

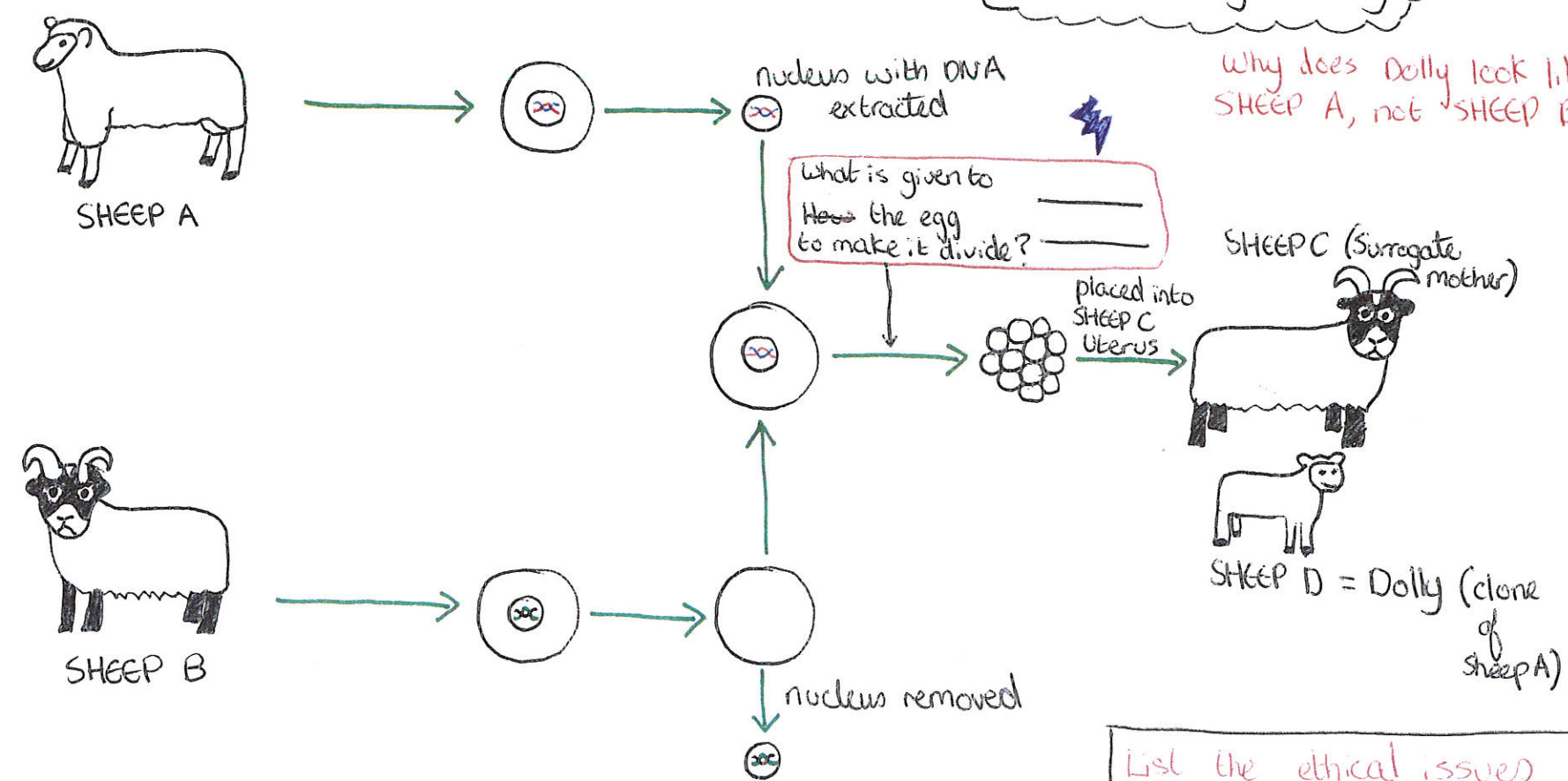
Cloning What type of reproduction is used for cloning? \_\_\_\_\_

How can tissue cultures produce clones?  $\rightarrow$  Give an example of using tissue cultures

Explain how embryo transplants produce clones.  $\rightarrow$  what does "surrogate" mean?  $\rightarrow$  Give an example of using embryo transplants

Adult Cell Cloning and Dolly the Sheep

Cloning + Genetic Engineering



Why does Dolly look like SHEEP A, not SHEEP B?

Why is it useful to clone some animals or plants?

