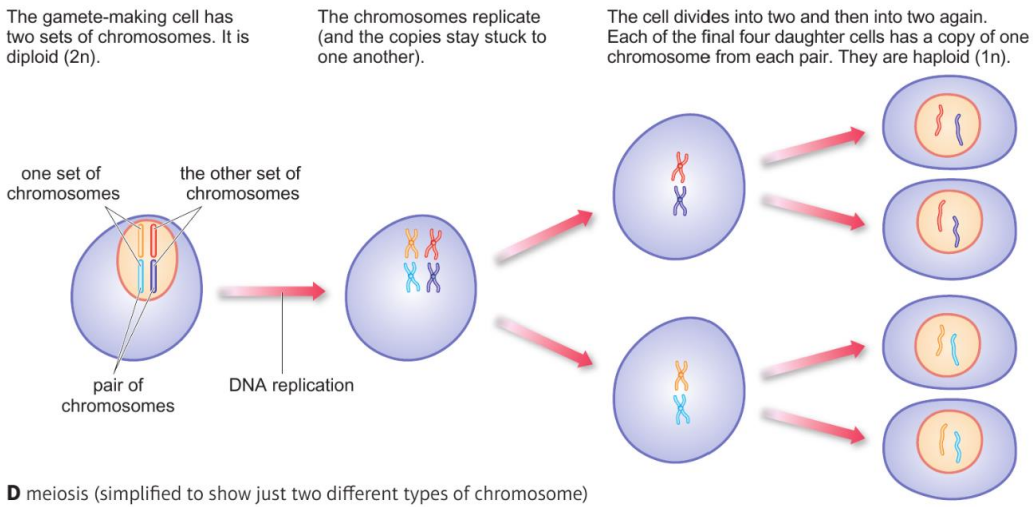
St Michael's CE High

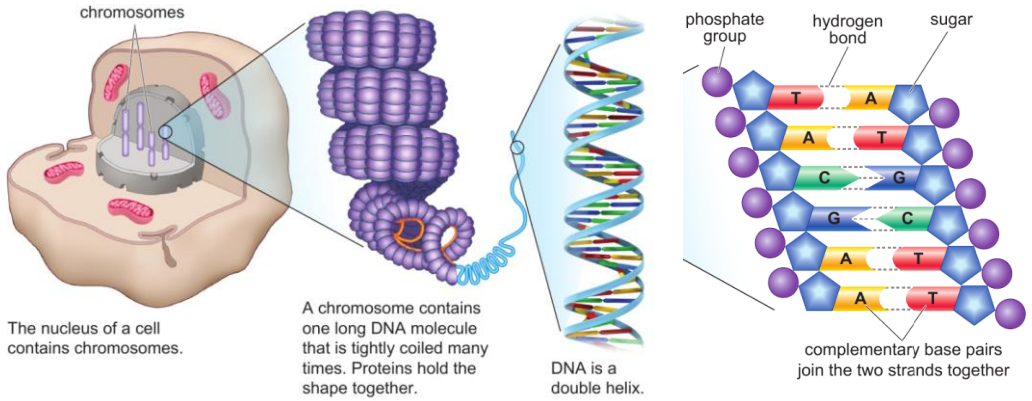
Knowledge Organiser: Biology, CB3a

Jesus grew in wisdom and stature" Luke 2:52

1	**Gametes** are made in reproductive organs (in animals ovaries and testes)
2	Cells divide by **meiosis** to form gametes
3	In meiosis: Copies of genetic information are made , the cells **divide twice** to form daughter cells each with **half** the number of chromosomes
4	**Haploid** gametes are **genetically different** from each other
5	Gametes join at **fertilisation** to restore the number of chromosomes
6	Genetic material in the **nucleus** is composed of **DNA**
7	DNA is a **polymer** made up of **two strands** forming a **double helix**
8	DNA is a polymer made from **four different nucleotides**. Each nucleotide consists of a **common sugar, phosphate group and one of four different bases; A, C, T & G**
9	A **gene** is a small section on a **chromosome**.
10	A gene codes for a **sequence of amino acids** to make a **specific protein**
11	A sequence of **3 bases** is the code for a particular amino acid, The order of bases controls the **order** in which amino acids combine and fold to produce a specific protein



