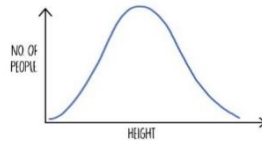


**1) Variation (Recap yr7)**

Variation is the differences in characteristics between individuals in a population.

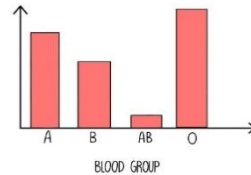
- Continuous** variation – characteristics which can take **any numerical value** and needs to be **measured**, e.g. height and wing span.

Continuous variation is presented in line graphs.



- Discontinuous** variation – characteristics which have a **limited number of values** and can be put into **groups**, e.g. eye colour and blood group.

Discontinuous variation is presented in bar charts.

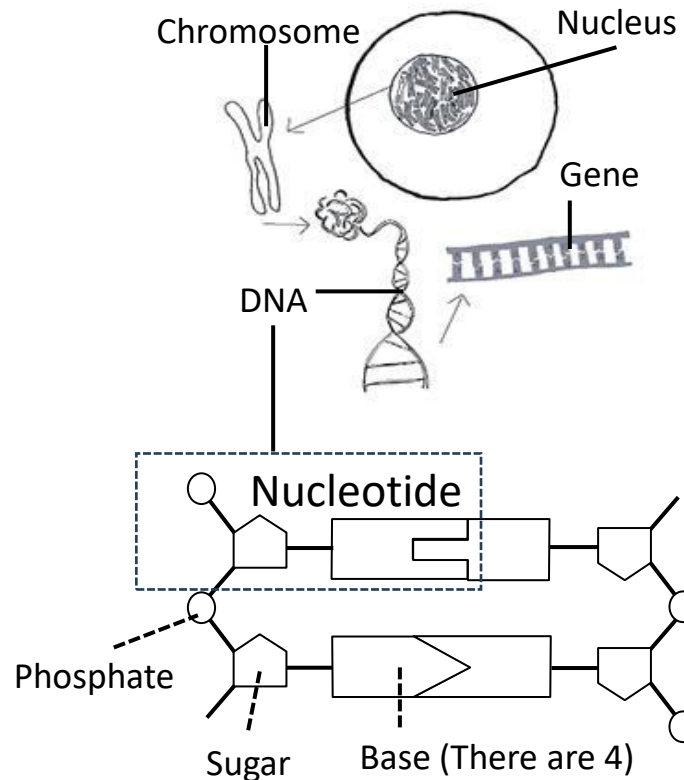
**2) Causes of Variation (Recap yr7)**

- Genetics** – Inherited from parents, such as eye colour and blood group.
- Environment** – How we live and the choices we make, such as scars and tattoos.

**OR both genetics and environment**, such as height and weight.

**3) Adaptation (Recap yr7)**

Living things are adapted to their **habitats** - they have **special features that help them to survive**.

**4) DNA: Where is it? What does it look like?****5) How does DNA work**

**DNA** has a code made up of **bases**.

**Genes** are sections of DNA with the code for **proteins**. Proteins determine our **characteristics**.

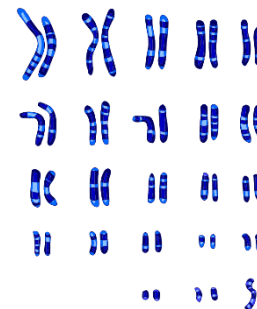
**6) Human genetics key ideas****Numbers of chromosome**

Normal human cell – 46 (23 pairs)

Sperm or egg – 23 (1 of each pair)

