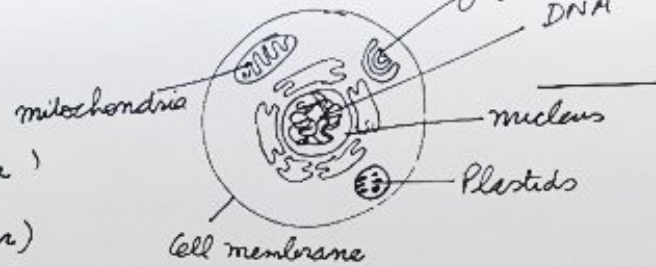
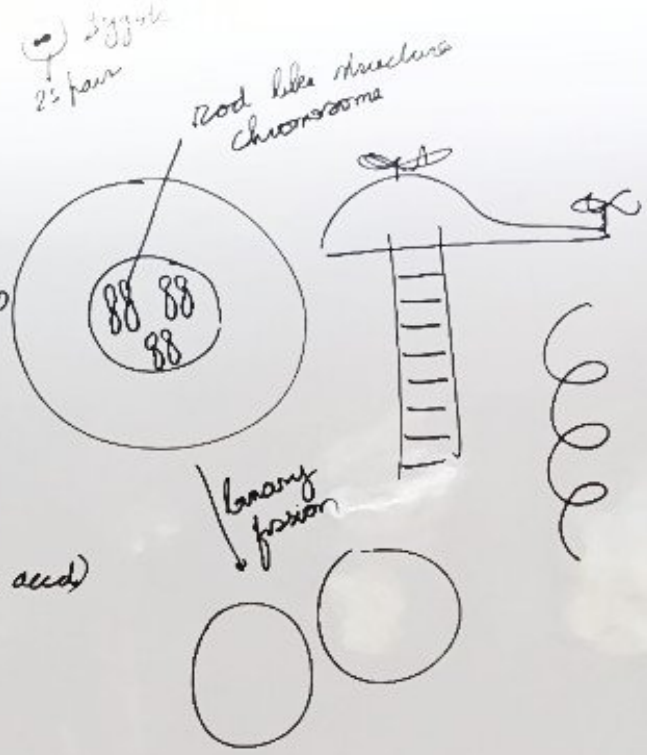
We are made of cell. Cell is smallest living unit of all living organisms. Cell can take nutrition, respiration, growth, reproduction and do excretion.

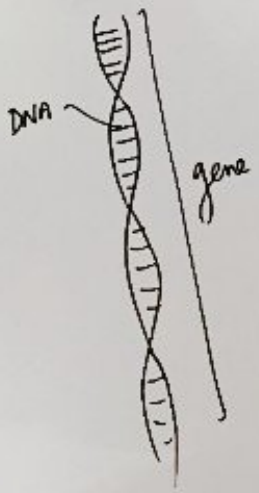
DNA is genetic material which contains code of protein synthesis.

Protein → structural (feature)
→ hormones (Gender)
→ Enzymes (Biochemical reaction)





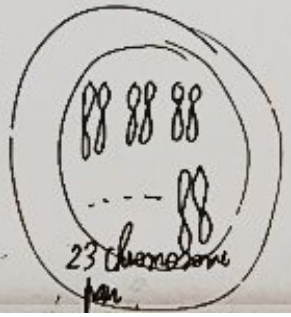
DNA is double stranded helical structure. It is very long. (Deoxyribonucleic acid)

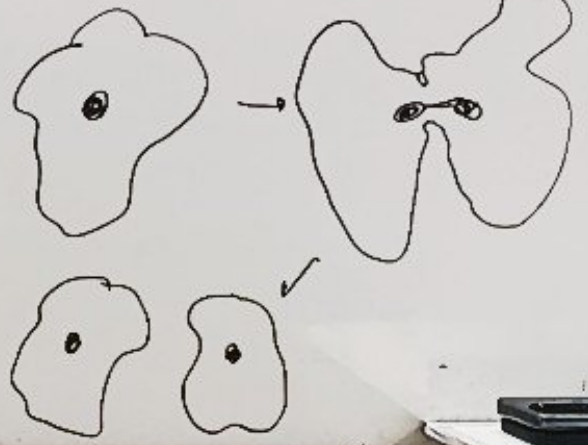


Gene :- A long part of DNA which determine one character in us is called gene.

Chromatin :- Enlarged form of DNA is called chromatin.

