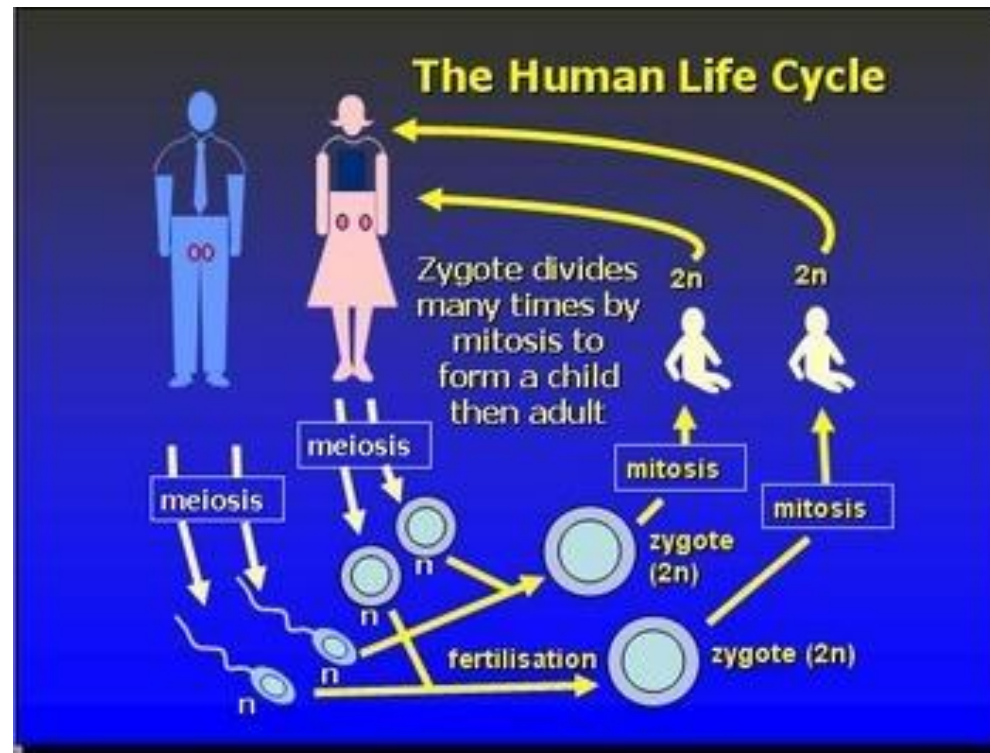


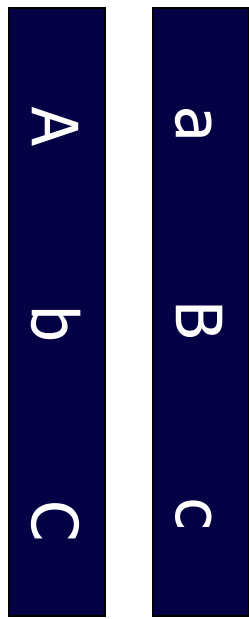
Meiosis:

_____ (sperm or egg) formation. Gametes are genetically unique and contain half the number of chromosomes (haploid - n).

In humans, meiosis only occurs in specialized cells in _____ that make the egg or sperm.

Fertilization (fusion of an egg and sperm to form a _____) returns to a cell with a full set of chromosomes (_____ , $n + n =$ _____)



