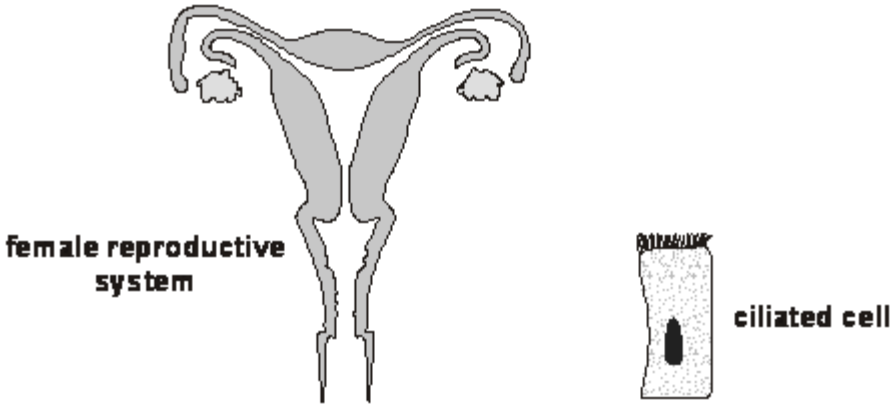
CLIMATE affects how animals and plants develop. Some animals grow a thicker coat if their environment becomes colder. Plants usually grow faster in the sun than they do in the shade. A person's skin may become darker (tanned) if they are exposed to more sunlight.

Exercise - Complete the sentences below.

1) We are all different from each other. This is called V _ _ _ _ _ _ _ _
2) The two types of variation are C _ _ _ _ _ _ _ _ _ and discontinuous.
3) An example of continuous variation in humans is H _ _ _ _ _
4) We are all different, partly because of the G _ _ _ _ we inherited from our parents and partly because of our E _ _ _ _ _ _ _ _ _ _
5) Every sperm and O _ _ _ contains a different set of genes.
6) Food supply affects the G _ _ _ _ _ rate of young animals.
7) Plants will grow larger in soil that is rich in M _ _ _ _ _ _ _

3.2 - Variation – Exam questions

(a) The diagram below shows the female reproductive system and a ciliated cell.



not to scale

Ciliated cells move an ovum along part of the reproductive system.

(i) In which part of the reproductive system are ciliated cells found?

.....

1 mark

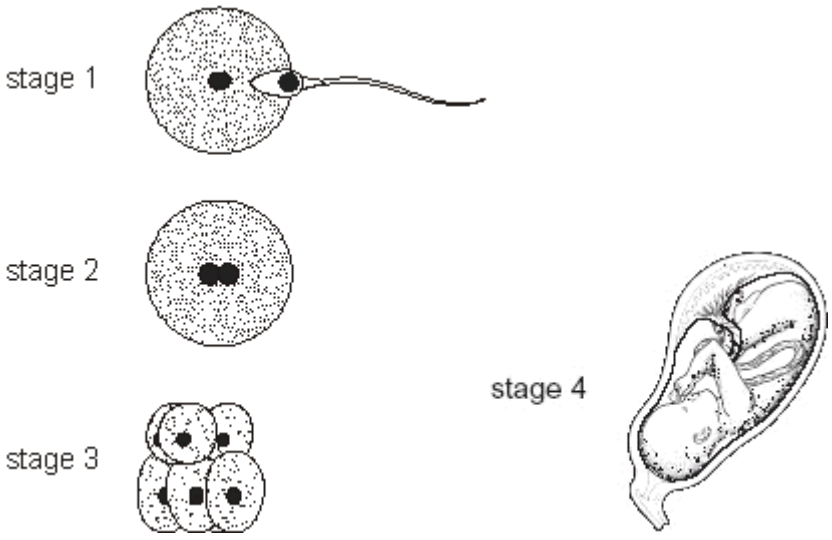
(ii) Describe how ciliated cells move an ovum along.

.....

.....