Chromosome :- When cell is about to divide then genetic material get condensed in rod like structure called chromosome. Chromosome occurs in pair. Human body all contains 23 pair of chromosome. Human sex cell (sperm / ovum) contains 23 chromosome.





Genetic material or genes is responsible to transfer characters from parents to offspring / progeny / new borns

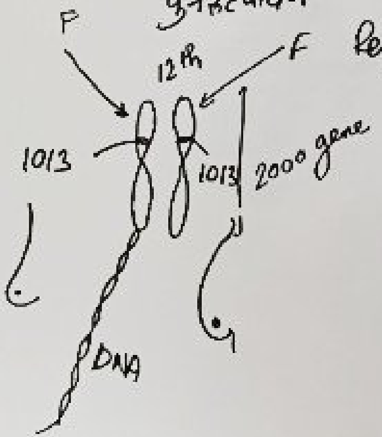
Genetic material can be DNA, genes, chromosomes or chromatin

Young ones resembles in their features to their parents. Young ones inherit (लेते हैं) traits/ features/ characters from their parents. This transfer of features is called heridity or inheritance (अनुवांशिकता)

species (प्रजाति): group of individual which closely resembles with each other and can reproduce viable fertile young ones is called species eg Human species, dogs, cows. Within a species there is slight difference between individuals. This is called variation.

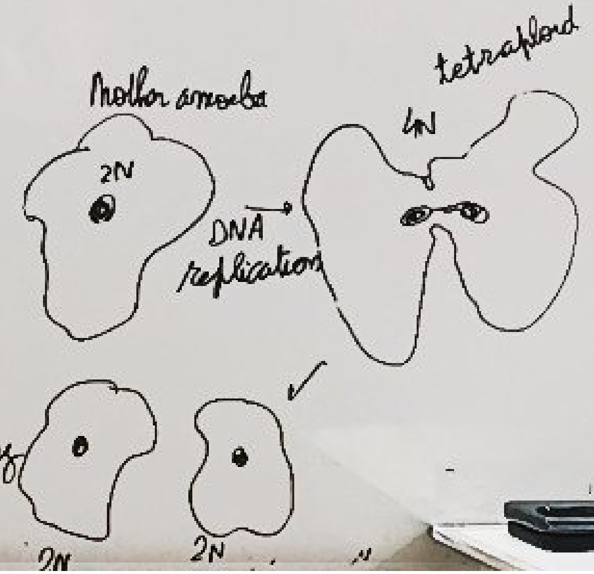
Reproduction (प्रजनन): It is producing young ones like them by preexisting species is called reproduction. eg Cow gives birth to calf.

Reproduction is responsible for continuation of life of species on earth



Reproduction

asexual	sexual
• In this only one parent is involved.	• 2 parents are involved
• No sex cell/ germ cell/ gamete/ specialised cell (pollen/ ovum/ sperm)	• Reproductive organs alongwith sex cell are present
• It leads less variation	• It leads more variation
• This takes place in simple organism having cellular level or tissue level	• It takes place in organisms having complex body designs eg in organ & organ system level.



eg unicellular organisms
(amoeba, paramecium, Euglena, bacteria)

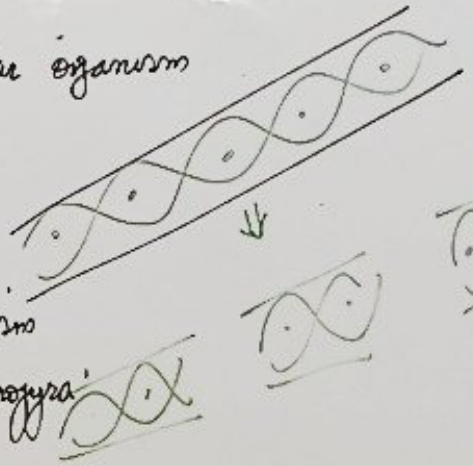
Multicellular organism developed upto tissue level - Planaria
Hydra, star fish.
Spirogyra

① Draw diagram of binary fission in amoeba
② Draw diagram of animal cell and label its parts
③ Differentiate between sexual and asexual reproduction
④ Define: DNA, gene, Chromatin, chromosome, reproduction
⑤ Define: Genetic material, heredity, binary fission, fragmentation

Asexual reproduction

→ ① Binary fission When mother cell subdivides into 2 daughter cells. It takes place in unicellular organisms. eg. Amoeba, paramecium, bacteria

→ ② Fragmentation When multicellular organism grow beyond a certain size automatically break into few parts and each part start existing as living organism It is called fragmentation eg spirogyra



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