

BAL BHARATI PUBLIC SCHOOL PITAMPURA
CLASS XII (SESSION 2020-21)
BIOLOGY
CHAPTER - GENETICS (PART II)

INSTRUCTIONS-

STEP 1- READ THE CHAPTER HUMAN REPRODUCTION AND PRINCIPLES OF INHERITANCE(GENETICS PART 1)

STEP 2- SET UP A LINK BETWEEN THE TWO CHAPTERS THROUGH CONCEPT MAPPING/ FLOWCHART

STEP 3- READ GENETICS PART II

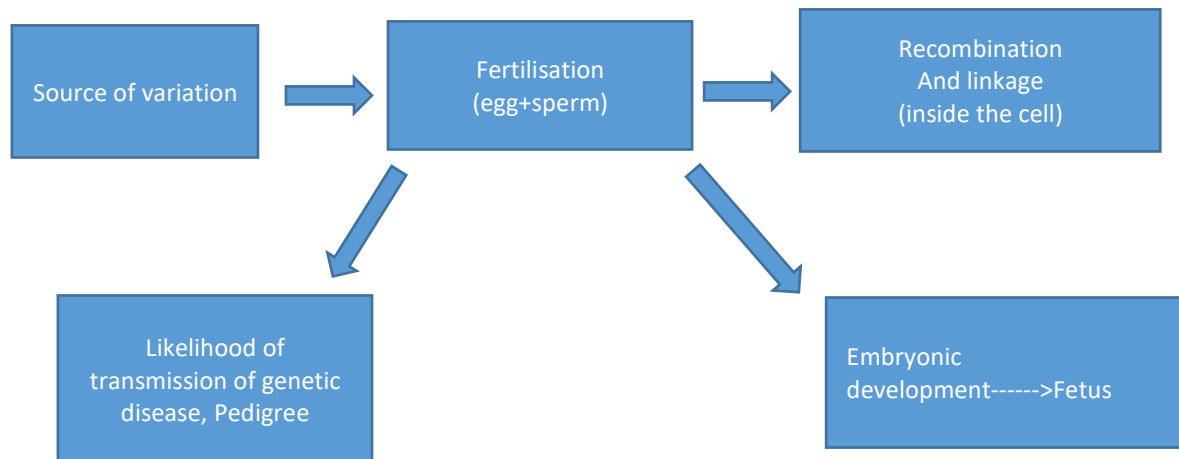
SOME BASIC CONCEPTS OF HUMAN REPRODUCTION ARE ALSO INCLUDED IN THIS PLAN.

STEP 2- READ THE NOTES CAREFULLY.

TOPIS COVERED :

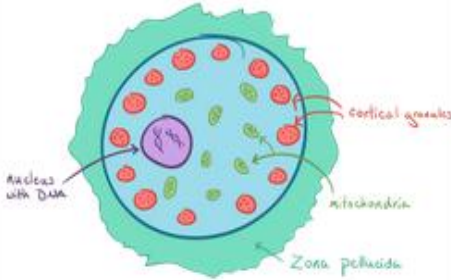
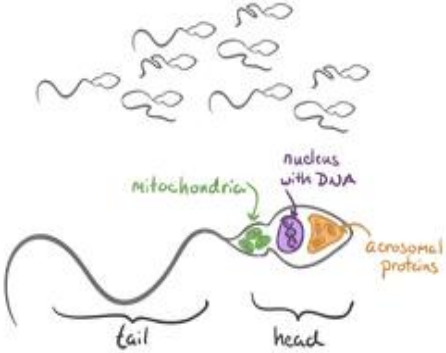
- A FERTILISATION
- B DIFFERENCES BETWEEN MALE GAMETE AND FEMALE GAMETE
- C SIGNIFICACE OF COMBINATION OF DIFFERENT GENES