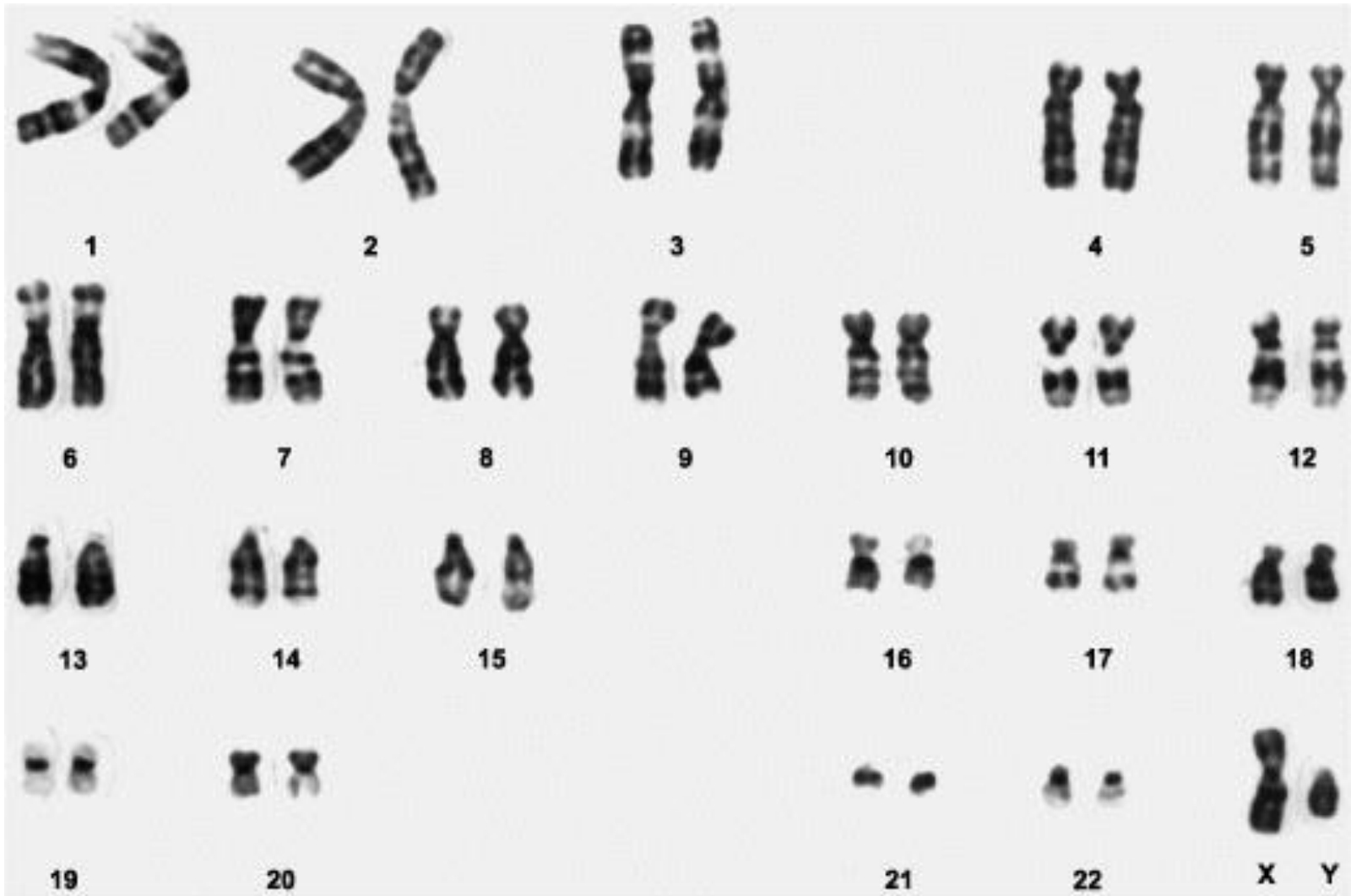


Example:
 A/a Skin Pigment
 Normal pigment (A)
 (a) Albino
 B/b Eyebrow
 thickness
 (B) Bushy/ (b) thin
 C/c Chin dimples
 (C) undimpled
 (c) dimpled

- _____
 Two copies of each chromosome (one from the _____ and one from the _____).
 Chromosomes _____, but they contain _____.
- _____
 Homologous chromosomes may contain different forms of a gene for the same trait called _____.
- Humans have _____ homologous pairs, for a total of _____ chromosomes in each somatic (body) cell.

23 Homologous Pairs in Humans

Organized by _____. Organized picture is called a _____
_____. Used to detect chromosomal mutation.



Diploid and Haploid Cells

_____ cells have homologous pairs of chromosomes.

ex. _____ somatic (body) cells are diploid. (di = 2)

_____ cells just have one copy of each chromosome pair.

ex. _____ (egg and sperm) cells are haploid.

Diploid cells = _____ Haploid cells = _____

Interpreting Genetics diagrams



Sister chromatids (identical copies produced during S phase of interphase) are shown connected by _____.