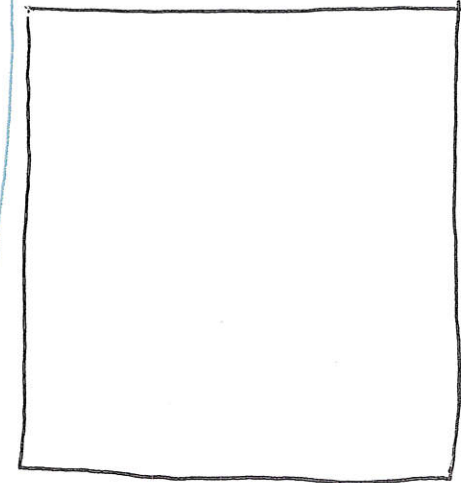
List the ethical issues with adult cell cloning

Genetic Engineering

What is genetic engineering? what does it change?

Draw a diagram to show how scientists can cut out genes from chromosomes

How is this technique used to make insulin using bacteria?



What are GM crops and give some examples?

GM crops ~~are~~ can increase y\_\_\_\_\_ and they may be r\_\_\_\_\_ to insect attack or herbicides.

Why do you think we may need to grow more GM crops in the near future? Hint: population

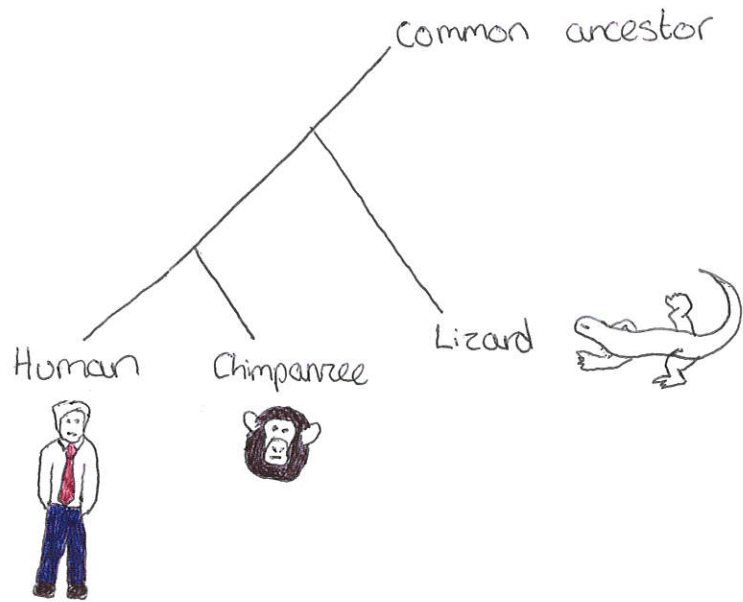
List the main reasons why GM crops ~~are~~ cause debate.

# Classification

How are organisms usually classified?

What are the three kingdoms and what are the main features of each

- 1)
- 2)
- 3)



What does this evolutionary tree show? Which organisms are more closely related + how can you tell?

Pet shops sell white + brown rabbits. White rabbits are easily seen by foxes. Use Darwin's theory of Evolution to explain why white rabbits are rare in the wild

## Evolution

Explain the process of natural selection/evolution using these headings:  
\* You must be able to apply this explanation to lots of different situations \*

1. Mutations + variation
2. Survival + competition
3. The fittest
4. Passing on the advantage

Why would this process speed up if there was a rapid change to the environment?

Why does evolution occur over a long period of time?

List the three main reasons why the theory of natural selection was only gradually accepted?

- 1)
- 2)
- 3)

Complete the table to explain the scientists' different theories of evolution

Lamarck (not accepted)	Darwin (accepted)

# Pathogens

What is a pathogen?

How do bacteria make you ill?

How do viruses make you ill?

Why are they grown at 25°C max at school?

4 ways pathogens can spread

- 1)
- 2)
- 3)
- 4)

4 ways the body stops pathogens entering the body

- 1)
- 2)
- 3)
- 4)

Who was Semmelweis, what did he recommend + why?

How do you safely/correctly set up a culture of microorganisms?

# White blood cells + Immunisation

3 ways that white blood cells fight infection

- 1)
- 2)
- 3)

Which are larger?

Antibodies are types of p\_\_\_\_\_  
They are s\_\_\_\_\_, i.e. they only kill one type of pathogen

Some people consider viruses to be living, others think they aren't, why?

What effect does immunising a large proportion of the population have on the spread of disease + why?

## Infectious Disease

### Antibiotic Resistance

What are antibiotics used for?

Why can they not be used to kill viruses?