STEP 3- ATTEMPT BACK EXERCISE QUESTION OF THE TEXTBOOK



FERTILISATION

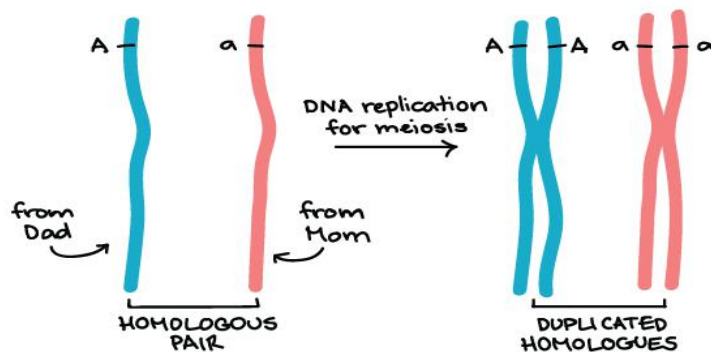
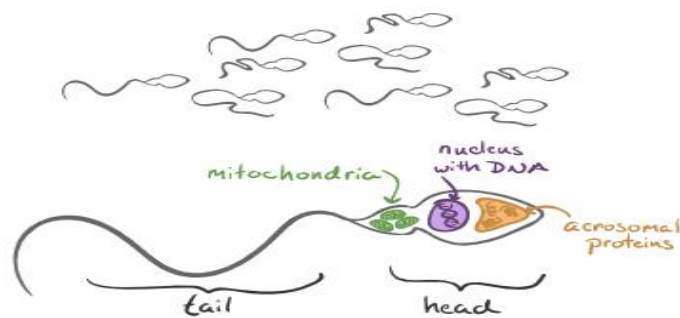
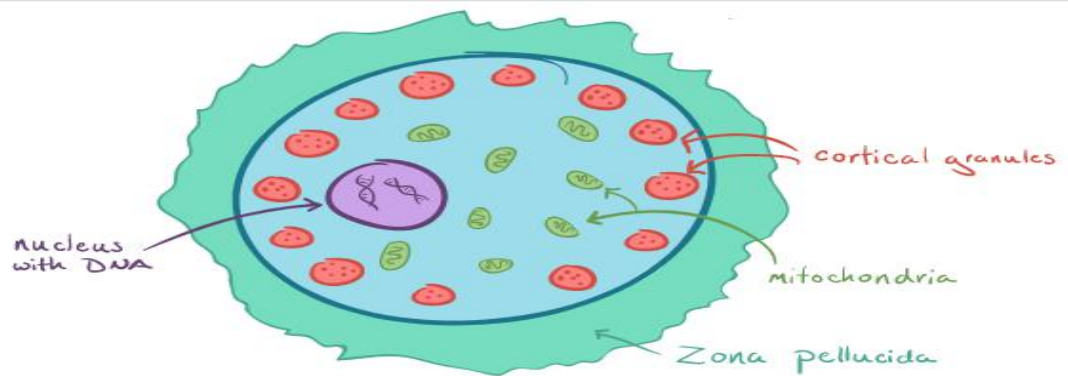
Term	Meaning
Gamete	A reproductive (sex) cell. In males, sperm; in females, eggs
Fertilization	The process in sexual reproduction in which a male gamete and female gamete fuse to form a new cell
Zygote	Cell resulting from fertilization
Diploid (2n)	Cell that contains two sets of homologous chromosomes
Haploid (n)	Cell that contains only a single set of genes
Apoptosis	The process of programmed cell death
Differentiation	The process by which cells become specialized in structure and function

	Egg	Sperm
How many participate?	1 per menstrual cycle	~250-280 million per ejaculation
Size	Largest diameter cell in the human body: ~0.12mm	~ 50µm long (10,000x smaller than the egg)
Ploidy	Haploid, but meiosis II uncompleted	Haploid: 23 chromosomes
Mitochondria	100-200,000	75-100
Special features:	<ul style="list-style-type: none"> · Zona pellucida: outer glycoprotein coat · Cortical granules: enzyme packets within the cell 	<ul style="list-style-type: none"> · Tail for propulsion · Mitochondria in the middle for energy · Acrosome: packet of enzymes in the head
Graphic Representation	 <p>A hand-drawn diagram of an egg cell. It is roughly spherical with a green outer layer labeled 'Zona pellucida'. Inside, there is a purple nucleus labeled 'Nucleus with DNA', several red dots labeled 'cortical granules', and several green bean-shaped structures labeled 'mitochondria'.</p>	 <p>A hand-drawn diagram of a sperm cell. It has a long, wavy 'tail' and a 'head' at the front. Inside the head is a purple nucleus labeled 'nucleus with DNA', a green bean-shaped structure labeled 'mitochondria', and an orange area labeled 'acrosomal proteins'.</p>

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Why so many mitochondria are present in the egg?