Genes on the chromosome are represented with letters.
Example: R/r represents gene for pea seed shape

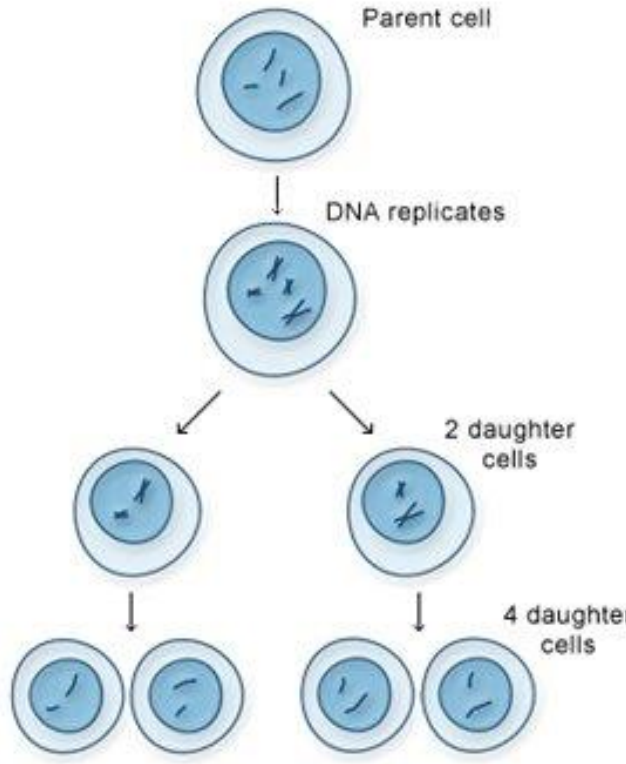
Alleles of the same gene are located at the _____ on each homologous chromosome.

Example: A pea plant that is heterozygous for seed shape (Rr) is in the picture above.

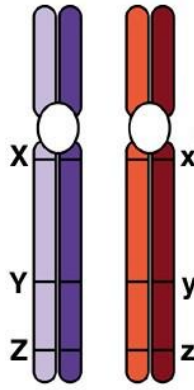
In meiosis, after the cell has prepared to divide it goes through 2 cell divisions, to produce 4 haploid cells.

Phases of Meiosis:

Meiosis also has an _____ period, during which chromosomes are duplicated (_____).

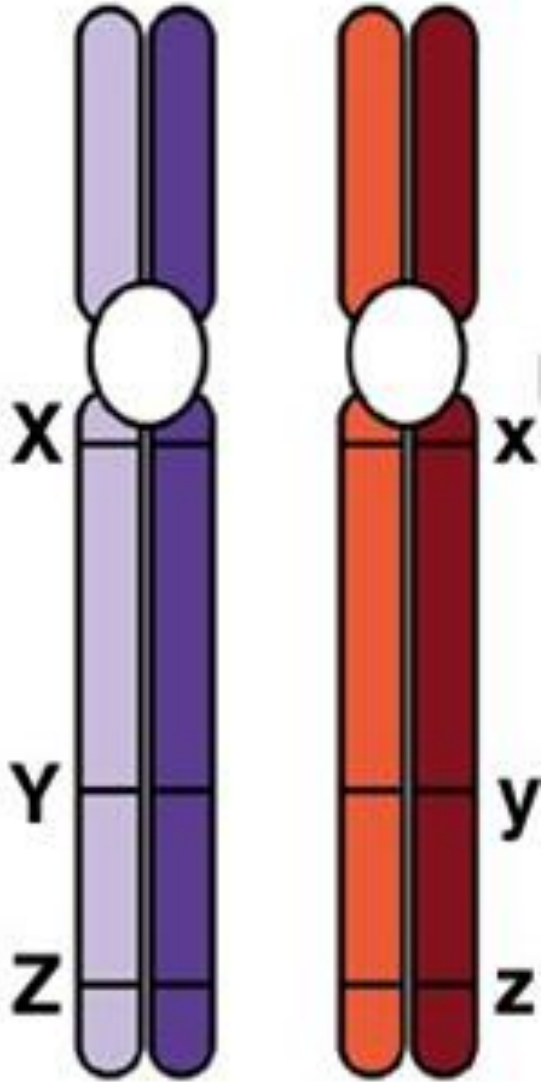


The two sister chromatids are _____.