Bullet point how bacteria become resistant to antibiotics.  
→ what is the process called?  
n\_\_\_\_\_ s\_\_\_\_\_

Why is it bad to not complete the course of antibiotics or overuse them?

Complete the flow diagram to show how immunisation (vaccine works)

A vaccine contains \_\_\_\_\_ or \_\_\_\_\_ form of the pathogen

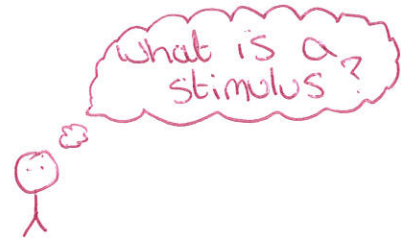
You are immune to this pathogen, as the ~~antibodies~~ white blood cells remember which antibodies to produce quickly to fight the infection.

Complete the table below

Advantages of vaccination	Disadvantages of vaccination

Why is it important to develop new vaccines?

Why are reflexes automatic and rapid?



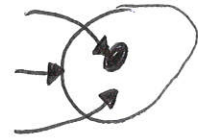
What is the central nervous system made up of?

- 1)
2)

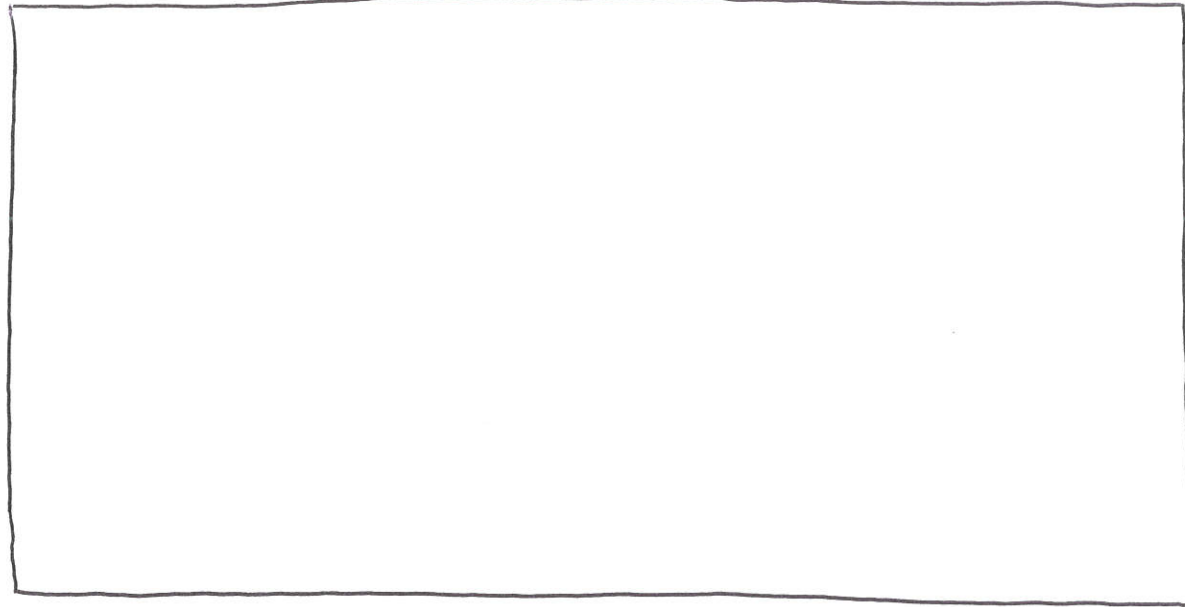
What is the peripheral nervous system?

Name the 3 parts to a receptor cell (same as all animal cells)

- 1)
2)
3)



Draw the reflex arc below



Name some receptors. What do they detect?

- •
•
•

The main effectors are m\_\_\_\_\_ and g\_\_\_\_\_

How are ~~nerves~~ neurones adapted?

The main stages of the reflex action are:

- •
•
•
•
•

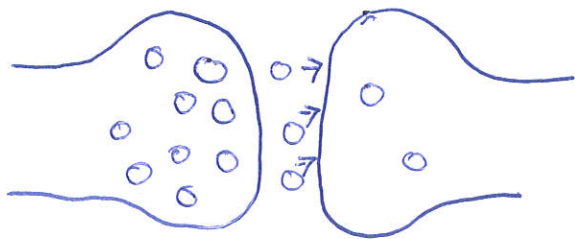
Give some examples of reflex actions

- •
•

In what situation do impulses go to the brain

Explain how impulses pass from neurone to neurone (Think: via S\_\_\_\_\_S)

- 1)
2)
3)
4)



