



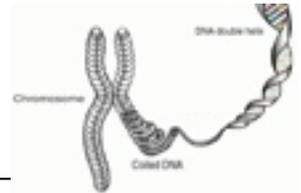
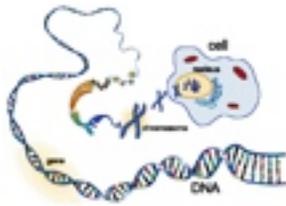
Name _____ Date _____ Hour _____ Binder Section:2

MEIOSIS NOTES



I. What is a Chromosome?

A. In the nucleus of each cell, the _____ is organized into thread-like structure called _____.



B. Each chromosome has many different _____

1. **Gene** – A region of DNA that _____
example) _____

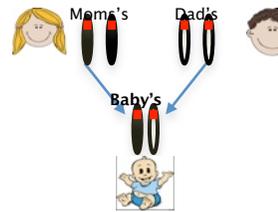
C. Humans have _____ chromosomes arranged in _____ pairs

1. Chromosomes that possess the same traits pair together and are called: _____

2. Each human receives _____ copies of each chromosome. One comes from _____ and one comes from _____

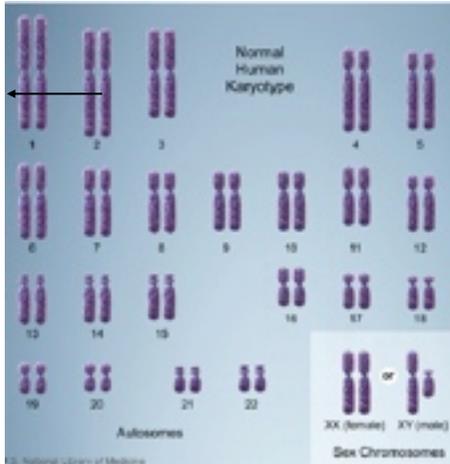
a. In humans: 23 chromosomes from
+ 23 chromosomes from dad

46 total chromosomes



D. Not all organisms have the _____

1. Number of chromosomes do not relate to organism _____



In your own complete sentences, summarize what you have learned about chromosomes:

II. What is Meiosis?

A. _____ where the number of chromosomes are _____

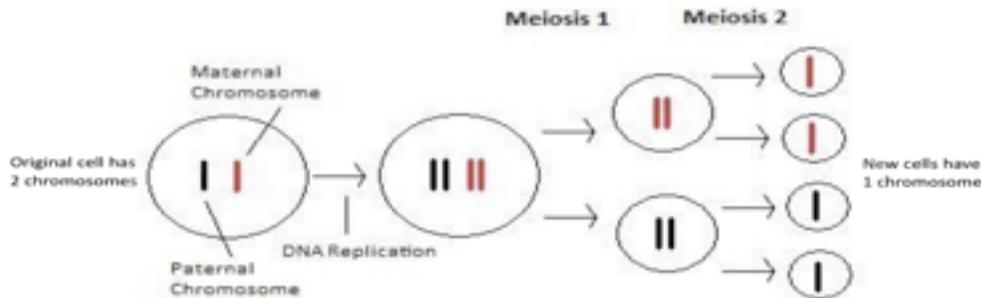
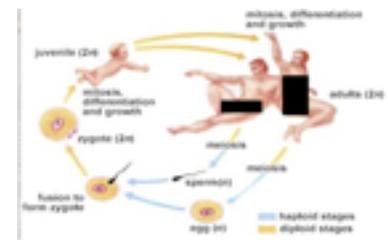


Figure 3: This shows the the steps in meiosis.

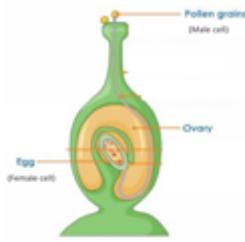
III. When do cells use Meiosis?

A. _____

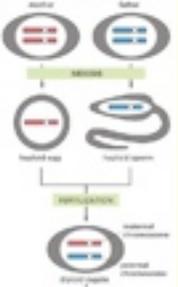
1. Meiosis is ONLY used to produce _____ (GAMETES)



IN PLANTS



IN ANIMALS



- Normal humans have _____ chromosomes in their _____ like skin, muscle, and bone (where _____ occurs)
If these cells were to join together during fertilization the baby would not have the proper amount of chromosomes
 $46 + 46 = 92$ chromosomes
- Humans have ONLY _____ chromosomes in their _____ (where _____ occurs)
 $23 \text{ sperm chromosomes} + 23 \text{ egg chromosomes} = 46 \text{ chromosomes (healthy human baby)}$
- Sex Cells (gametes) vs Body Cells (somatic cells)

SEX CELLS _____	BODY CELLS _____
Haploid – Contain only _____ of each chromosome	Diploid – Contain _____ of each chromosome
Example: _____	Example: _____
In humans the haploid number is _____	In humans the diploid number is _____
In pea plants the haploid number is _____	In pea plants the diploid number is _____
In dogs the haploid number is _____	In dogs the diploid number is _____