The homologous pairs have the _____, but could have _____ (forms of the gene).

At the start of meiosis, there are _____ copies of each gene (the original 2 alleles plus the 2 copies)

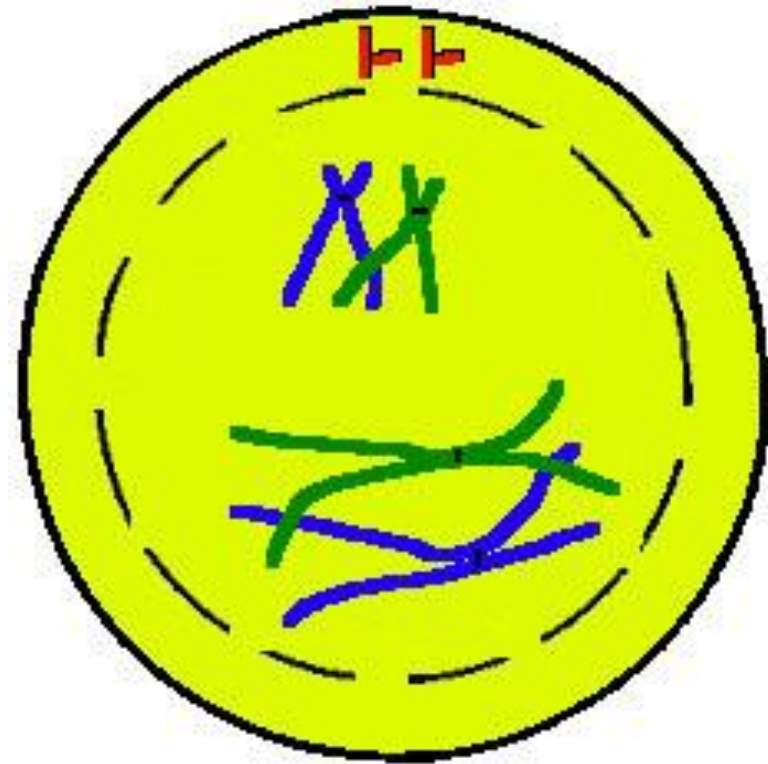


- This organism has 3 genes represented in the picture (X, Y, and Z).
- It is heterozygous for each of these traits (____, ____, ____).
- As pictured, the chromosomes have copied so each chromosome (blue and red) has two copies of each allele (____,____,____).

Meiosis I – Separating

Prophase I

During Prophase I,
the chromosomes
condense to become
visible.



(4 chromatids)

Sources of Genetic Variation from Meiosis

Crossing Over:

During prophase I, _____

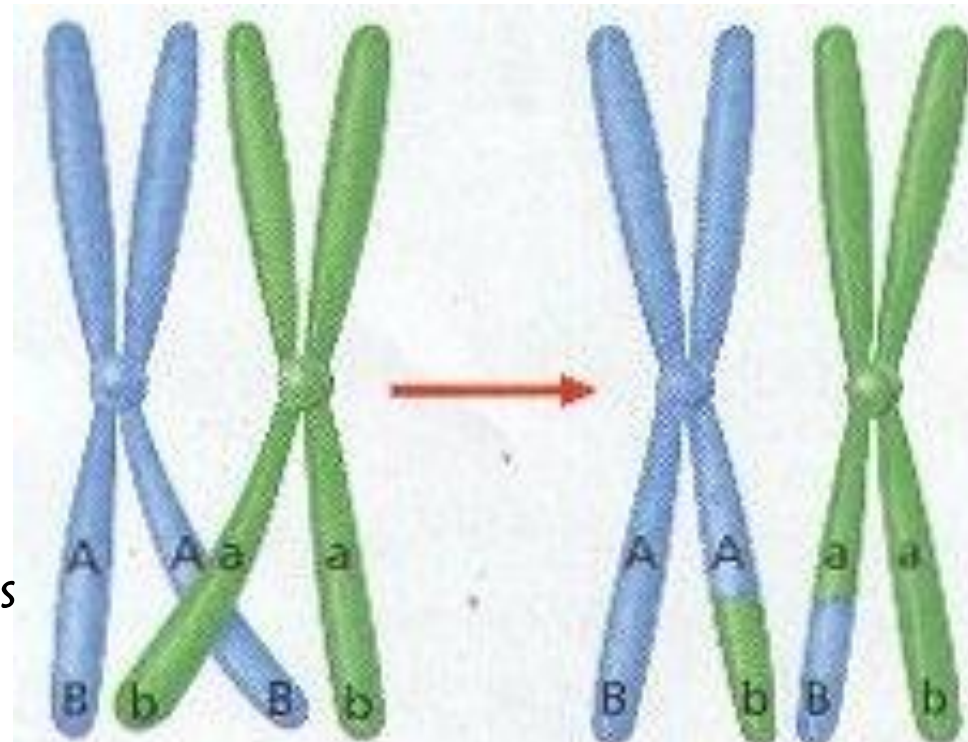
_____ can break off and can be

_____ while homologous pair are in

_____.

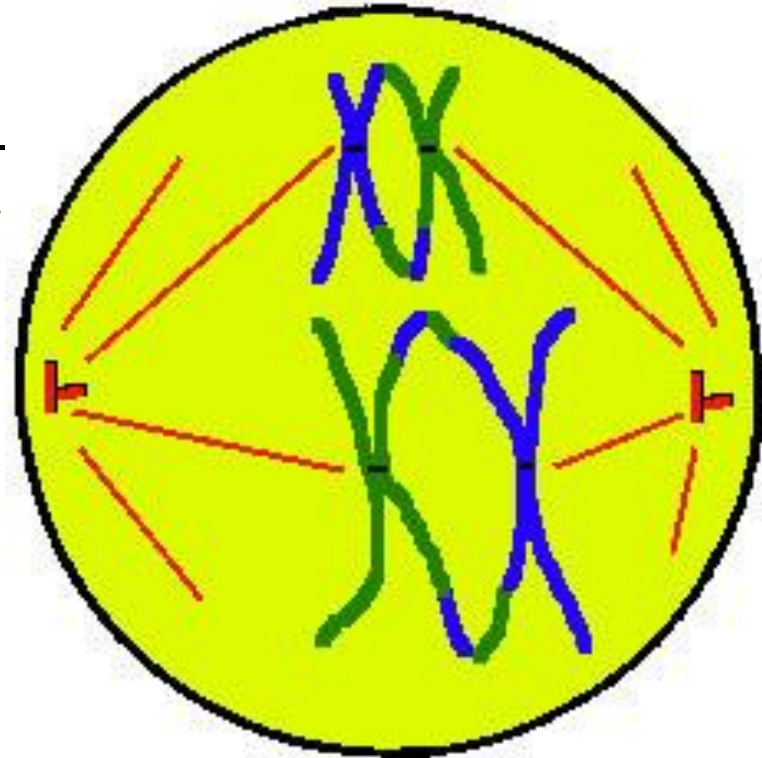
_____ of genes on the same chromosome can occur due to _____.

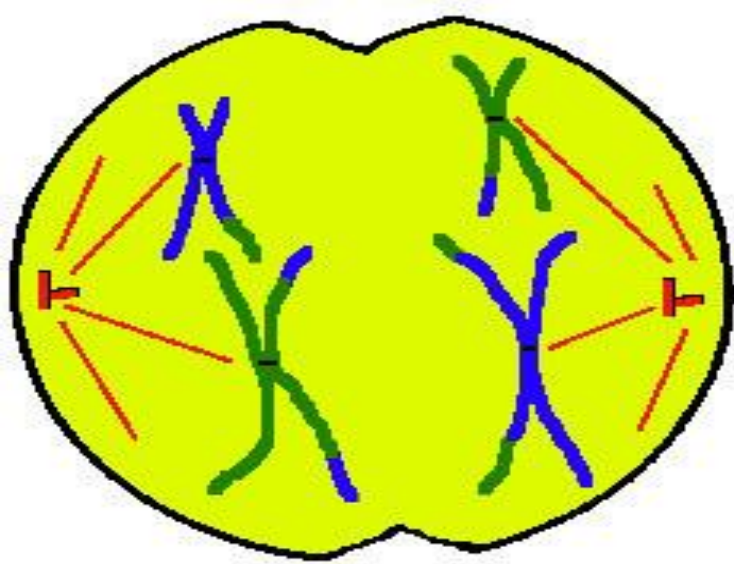
In humans, this happens about ____ times in different locations per chromosome pair.