What is the reason behind large size of the egg?

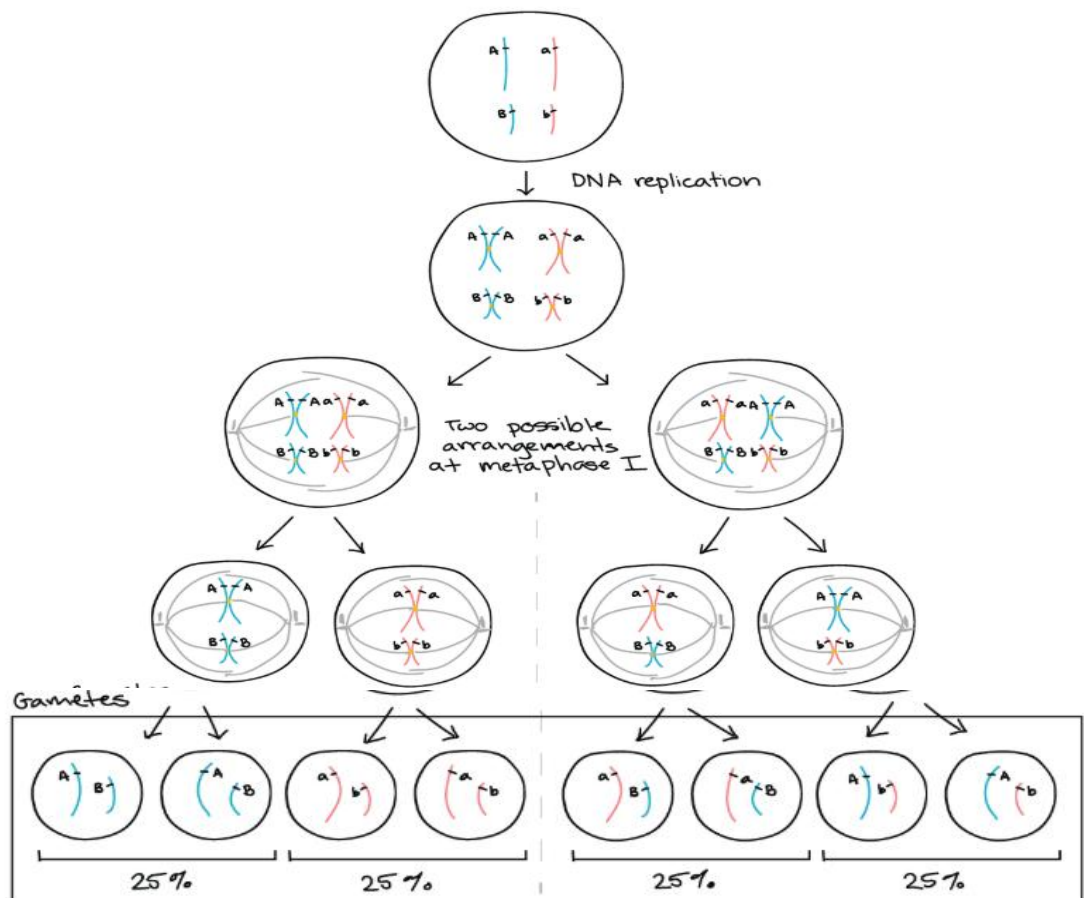
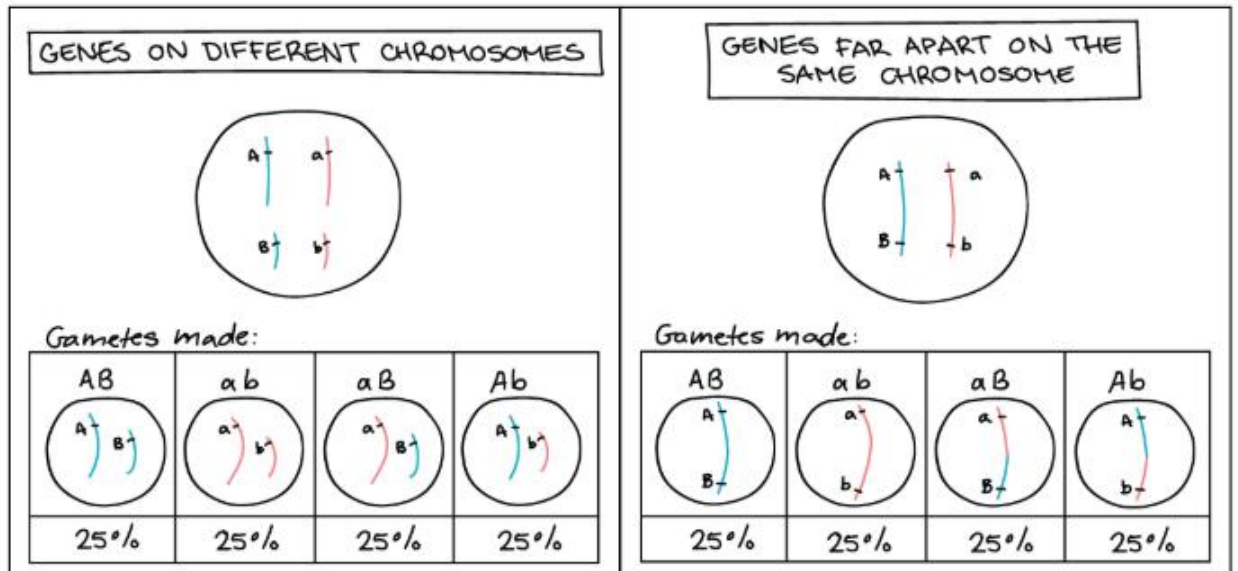