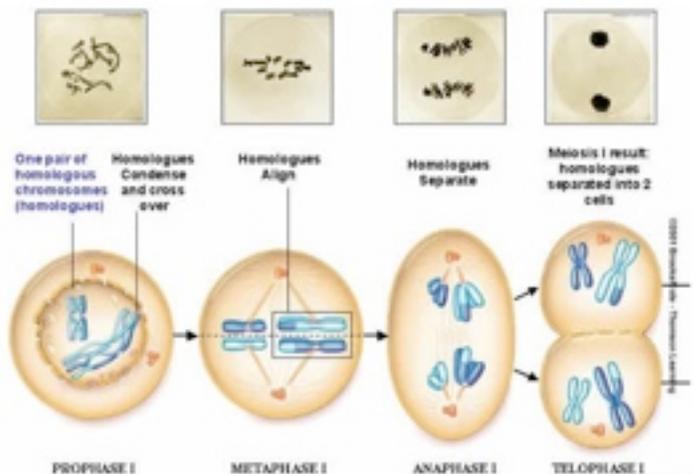
In your own complete sentences, what is meiosis, and when does it occur?:

IV. How does Meiosis occur?

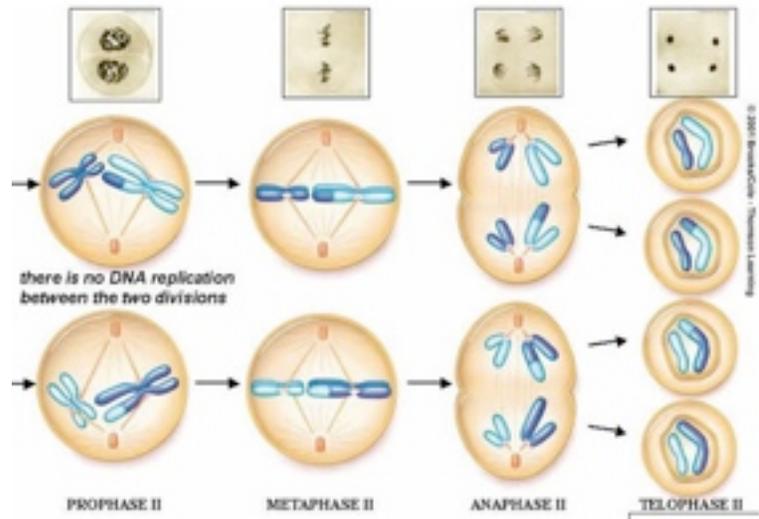
A. _____ replication (copying) of DNA and _____ cell divisions

B. Steps of Meiosis

- Interphase
- Prophase I
- Metaphase I
- Anaphase I
- Telophase I
- Cytokinesis



Prophase II
 Metaphase II
 Anaphase II
 Telophase II
 Cytokinesis



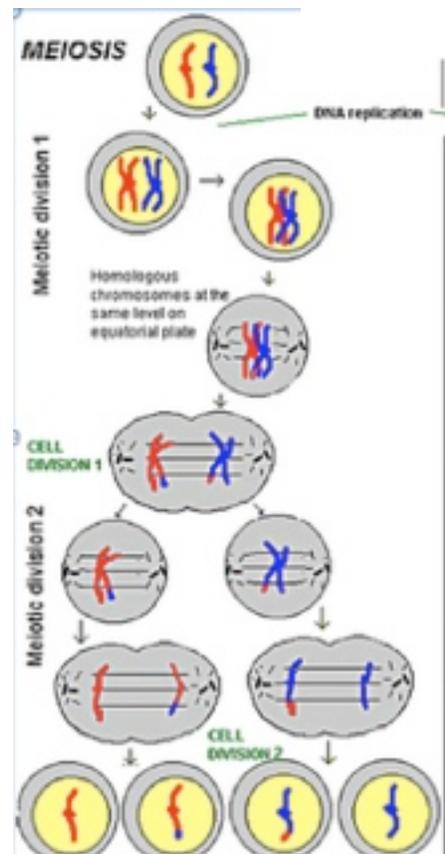
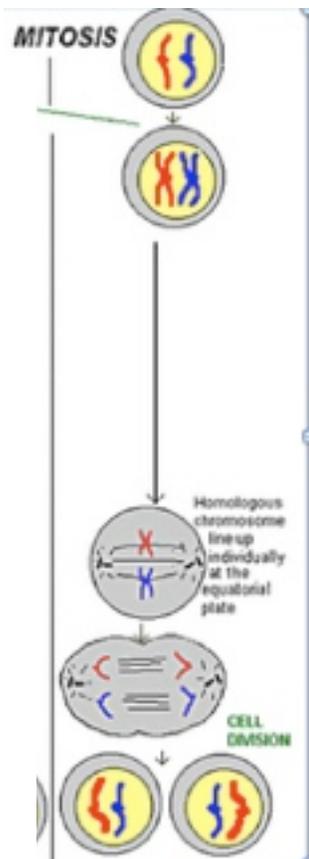
C. In prophase I:

- The replicated chromosomes of each homologous pair come close to one another and may exchange DNA with each other – _____
- This increases _____ (differences between individuals)

D. At the end of Meiosis there are

_____ cells with _____ of number of chromosomes as the original cell

IV. Mitosis vs Meiosis



MITOSIS	MEIOSIS
A. Create new cells with the _____ number of chromosomes	A. Create new cells with _____ the number of chromosomes
B. Used for _____, _____, & _____	B. Used for _____
C. New cells are _____ genetic copies of the parent cell	C. New cells are _____ genetically identical to the parent cell
D. _____ cell division	D. _____ cell division
E. _____ new cells are produced	E. _____ new cells are produced

In your own complete sentences, summarize how meiosis works:

V. What are Karyotypes?

A. _____ in metaphase

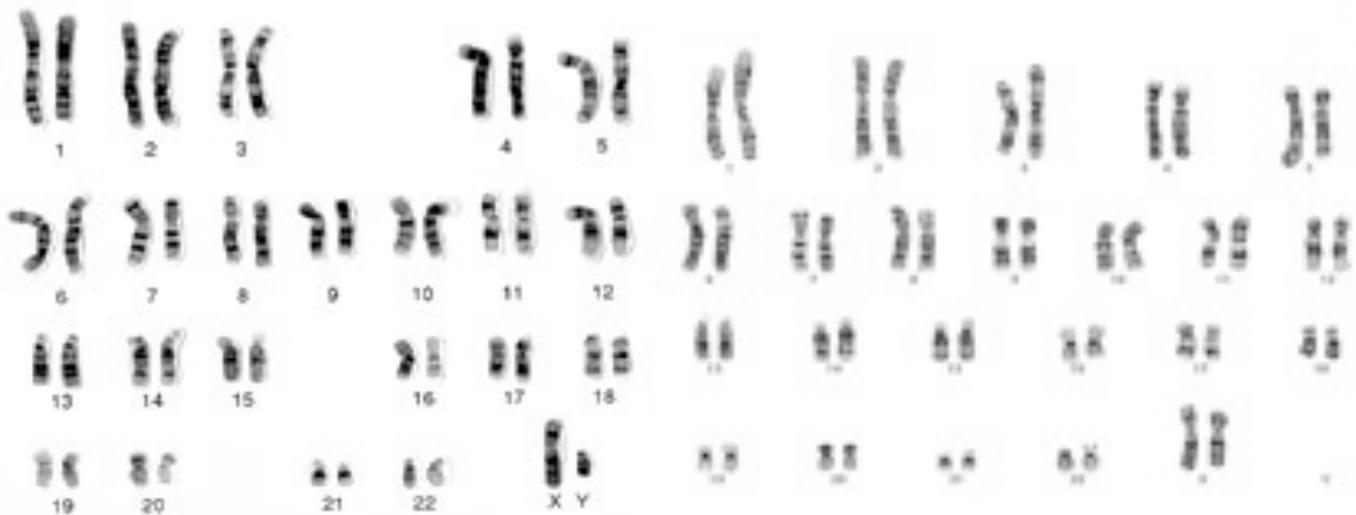
1. May be taken during _____ or _____

B. Used to _____

1. Can show parents if offspring would be normal (amniocentesis)

Normal Male

Normal Female



C. In Normal Somatic Cells...

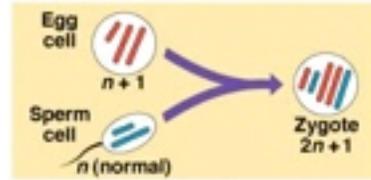
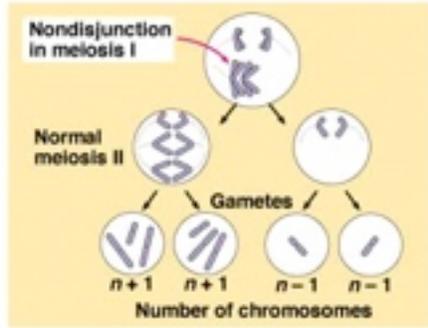
1. We are diploid (2n)
2. We have 23 pairs of chromosomes
 - How many total chromosomes? _____

BUT...problems can happen where there is:

- a. An extra chromosome (_____)
- b. A missing chromosome (_____)

D. How Does Monosomy & Trisomy Happen?

1. _____ - have an abnormal number of chromosomes
Caused by errors in Mitosis or Meiosis
Results in _____ (3 chromosomes) or _____ (1 chromosome)



2. Polysomy vs. Polyploidy

Polysomy means _____ (some—somy)

Polyploidy means _____

~ Polyploidy is Common in Plants

In your own complete sentences, what are karyotypes and why are they important?