1 mark

(b) The diagrams below represent what happens at fertilisation and after fertilisation has taken place.



not to scale

(i) Some women find it difficult to become pregnant. Doctors have developed a technique in which an ovum is fertilised in a test-tube. An embryo is then implanted into the woman's reproductive system.

Which stage in part (b) shows an embryo and which stage shows a foetus?

embryo .....

foetus .....

1 mark

(ii) Into which part of the woman's reproductive system is the embryo implanted?

.....

1 mark

(c) (i) Explain why a child can look like both parents but is **not** identical to either of the parents.

.....

.....

.....

.....

2 marks

(ii) In the table below, tick **one** box by each human characteristic to show whether it is:

- inherited only
- inherited **and** affected by environmental conditions.

Human characteristic	**Inherited only**	**Inherited and affected by environmental conditions**
Eye colour		
Skin colour		
Weight		

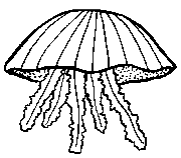
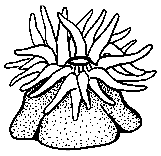
1 mark

maximum 7 marks

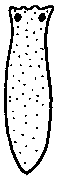
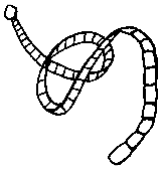
3.3 – Animals without backbones

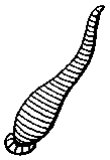
All animals can be sorted into two main groups. **VERTEBRATES** have a backbone and **INVERTEBRATES** do not. Read the information below about the groups of invertebrates with soft bodies.

JELLYFISH AND ANEMONES
They live in the sea. They have a very simple body with tentacles. Some have sting cells

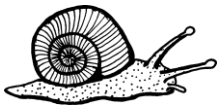
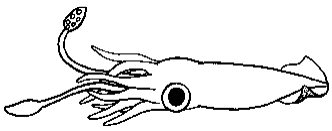



FLATWORMS
They have a long, flat body. Some live in freshwater. Some are parasites that live inside other animals.

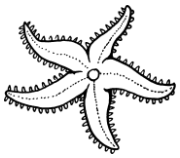
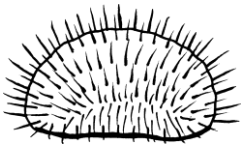





MOLLUSCS
They often have a shell for protection. Most of them live in water. Some have tentacles.

STARFISH AND SEA URCHINS
They all live in the sea. They have a thick skin which is sometimes covered in spines.

Exercise – **Complete the sentences below.**

1) Animals with a backbone are called _ _ _ _ _ _ _ _ _ _ _ _

2) Animals without a backbone are called _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

3) Jellyfish and sea anemones both have _ _ _ _ _ _ _ _ _

4) A _ _ _ _ _ _ _ _ is a flatworm that lives inside other animals.

5) An earthworm's body is divided into _ _ _ _ _ _ _ _

6) A _ _ _ _ _ is a mollusc that has a shell for protection.

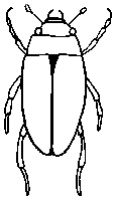
7) Sea urchins are covered in _ _ _ _ _

3.4 – Animals without backbones – Arthropods

ARTHROPODS are invertebrates with a hard outer coating. They all have a segmented body with jointed legs. This is a very large group and it can be divided into the smaller groups shown below.

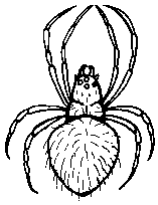
INSECTS

They have three parts to the body and six legs. The adults usually have four wings and a pair of antennae.



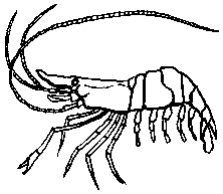
SPIDERS AND SCORPIONS

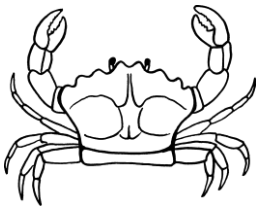
They have two parts to the body and eight legs. Spiders usually spin a web of silk and have poisonous fangs. Scorpions have a sting at the end of their tails.