Define homologous pair.

What is the reason behind formation of X shaped chromosomes?

Now you can understand what is the significance of genetic combinations and how is that related to the study of genetics.

The diagram given below explains how genetic combinations are made.



Genetics is the study of heredity, the process of a parent passing certain **genes** to their children. A person's appearance -- height, hair color, skin color, and eye color -- is determined by genes. Other characteristics affected by heredity are:

- Likelihood of getting certain diseases
- Mental abilities
- Natural talents

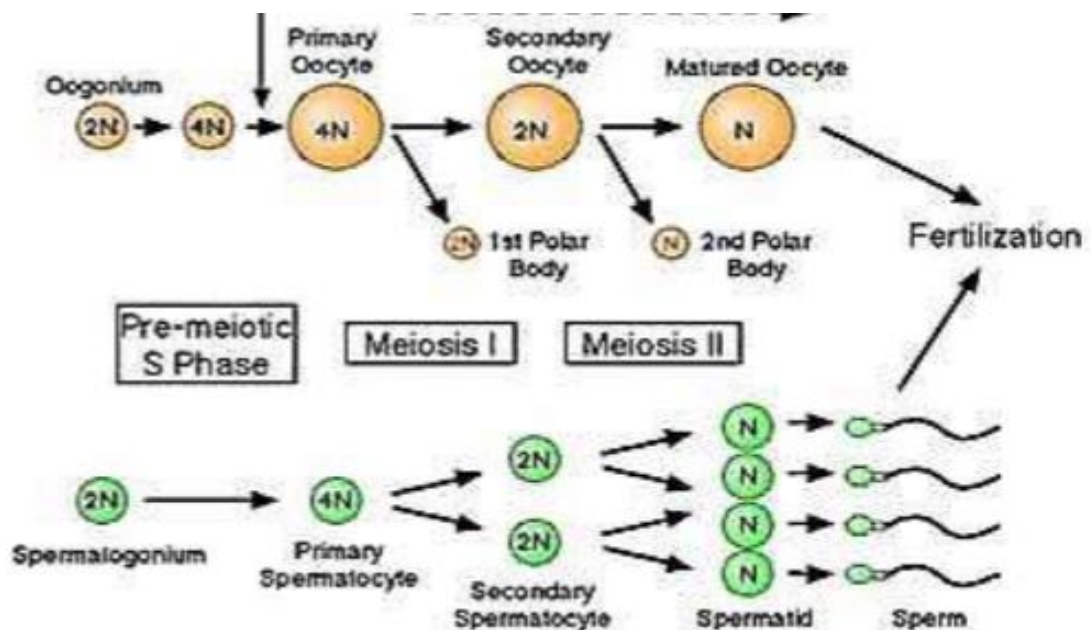
An abnormal trait (anomaly) that is passed down through families (inherited) may:

- Have no effect on your health or well-being. For example, the trait might just cause a white patch of hair or an earlobe that is longer than normal.
- Have only a minor effect, such as **color blindness**.
- Have a major effect on your quality or length of life.

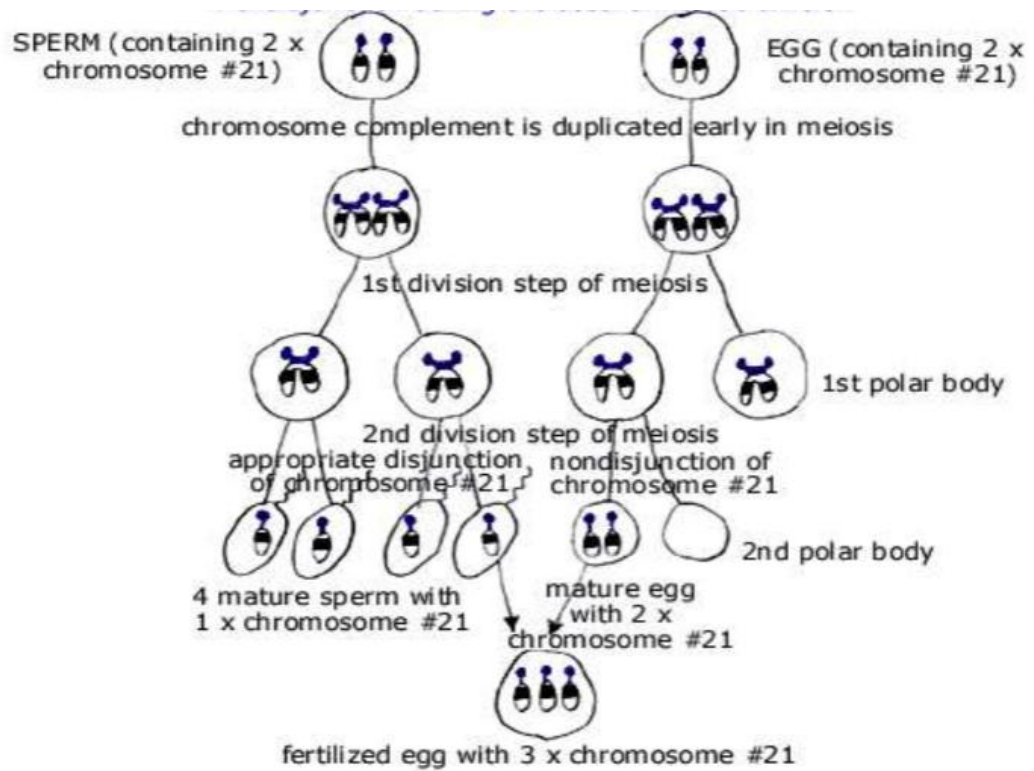
For most genetic disorders, **genetic counseling** is advised. Many couples may also want to seek prenatal diagnosis if one of them has a genetic disorder.

Answer the following questions. (Picture based)

1. Which cells are involved in Meiosis I and which are in Meiosis II?
2. What do 2N and 4N indicate?
3. What is the reason behind formation of only 1 egg whereas sperm produced are 4 in number?



4. Interpret the image given below.



BBPSPP