**Gender in humans**

Male XY Female XX

**7) Genetics key terms**

**Chromosome** – A strand of DNA

**Gene** – Part of a chromosome with code for a protein

**Allele** – A version of a gene

**Homozygous** – An individual has 2 copies of the same alleles

**Heterozygous** – An individual has 2 different alleles

**Dominant** – An allele that is expressed when only one is present

**Recessive** – An allele that is expressed only if 2 are present

**Genotype** – The genetic makeup of an individual

**Phenotype** – The observable characteristics

**Mutation** – A change in the bases in a gene (that can lead to a new protein and, therefore, a new phenotype.)

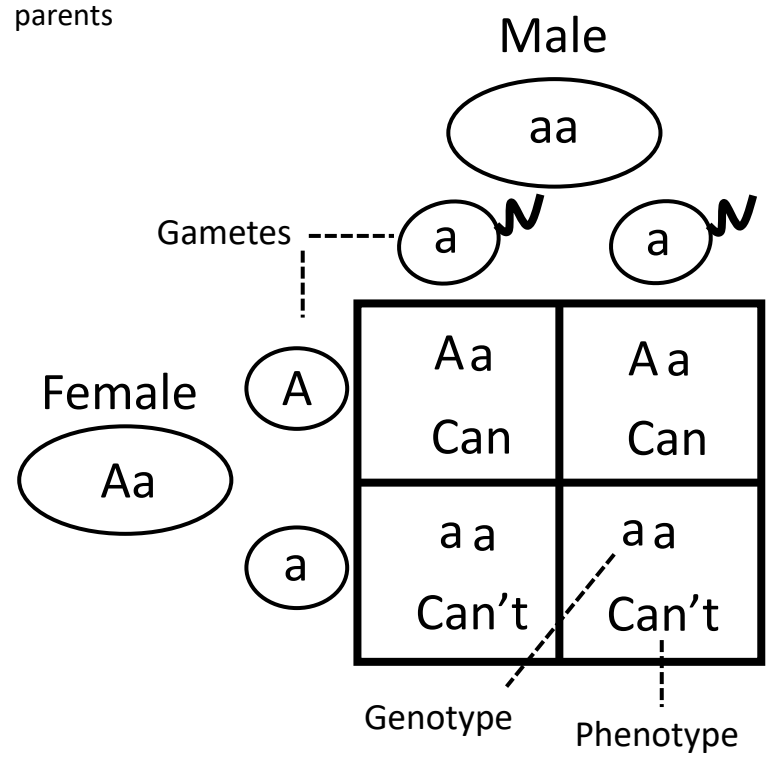
**Genetic disorder** – A condition arising from a fault in an individual's genes

**Carrier** – Individual with a recessive gene for disorder (they are heterozygous)

**Gamete** – Sex cell with half the chromosomes to make an individual (Animals: Sperm and egg)

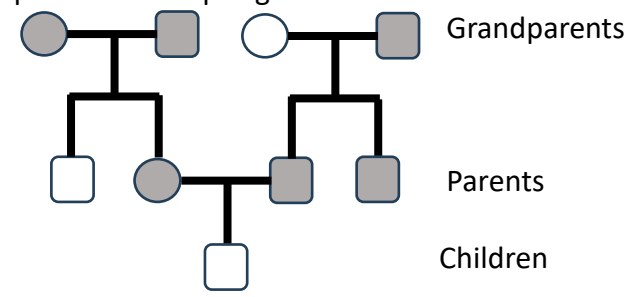
## 8) Punnett Square

A diagram used to predict the possible offspring of two parents



## 9) Pedigree analysis (family tree)

A diagram used to show how a genotype (or genetic disorder such as cystic fibrosis) can be passed from parents to offspring



## 10) Evolution by Natural Selection

**Charles Darwin's** evolution states that all living things have evolved from **simple life forms**. Evolution happens by **natural selection** ('survival of the fittest').

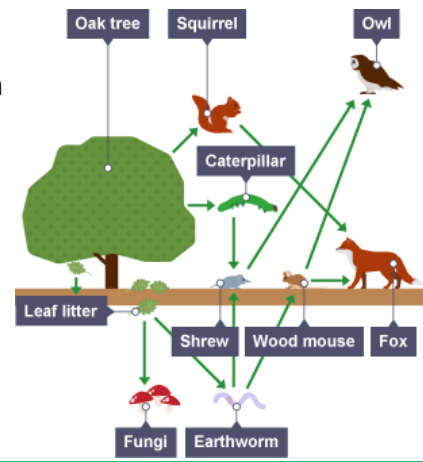
### Natural Selection:

- Individuals in a species show **variation**
- Individuals with features **best suited to their habitat** are **more likely to survive and reproduce**
- The **genes** that allow these individuals to be successful **are passed onto their offspring**
- Over many generations more individuals will have those features

## 11) Biodiversity

A measure of the **variety** of living things in an **ecosystem**

An ecosystem with a high biodiversity will have a wide variety of organisms



Human activity tends to reduce biodiversity

## 12) Conservation

Methods for **preserving** and **improving** biodiversity e.g.

- Breeding programs
- Habitat protection
- Rewilding
- Reducing pollution
- Sustainable development



Glue here