CRUSTACEANS

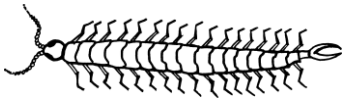
Most of them live in water. They usually have a thick, hard coating. They have many legs and two pairs of antennae.





CENTIPEDES AND MILLIPEDES

They have long bodies made up of many segments. Centipedes have one pair of legs on each segment and millipedes have two.



Exercise – **Complete the sentences below.**

1) _ _ _ _ _ _ _ _ _ _ _ all have a hard outer coating.

2) A fly is an _ _ _ _ _ _

3) Insects usually have _ _ _ legs and _ _ _ _ wings.

4) Spiders have _ _ _ _ _ legs.

5) Scorpions have a _ _ _ _ _ at the end of their tails.

6) Crabs and _ _ _ _ _ _ _ are closely related.

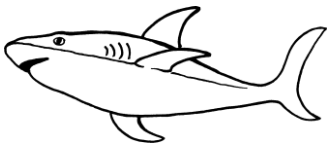
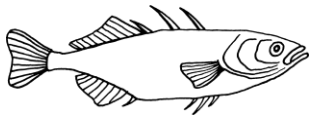
7) The bodies of centipedes are made up of many _ _ _ _ _ _ _ _

3.5 – Animals without backbones – Mammals

VERTEBRATES have a backbone and an inside skeleton. Read the information below about the groups of vertebrates.

FISH

They live in water and have gills for breathing. They are covered with scales and have fins for swimming.

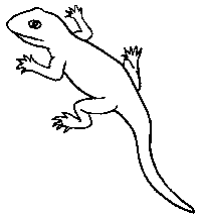
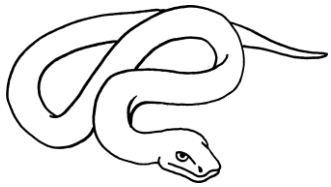



AMPIBIANS

The tadpole (young) lives in water and has gills for breathing. The adult lives on land and has lungs. They have damp skin without scales

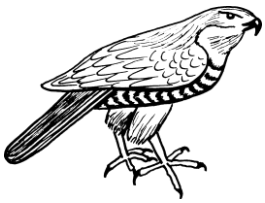

REPTILES

They have a dry, scaly, waterproof skin. Their eggs have a tough leathery shell and are laid on land.

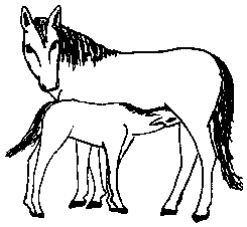
BIRDS

They are covered with feathers and have wings for flying. Their eggs have a hard shell. They have a beak for feeding. Their bodies are warm because they make heat inside.

MAMMALS

They have hair and a warm body. The young develop inside the mother's body. After they are born the young feed on milk from the mother's body. Humans belong to this group.

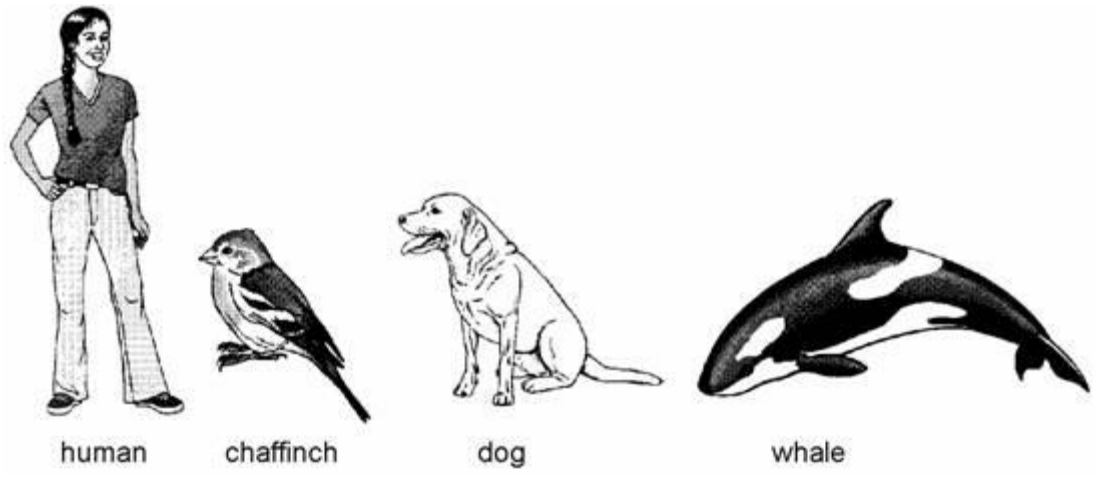
Exercise – **Complete the sentences below.**

