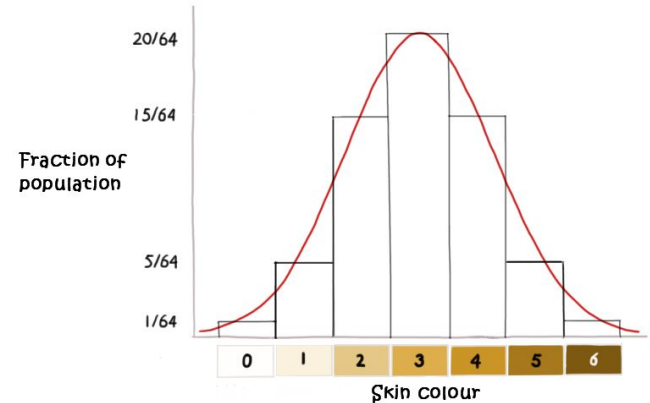
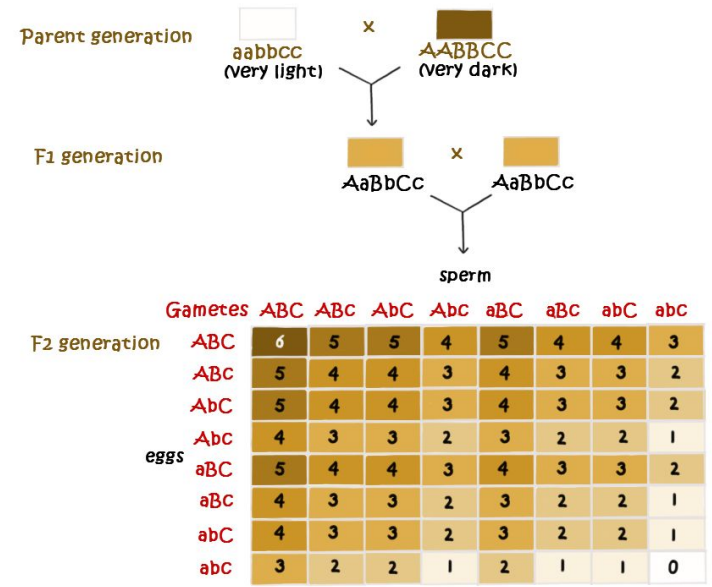


# Polygenic traits

- Traits that are controlled by multiple genes
- Often show a wide variety of phenotypes
- Examples:
  - Human skin color
  - Height
  - Weight



## Sex-linked traits

- Genes located on the sex chromosomes (X and Y)
- Remember:        males = XY        females = XX
  
- Rules for how these genes are passed on:
  - **Daughters**
    - always receive **dad's** single X chromosome
    - randomly receive one of **mom's** X chromosomes
  - **Sons**
    - always receive **dad's** Y chromosome
    - randomly receive one of **mom's** X chromosomes
  
- Examples:
  - Red-green color blindness
  - Hemophilia
  - Male-pattern baldness

	X	X
X	XX Unaffected	XX Carrier
Y	XY Unaffected	XY Affected

## Traits with multiple alleles

- A person can only carry **two alleles** for a gene, but some genetic traits have more than two possible alleles
- Example 1: Eye color has many different alleles (blue, green, hazel, brown, etc.)
- Example 2: Human blood types: 3 alleles (ABO) determine blood type. These produce four possible phenotypes (A, B, AB, & O)

**Parents: A0 X B0**

	<b>A</b>	<b>O</b>
<b>B</b>	<b>AB</b>	<b>BO</b>
<b>O</b>	<b>AO</b>	<b>OO</b>

**Offspring Phenotypes:**  
1/4 Type A, 1/4 Type B,  
1/4 Type AB, 1/4 Type O

## Incomplete dominance

- Not all traits follow the “dominant covers up recessive” pattern
- Incomplete dominance is where the **dominant allele and recessive allele combined (in heterozygotes) to create a blended phenotype**
- Example: In some flowers, the heterozygous (1 red, 1 white allele) genotype **creates pink flower color.**

### Example of Incomplete Dominance



Crossing between a red rose and a white rose producing a pink phenotype.

# Codominance

- Similar to incomplete dominance
- The dominant and recessive alleles are expressed at the same time (NOT BLENDED, usually appears as spots or stripes on an organism)



Appaloosa  
horse



Roan cow