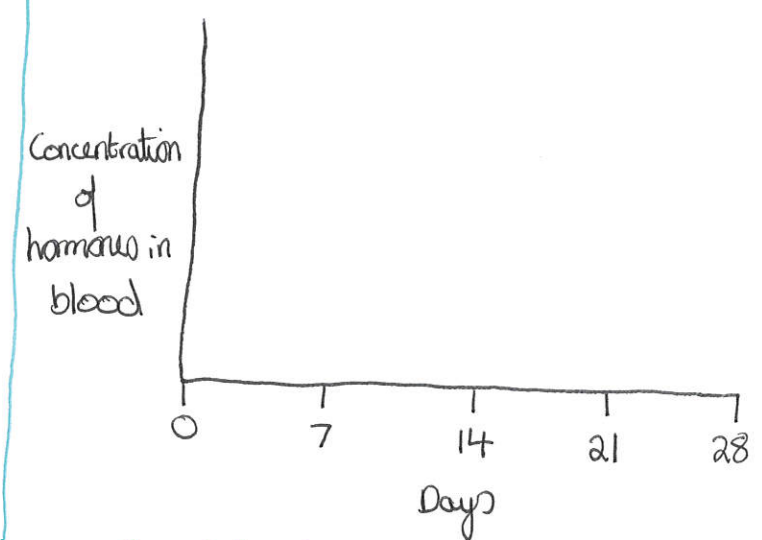
# Homeostasis

What are the four internal conditions that need to be controlled in your body, + why?

- 1)
- 2)
- 3)
- 4)

- What are hormones?
- Where are they secreted?
- Where are they transported to?
- How are they transported around the body?

# Menstrual Cycle



Complete the graph to show levels of oestrogen, progesterone, LH, FSH

Hormones

How do you lose water?

- 1)
- 2)
- 3)

How do you gain water?

- 1)
- 2)
- 3)

What organ + hormones control sugar levels?

How does your body generate + lose heat.

# Complete

	Job	Where it is secreted?
Oestrogen		
Progesterone		
LH		
FSH		

What day of the cycle is the egg released?

When is a woman most likely to conceive?

What was the effect of too much oestrogen on women when the first contraceptive pill was introduced?   
 → What hormone do many modern pills have?

Explain how the oestrogen in contraceptive pills prevents pregnancy.

# Fertility Treatments

How does IVF work? (Discuss the use of LH + FSH)

Benefits of IVF	Problems of IVF

What does tropism mean? → What are the three "tropisms"?

- 1)
- 2)
- 3)

What 3 things do plants respond to?

- 1)
- 2)
- 3)

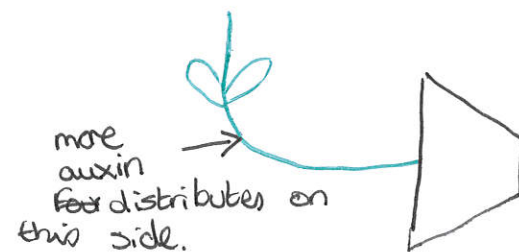
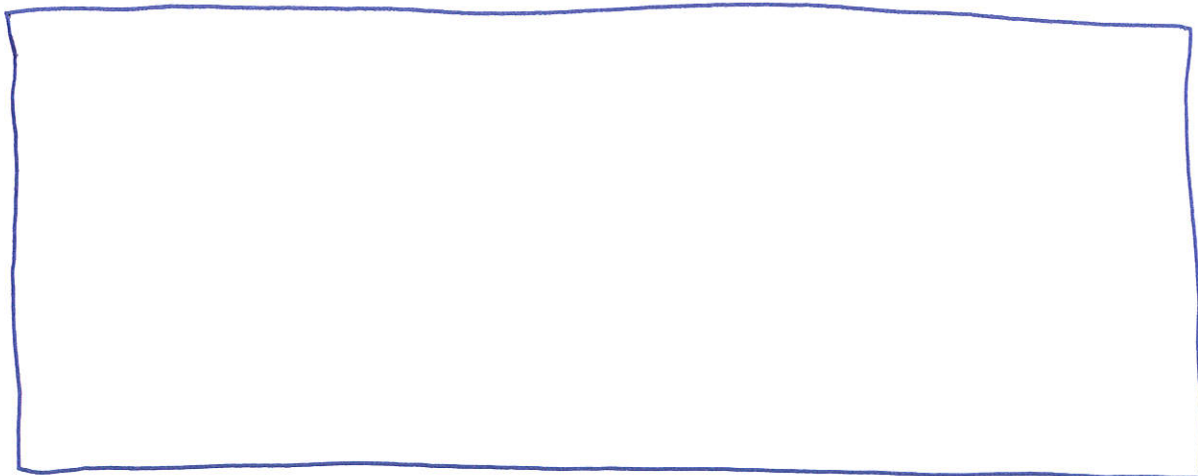
What hormone is produced in the tip of shoots?

