The movement of particles across membrane

It is important to note that the very last image although looks like nothing is moving, but in fact all the particles are moving. But equal amounts are moving in each direction.

Temp also affects the rate

- Increase- particles move faster
- Diffusion occurs faster as the random movement of articles speeds up

<u>Diffusion in living organisms:</u>

NOTE: in all of these the solution/gas move along the CG from high C (where they are) to low C (inside the cell) by diffusion

- Water and glucose move into the cells by diffusion
- The amino acids from the breakdown of proteins in the gut
- Oxygen from the air gets into the RBC through the cell membranes

To make diffusion easier the SA of the cell membrane is bigger in some cells

- This is because there is more room for diffusion to take place, and more of a substance moves in a given time
- To can be done by folding the cell/tissue

<u>Tissues and organs</u>

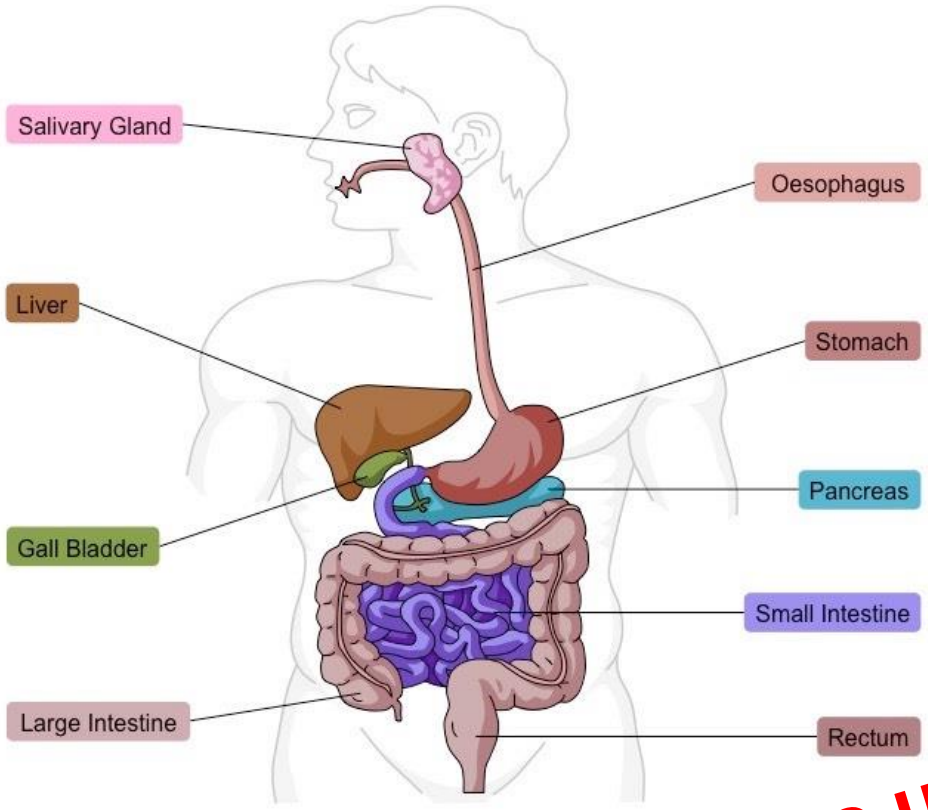
Tissue- a group of cells with a similar structure and function, working together

Animal:

- Muscular tissue: contract to bring about movement
- Glandular tissue: secretory cells produce substances like enzymes and hormones

Plant:

- Epidermal tissue: cover the surface and protect plants
- Mesophyll tissue: contain chloroplasts to carry out photosynthesis



The digestive system is a muscular tube that squeezes food through

There are glands that produce enzymes to break the food down

The soluble food is absorbed in the small intestine into the blood, to get transported around the body

The small intestine has a large SA to increase diffusion

Insoluble foods are passed into the large intestine where water is absorbed, and the foods are passed out the anus as faeces