Fish live in water and have …… for breathing. Both fish and …… have a scaly skin. The young of …… live in water but the adults live on land. Amphibians have a …… skin. Both reptiles and …… lay eggs on land. Birds are covered with …… and have …… for flying. Birds and …… have a warm body. Mammals have …… and feed their young on ……

Amphibians gills reptiles birds hair milk wings damp feathers mammals

3.6 – Animals with and without backbones – Exam Questions

The drawings show a human, a chaffinch, a dog and a whale.



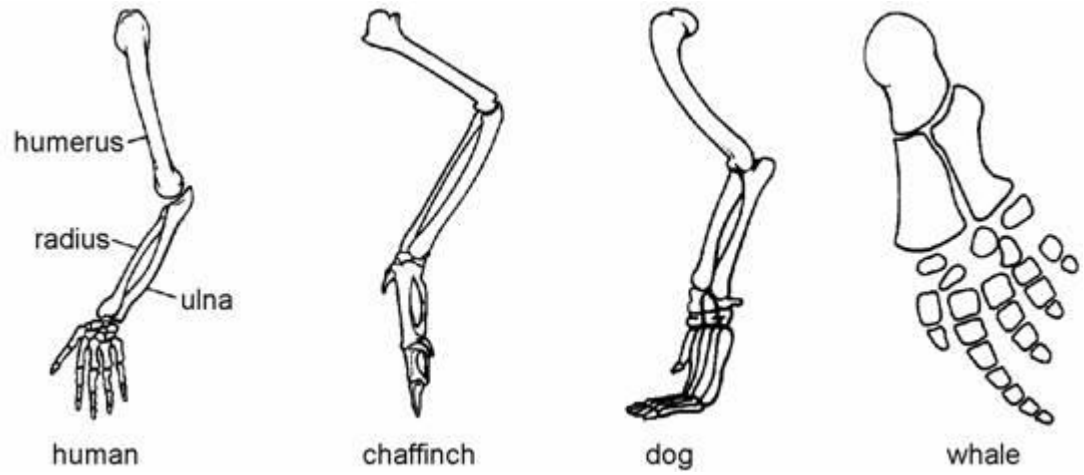
One of these animals is a bird. The other three are mammals.

(a) Which group do all four animals belong to?

.....

1 mark

(b) The drawings below show the bones of the front limbs of the four animals. Some of the bones of the human limb are labelled.



On the drawings, label:

(i) the ulna of the chaffinch;

1 mark

(ii) the radius of the dog;

1 mark

(iii) the humerus of the whale.

1 mark

(c) Describe how the shape of the front limb of the whale is adapted for moving in water.

.....

.....

1 mark

(d) The bones of birds are hollow. How does this help birds to fly?

.....

.....

1 mark

Maximum 6 marks

(a) The animals drawn below all have backbones.

not to scale

(i) What word describes animals with a backbone?

.....