Metaphase I

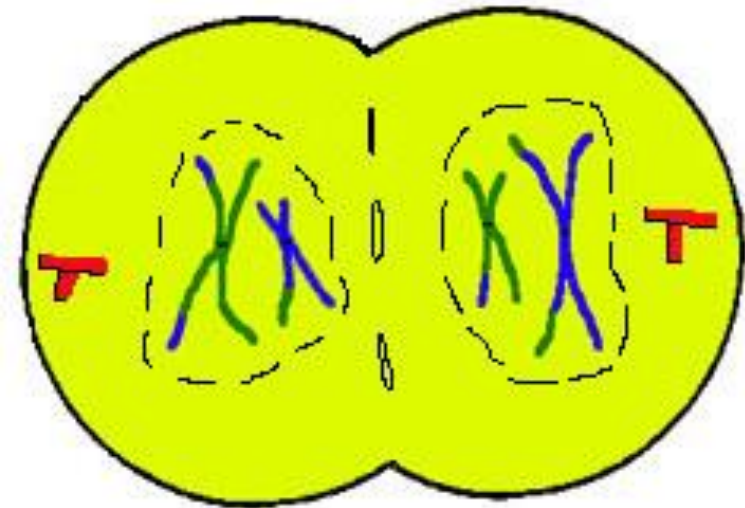
In metaphase I,
the _____
_____ line up along
the middle
(_____).





Anaphase I:
Homologous chromosome
pairs _____.

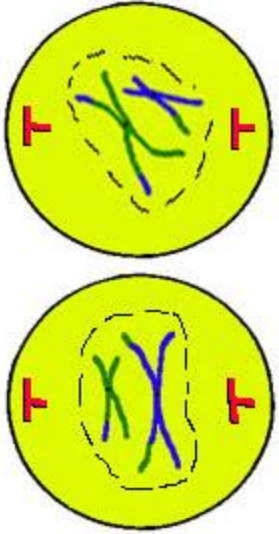
Telophase I
Nuclei partly reform, producing
_____.



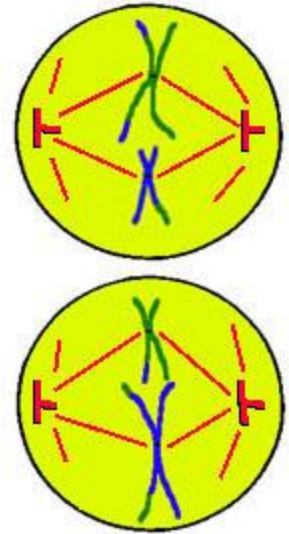
But each cell still has 2
_____ for each
chromosome. Why are the
resulting cells haploid?

