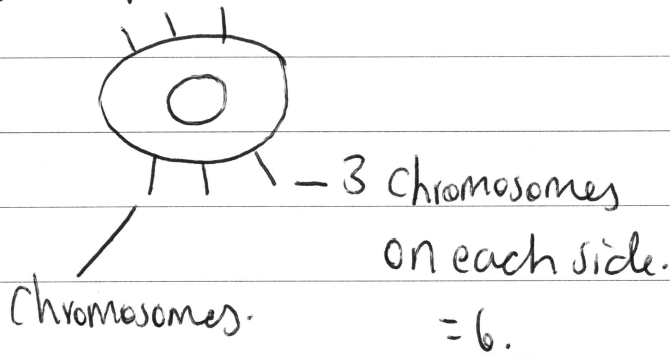


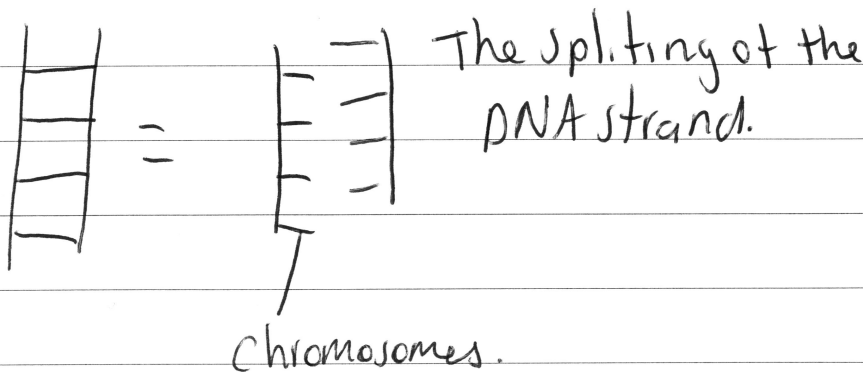
Start here.

(a) mutations	Affects chromosome number in an organism.
Trisomy	affects 26 chromosomes and adds more.
Polyploidy	stays the same to have 26 from each gamete to produce the right chromosomes
Base substitution.	Not enough chromosomes and adds a disability to the organism.

(b) Diploid cell.



haploid cell.



(C) i Vision defect = Recessive.
 Limb defect = Dominant.

(ii)

	$x^c y$	<u>Vision</u>
Linked =	x^c	$x^c y^c$
	y	$x^c y$
		$y y$

	$X^O Y$	<u>Limb</u>
	X^O	$X^O Y$
	y	$y x$
		y

Will have a vision defect

Their children will have a vision problem but
 a 50% chance they will have a limb defect.

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(i) Data can be collected by blood samples to show DNA within a cell of red blood cells or white blood cells to acknowledge the genetic history and information of relative position of linked genes.

(ii) The human genome project couldn't be achieved by studying linkage maps as

1: Linkage maps do not provide enough relevant information on the genome project.

2: The data is not 100% correct and could provide wrong data statistics and human genome project would be incorrect.

3: Linkage maps might be incorrect to study of and not have the right information and different genes and DNA might have gone through linkage maps but not been recorded.

(e). Gene cloning and gene cascades have been a breakthrough in technologies. As ~~more~~ species have been cloned off of each one animal and cloned. This has resulted in animals living longer as they have

been cloned to have the right gene structure and have no hereditary disease or information. Gene cascades is genes placed into an animal to adapt the right genes and create characteristic of a certain type within an animal from the information above from these technologies because artificial chromosomes was inserted into bacterium it resulted in surviving long and producing more bacteria.

Artificial blood is used to develop these technologies as it can be stored for a longer period of time, does not need refrigeration, it has all the materials needed such as plasmid, white and red blood cells, platelets and clotting factors to make it suitable for the ~~or~~ species that are receiving it also ~~has chance of~~ no chance of catching diseases.

All these factors of cloning and gene cascades are effective in the new technologies of modifying species and adding characteristics.

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