1 mark

(ii) There are five groups of animals with a backbone. Only four groups are shown above
Give the name of the missing group

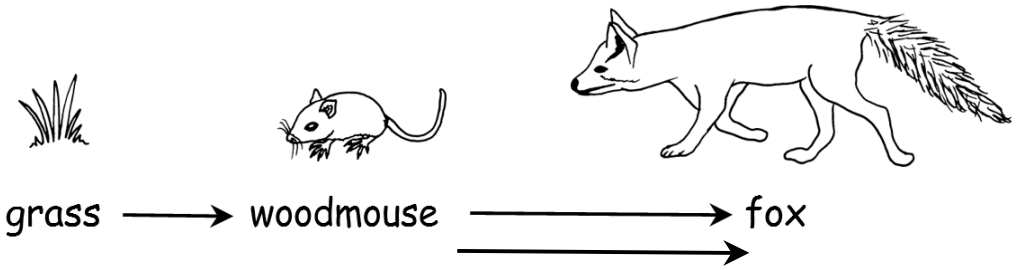
.....

1 mark

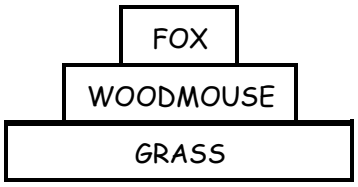
4. Ecology

4.1 – Food Chains

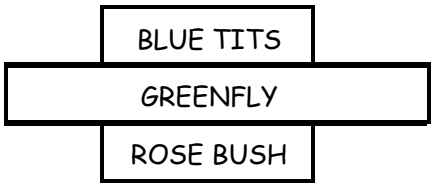
Green plants make food by **PHOTOSYNTHESIS**. Animals must feed on plants or other animals. The food is passed along a **FOOD CHAIN**.

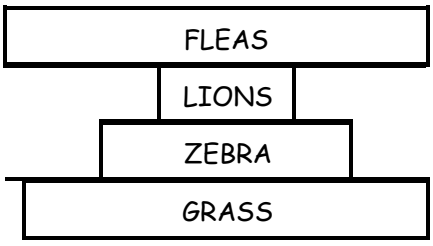


Food chains always begin with plants. Animals that eat plants are called **HERBIVORES**. Animals that eat other animals are called **CARNIVORES**. Carnivores are also called **PREDATORS** and the animals that they hunt are called the PREY. In most habitats there are more plants than herbivores and more herbivores than carnivores. This can be shown with a **PYRAMID** OF **NUMBERS**.



Pyramids of numbers are usually large at the bottom and small at the top. Sometimes they have a different shape because of the different sizes of the organisms in them. Two examples of this are shown below.





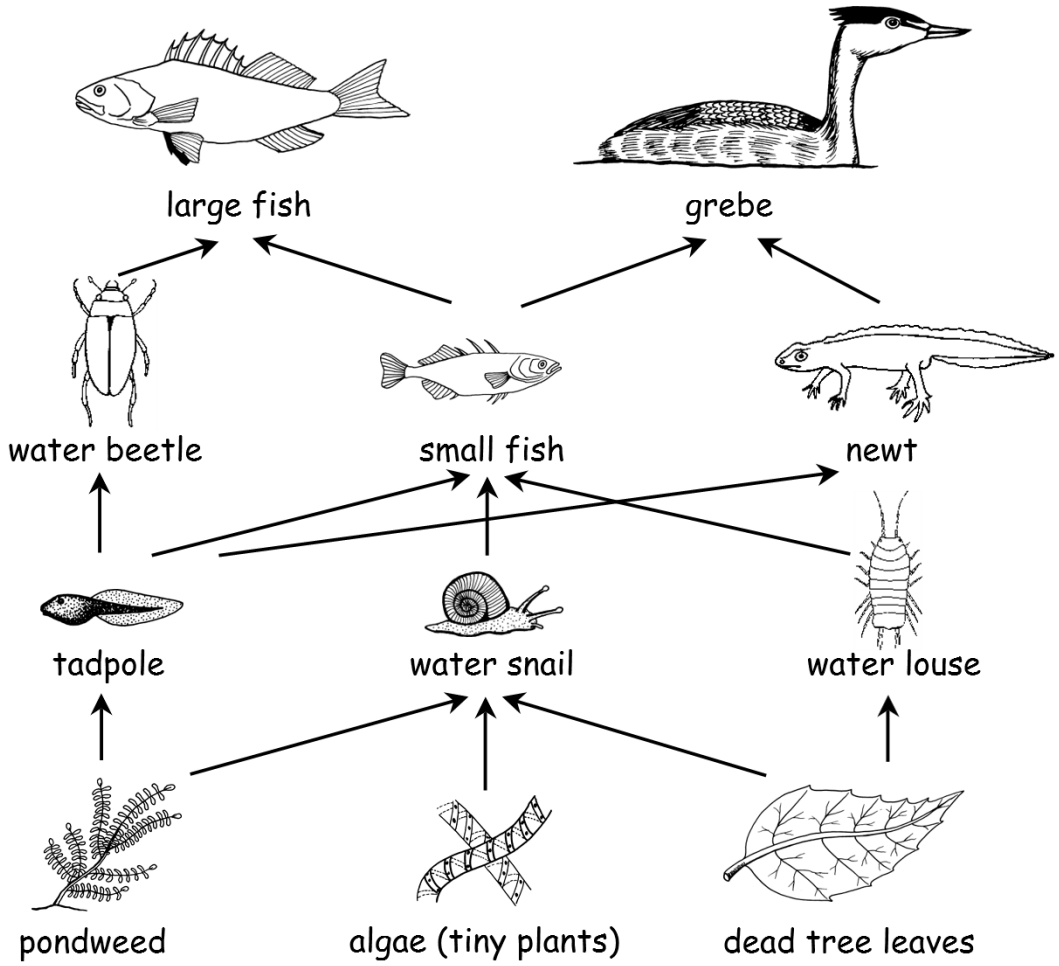
Exercise - Fill in the missing words in the passage below.