<u>Plant organs</u>

Tissues- Mesophyll, xylem, phloem

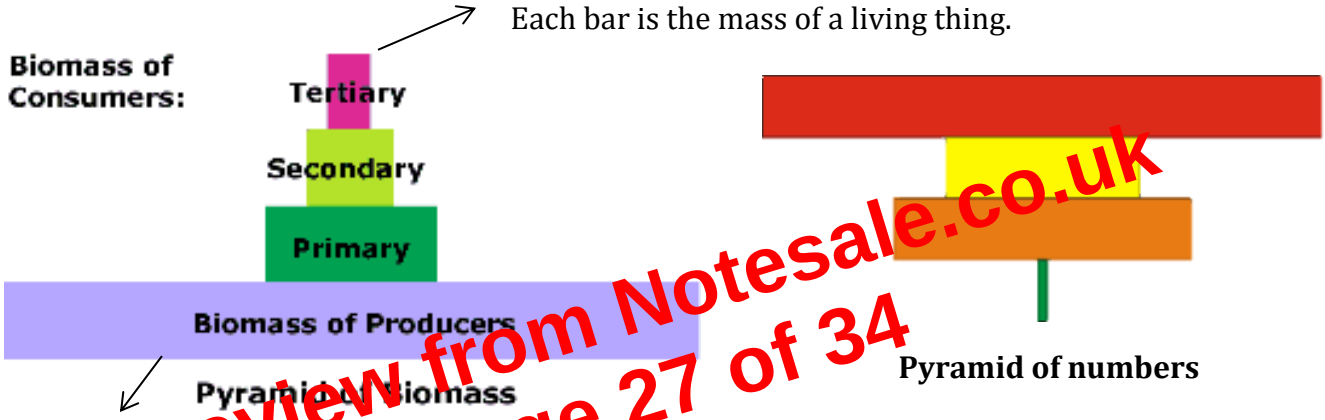
Organs- leaves, stem, roots

B1.5- ENERGY IN BIOMASS

Pyramid of Biomass

Biomass- the dry mass of living material in a plant/ animal

- Built up using energy from the sun
- Plants absorb this energy to be used photosynthesis for food, which is stored as chemical energy, in plants/algae= this is biomass
- Biomass is passed through the food chain, when animals/plants eat each other



Always in a pyramid, whereas a pyramid of numbers can be any shape

When energy is passed on it gets less each time, so food chains are generally quite short.

Where energy is lost:

1. Not all producers are eaten- so not all energy is passed on

2. Only a small amount of energy is in the cells, so only a little is passed on

3. Respiration releases energy
4. Movement:
    - Energy is used in respiration to supply energy to the body

Carbon Cycle:

All the main molecules that make up our bodies (carbohydrates, proteins, fats and DNA) are based on C atoms combined with other elements

Carbon cycle- constant cycling of carbon in nature:

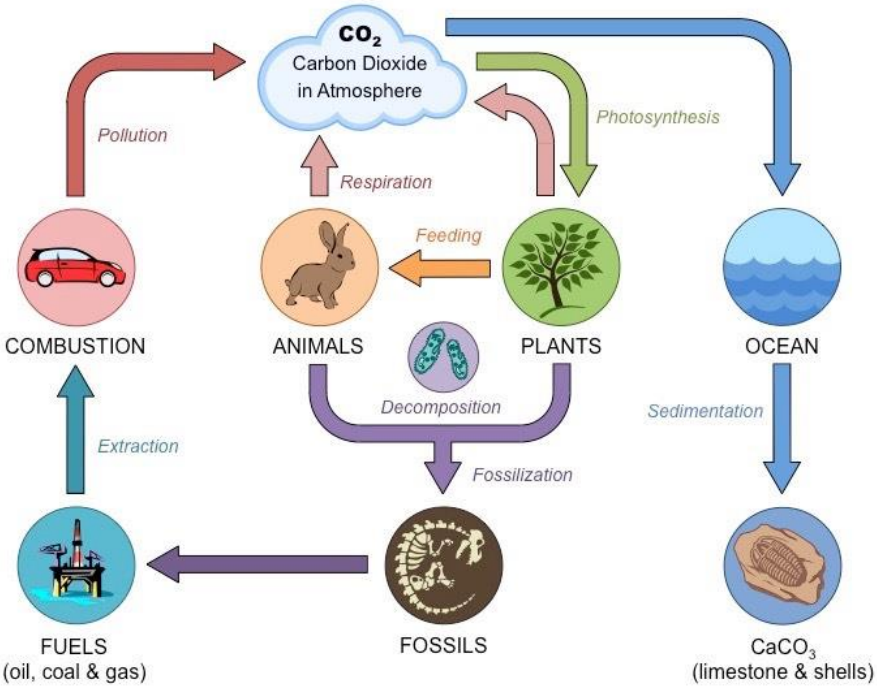
1. Photosynthesis:
    - Plants use CO2 for carbohydrates, proteins and fats
    - These make up the biomass of the plant
    - Carbon is then passed on to the animals
    - And goes on to become a part of the carbs, proteins and fats in these animals

2. Respiration
    - CO2 is produced as waste, so C is returned to the atmosphere
    - When plants and animals die they are broken down by decomposers an detritus feeders

3. Combustion
    - Fossil release CO2 when burnt back into the atmosphere
    - The carbon in the fossil fuels is from the plants it is made from

As we burn more fossil fuels there is more CO2 going into the atmosphere- the Carbon cycle cannot cope.

- If the levels increase it will lead to global warming



- They can make a species extinct by eating all its food, water or territory, or in the case of plants, light

4. Environmental change
    - Changes in climate have caused mass extinctions throughout history
    - Organisms that thrive in the heat don't in the cold (ice age) and vice versa

Mass extinctions

Where many species on the earth die out

Evidence suggests that a single catastrophic event is often the cause of these

- This could be a volcanic eruption or an asteroid

The dinosaurs

Went extinct 65m years ago when a giant asteroid hit the earth in Chicxulub in Mexico

Evidence of this

- The huge crater (180km in diameter)
- A layer of rock formed from the crater debris around the world, and the further from the crater you go the thinner this gets
- Also below the crater there are lots of minerals only formed when rock it hit with massive force (an asteroid)

The impact would have caused fires, earthquakes, tsunamis, landslides

Also lots of material would have been blasted into the atmosphere, making almost everywhere dark, so plants struggled to survive

The drop in temp caused a global winter

50%- 70% of living species became extinct

Summary of causes of extinction:

- Environmental changes
- New predator
- New disease
- Can compete
- Catastrophic event
- Specialisation