← ALWAYS mention this hormone when answering 3-6 mark Qs on plant hormones.

Hormones in Plants

Explain how auxin makes a shoot bend?

Key word: elongate, unevenly distributed.

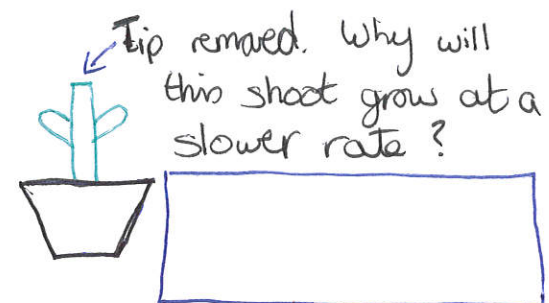


Example of geotropism (negative)

§ This response could happen in a dark room

Example of phototropism (positive)

← more auxin distributed on this side.



What is the advantage of plants responding by:

- Geotropism -
- Phototropism -
- Hydrotropism -

How are hormones used in agriculture + horticulture?

- 1) Weedkillers -
- 2) Rooting powder -
- 3) Fruit ripening -
- 4) Control of dormancy -

# Pyramids of Biomass

Write a food chain for plants/animals in (label producers + consumers)

Sea  
Seaweed →  
Producer

Wood

African Savannah

What do the arrows represent?

Construct pyramids of biomass for two of your food chains below.

Why is biomass lost at each stage?

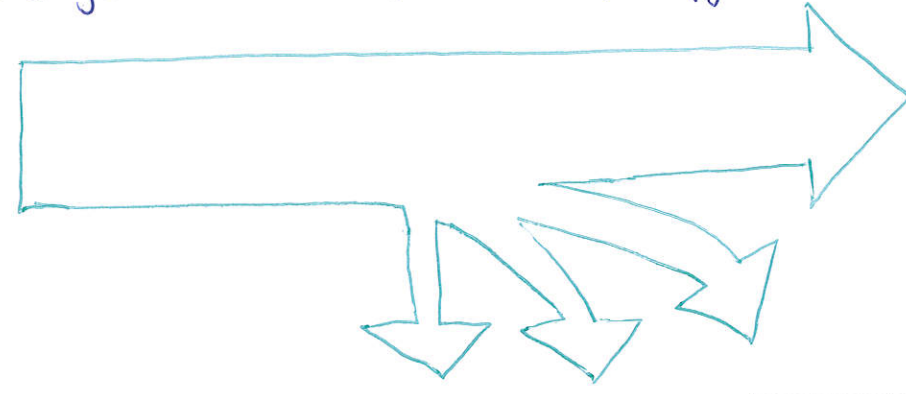
Why might the size of each trophic level change over time?

Energy + Biomass

# Energy flow

Complete the diagram to show how biomass/energy is lost at each trophic level.

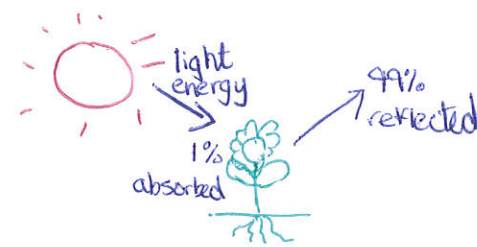
Biomass/Energy From Food



Biomass/Energy used for biomass of consumer

Why do warm-blooded animals have to eat more food/biomass than cold-blooded animals?