In habitats there is a mixture of ..... herbivores and carnivores. Carnivores are animals that eat other ..... Herbivores eat plants and are ..... by carnivores. Another name for carnivores is ..... and the animals that they hunt are called the ..... The amount of plants in a habitat must be ..... than the amount of herbivores or else the herbivores would run out of ..... In the same way there must be ..... carnivores than herbivores.

Predators animals food fewer eaten plants prey greater

4.2 – Food Webs

Food chains can be connected together to make **FOOD WEBS**. The diagram below shows a food web in a lake.



Exercise - Complete the food chains and sentences below.

PONDWEED ⟶ ..... ⟶ WATER BEETLE ⟶ LARGE FISH

LEAF ⟶ WATER LOUSE ⟶ ..... ⟶ GREBE

1) The predators of small fish are_____and _____

2) The prey of water beetles is _____

3) The prey of grebes is_____and _____

4) The animal that **only** eats dead tree leaves is the _____

5) The 3 **herbivores** are_____and _____

6) The 2 top **predators** are the_____and _____

4.3 – Food Chains and Food Webs - Look → Cover → Write → Check

Easy – look, cover, write the keyword, and check.

Medium – look, cover, write the definition, and check.

Hard – look, cover, write the definition for all the keywords in 5 minutes.

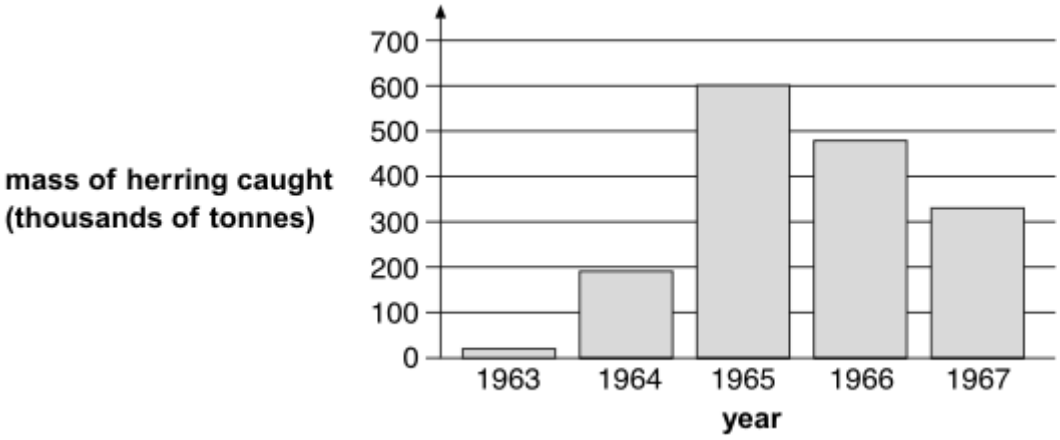
Keyword	1st try	Check	2nd try	Check	3rd try	Check
Herbivore						
Carnivore						
Predator						
Food chain						
Food web						