D meiosis (simplified to show just two different types of chromosome)



Crush fruit with a buffer solution containing detergent

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Filter the mixture

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Add ethanol and remove the DNA

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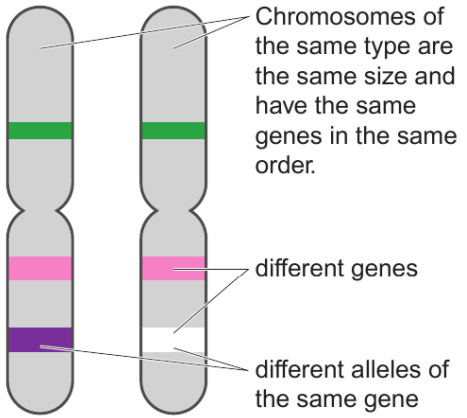
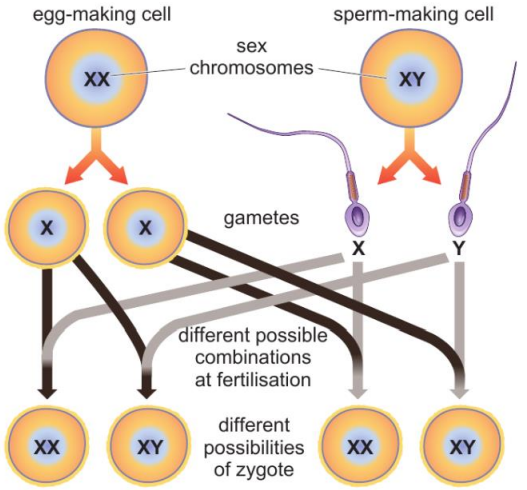
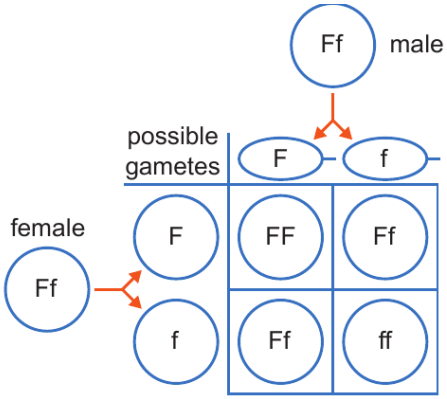
12	**Variation** is the difference in the characteristics of individuals in a population.
13	There is extensive variation within the **population of a species** e.g. hair colour, skin colour, height.
14	Variation may be due to **genetic cause (inheritance)**, **environmental causes** or a **combination of genes and environment**
15	**Gregor Mendel** caried out breeding experiments on plants and showed that **inheritance** of each characteristic is determined by units that are passed on to descendants unchanged.
16	**Zygote**- A single cell that results from fusion of egg and sperm cells.
17	**Allele**- Alternate forms of the same gene
18	**Dominant**- A type of allele- always expressed if one copy present
19	**Recessive**- A type of allele- only expressed when paired with another recessive allele
20	**Homozygous**- Pair of the same alleles, dominant or recessive
21	**Heterozygous**- Two different alleles are present 1 dominant and 1 recessive.
22	**Genotype**- Alleles that are present for a particular feature e.g. BB, Bb, bb
23	**Phenotype**- Physical expression of an allele combination e.g. black fur, blonde hair, blue eyes.
24	The **whole human genome** has now been sequenced which allows us to search for genes linked to different types of disease, understand and treat inherited disorders, trace migration patterns from the past, study evolution







C Punnett square for parents that are heterozygous for the CF gene