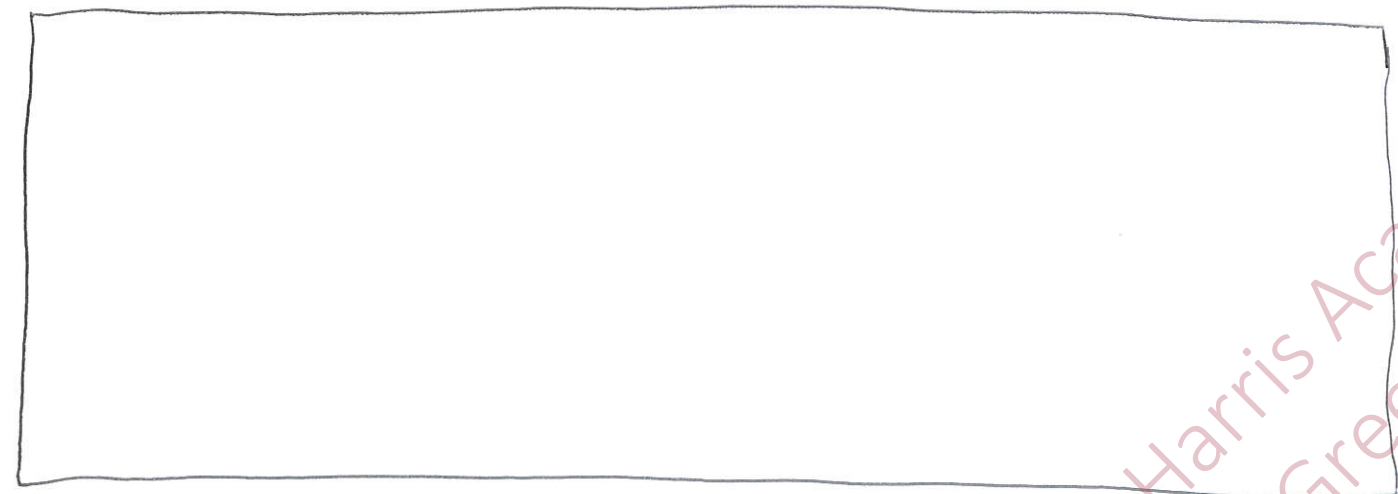
Why are food chains rarely more than 5 organisms long?



How do producers convert light energy into chemical energy?

~~How do consumers~~

A\* Q: On free-range farms the animals are allowed to roam freely outdoors. Explain why these animals are more expensive in butchers + supermarkets.



## Testing New Drugs

Number the steps involved with testing new drugs in clinical trials/labs.

1)

\* Drugs must be tested for t\_\_\_\_, e\_\_\_\_ and d\_\_\_\_ \*

What were the effects of thalidomide on pregnant women? What was it supposed to cure?

What is a placebo?

What is a double blind trial and explain its advantages.

What does prescribed mean?

Overall, the impact of legal drugs (prescribed) + non-prescribed on health is much greater than illegal drugs; far more people use legal drugs.

Drugs

## Recreational and Hard Drugs

What is a drug?

What may drugs alter?

What are the effects of these drugs on the body:

1) Cannabis (Recreational)

2) Ecstasy

3) Heroin (Hard drug)/Cocaine (Hard drug)

4) Caffeine + Nicotine (legal drugs)

5) Alcohol

Explain these two terms:

- Withdrawal.
- Addiction.

→ Why may some people move from recreational to hard drugs?

## Sport drugs

Which drugs build up muscle mass?

What are the harmful side effects?

Why do some athletes choose to take them?

Why is it unethical to take drugs to enhance performance?

Harris Academy  
Greenwich



## Malnourishment

What is a deficiency disease?

What does obese mean?

How do you become underweight?

How do you become overweight?

## Type 2 diabetes

- How is it caused?
- What are the effects?

## Cholesterol

What is cholesterol used for?

What are the two types and what does each type do?

1)

2)

What are statins + how do they work?

Diet and Exercise

## Metabolism

What is metabolic rate?

Three factors which affect metabolic rate

1) How does activity link to m.r.?

2) How does muscle to fat ratio link to m.r.?

→ Why do men generally have higher m.r.?

3) How do inherited factors link to m.r.?

## Food Groups

	Role in body	Example foods
Protein		
Carbohydrates		
Fats		
Vitamin/minerals		
Water		
Fibre		

What does adaptation mean?

## Adaptation

How are plants adapted to dry environments?

- 1)
- 2)
- 3)

Complete the table

Cold Environments		Hot/Dry environments	
Adaptation	How it helps survival	Adaptation	How it helps survival

Organisms may also be adapted to prevent being eaten

- 1) thorns on plants
- 2) camouflage
- 3) warning colours
- 4) poisonous.

Interdependence + Adaptation

List some organisms that are found in hot + cold environments

- |  |   |
|--|---|
| <p>Hot</p> <ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> </ul> | <p>Cold</p> <ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> </ul> |
|--|---|

### \* Competition \*

List all the things animals may compete for

An organism that is adapted to extreme environments are known as e\_\_\_\_\_s. They may

- be tolerant of
- 1) high levels of salt
  - 2)
  - 3)

Explain what will happen to ground plants in a woodland when a large tree falls + dies. (In context of competition)

List all the things plants may compete for

## Environmental Change

Name 3 living factors that can cause a change in distribution of organisms

- 1)
- 2)
- 3)

Name 3 non-living factors that can cause a change in distribution of organisms

- 1)
- 2)
- 3)

## Indicating pollution

What are pollutants?