4.4 – Food Chains and Food Webs – Exam Questions

The table below shows the number of boats used for catching herring fish in the Norwegian Sea between 1963 and 1967.

year	number of fishing boats
1963	16
1965	284
1967	326

The bar chart below shows the total mass of herring caught in the Norwegian Sea between 1963 and 1967.



Use the information above to help you answer parts (a) (i), (ii) and (iii).

(a) (i) Why did the mass of herring caught increase between 1963 and 1965?

.....

.....

1 mark

(ii) Suggest why the mass of herring caught decreased between 1965 and 1967.

.....

.....

1 mark

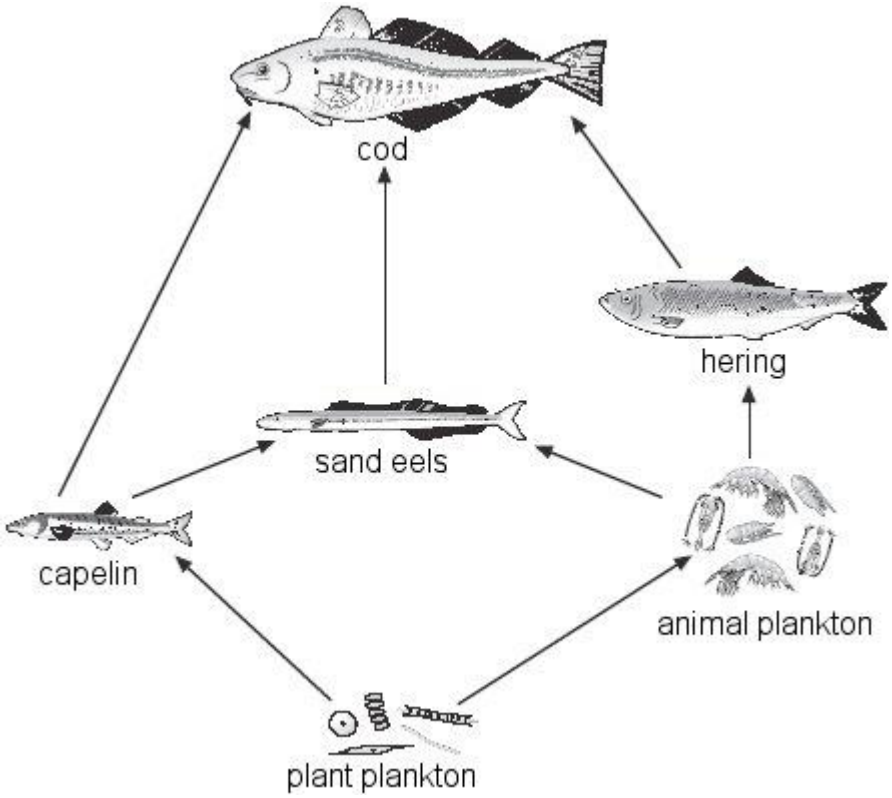
(iii) Herring **cannot** breed until they are four years old.
Fishing for herring was banned in the Norwegian Sea from 1972 to 1976.
Suggest **one** reason why fishing for herring was banned **for this period**.

.....

.....

1 mark

(b) The diagram below shows a food web in the Norwegian Sea.



not to scale

(i) How could a decrease in the number of herring cause a **decrease** in the number of sand eels?

.....

.....

1 mark

(ii) How could a decrease in the number of herring cause an **increase** in the number of sand eels?

.....

.....

1 mark
maximum 5 marks