Meiosis II- Separating

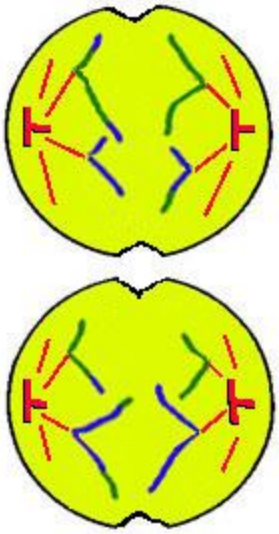
Prophase II



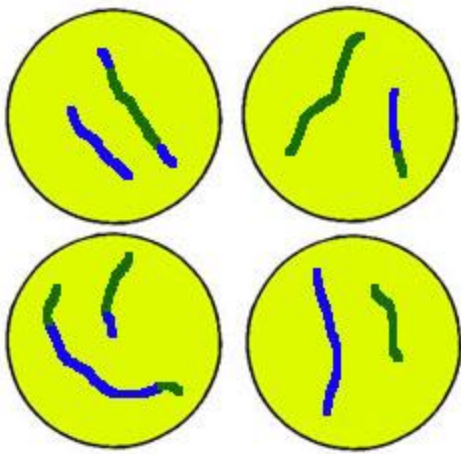
Metaphase II



Anaphase II



Telophase/
cytokinesis II

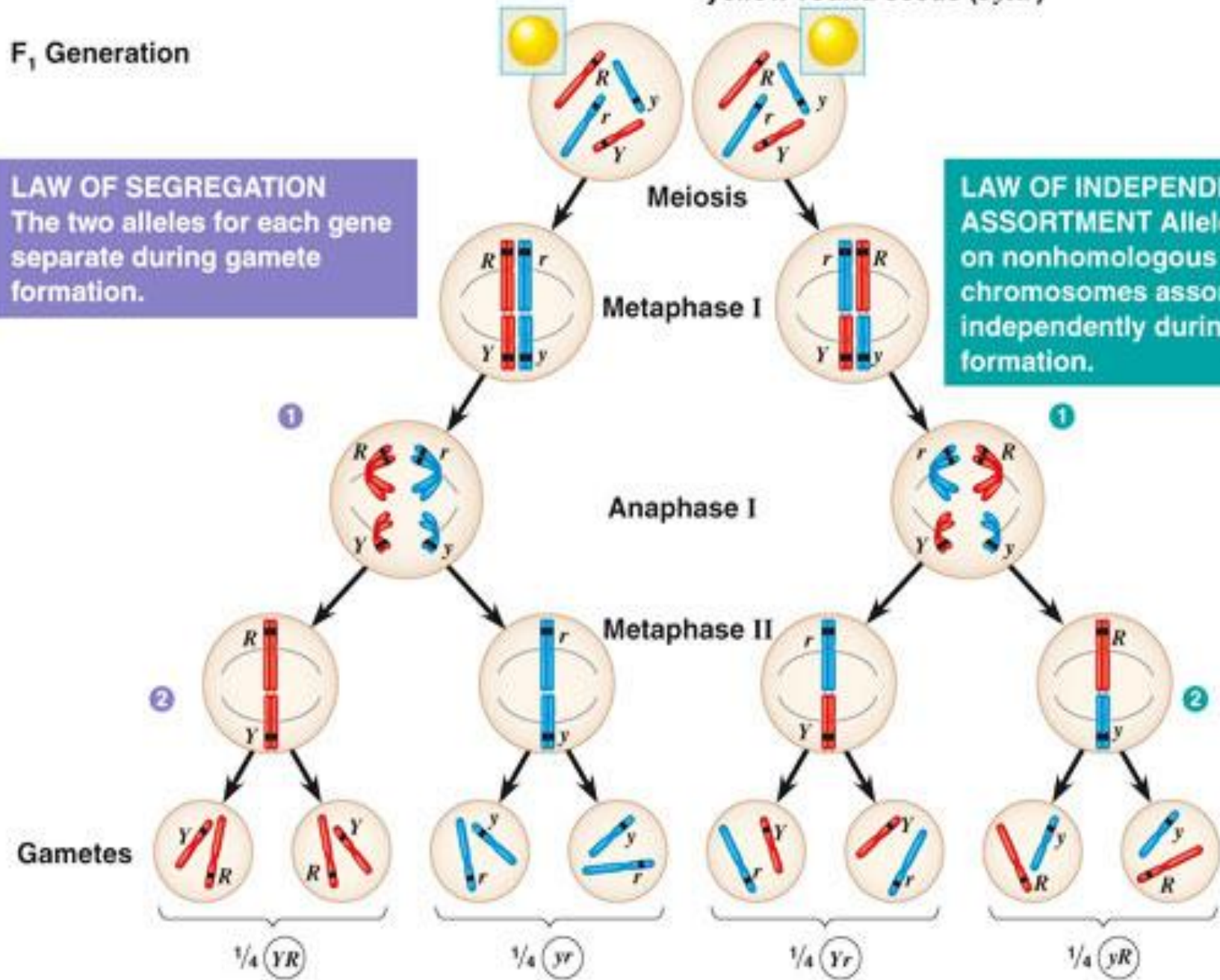


F₁ Generation

All F₁ plants produce yellow-round seeds (*YyRr*)

LAW OF SEGREGATION
The two alleles for each gene separate during gamete formation.

LAW OF INDEPENDENT ASSORTMENT Alleles of genes on nonhomologous chromosomes assort independently during gamete formation.



Comparing Mitosis and Meiosis

	MITOSIS	MEIOSIS
Purpose		
# of DNA replications		
# of cell divisions		
#/type of cells produced		