What are indicator species?

What three non-living indicators suggest levels of pollution?

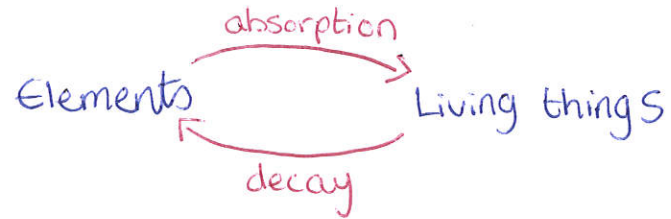
- 1) Oxygen levels
- 2)
- 3)

Complete the table to show how these can be used as indicator species

Lichen (indicator for air pollution)	Invertebrates (indicator for water pollution)

## Decay

- Elements are constantly recycled in nature
- Plants absorb ~~elements~~ elements (e.g. carbon + nitrogen) from soil and build them into molecules for plant growth
- Animals eat the plants and molecules become part of the animal
- Animals + plants die + return the elements into the environment



Give some examples of detritivores

What is the job of detritivores?

Give some examples of decomposers

What is the job of decomposers

what is saprotrophic feeding??

---

---

---

What 3 (or 4) conditions are needed for decay

- 1)
- 2)
- 3)
- 4)

Why is Autumn a good season for decay?

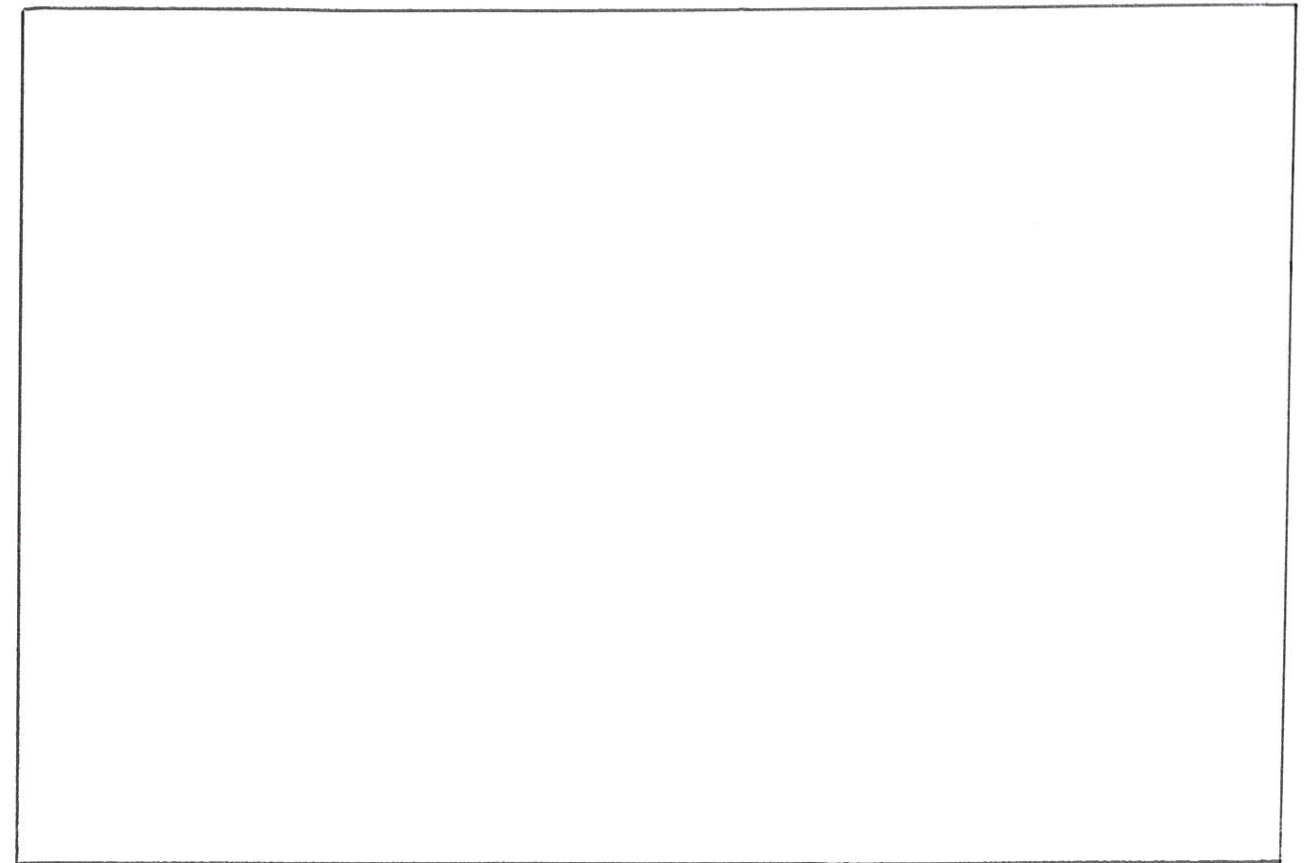
## Carbon cycle

Why is carbon important...?

How is carbon removed from the atmosphere?

How is carbon returned to the atmosphere?

Draw the carbon cycle below



Decay +  
Carbon Cycle

How can you make compost and why is it useful? Relate it to decay.

Describe how the actions of humans are leading to an imbalance in the carbon cycle...

# Variation & Genetics

List characteristics determined by your genes

How do you get genes from your mum + dad? ~~How are they~~ what cells fuse to bring these genes together?

List characteristics determined by the environment

List characteristics determined by both.

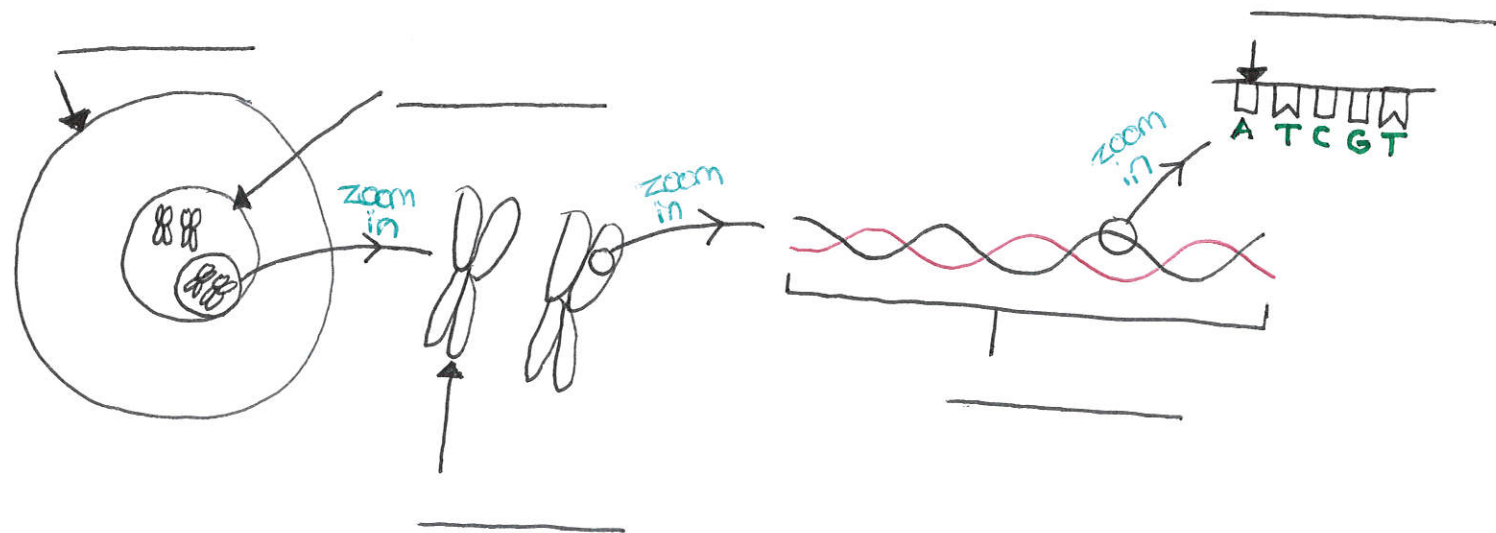
How many chromosomes do you have in your cells and where are they found in the cell?

Where do you get your chromosomes from?

Variation and Reproduction

What is a gene, where are they located and what do they code for?

Label this diagram



# Reproduction

Complete the table to compare asexual + sexual reproduction

	Sexual	Asexual
Number of parents		
Appearance of parent + offspring	Similar	
Genetic variation?		
Sex cells needed?		No
Example of organism that reproduces this way		

How can plant cuttings produce identical offspring (clones) to parent?

How do plants reproduce ~~as~~ sexually?

THINK

Sometimes new cuttings are placed in a pot and a clear plastic bag is placed over the whole thing. Why?  
Hint: genes + environment