Honors Biology Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

NDHS Per: \_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_

**Cellular Division**

Cell Division: basis for the continuity of life

 Functions:

 1. - making of new individuals ( ) -

 - generation of gametes ( ) -

 2. - more cells - bigger organism

 3. - new cells to fix old or damaged cells

 Focus of Cellular Division is

 -

 Followed by

 -

 **Mitosis**:

 - each new cell ( ) receives and identical set of genetic material from the old cell ( )

 -forms (body cells)

 **Meiosis**:

 - daughter cells receive the amount of genetic material from the parent cell

 - forms (sex cells)

Division of the nuclear material involves the separation of condensed DNA

 CHROMOSOMES: “\_\_\_\_\_\_\_\_\_\_\_\_\_” condensed \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 - each species has a particular number

 SOMATIC Cells: of each chromosome ( ) -

 GAMETES: of each chromosome ( ) -

 Structure of Chromosomes:

 Chromosome contains of the same genetic material

 - each set --> set of sister

 - linked by - narrow waste

- helps identify different chromosomes -

**MITOTIC CELL CYCLE**:

- separtion of chromosomes into  daughter cells

Two phases:

 Interphase: % of cell cycle

 Mitotic Phase:

INTERPHASE:

 - made up of three distinct sub-phases

1. G1 -

2) S -

 3) G2 -

 **Gap 1**:

 **Synthesis**:

 **Gap 2:**

MITOSIS ( ):

 1) :

 - chromatin

 - nuclear

 - nucleolus

 - centrioles (in animals)

* microtubules

 2) :

 "meta" means " "

* chromosomes are lined up in the

 from the centriole pairs

* - central line in the cell where the chromosomes move due to

3) :

 - separation of via the shortening of

 microtubules

 - each chromatid now considered a chromosome

(each has the same genetic infomation as the other chromatid)

 - cells are genetically

 4) :

 - daughter nuclei begin to

 - each cell has

 - nuclear envelope begins to

 - chromosomes

 - nucleoli reform

 - beginning of

MAKING SENSE OF CHROMOSOME NUMBERS

 Ex: 10 Chromosomes

 Recently divided daughter cell - 10 chromatids

 synthesis of DNA – 20 sets of chromatids = 10 Chromososmes

 10 Chromosomes of duplicated DNA in sister chromatids

 separate into 2 sets of 10 chromatids for new daughter cells

**CYTOKINESIS**:

 division of the

 Animal cells: use of

 - ring of and

 - contract and pull the the cell membrane in - like a draw string Ex: clay and string

 Plant Cells: use of

 - vesicles from the fuse at the

 build new cell wall

 Ex: dividing a room with a wall

**MEIOSIS**

Meiotic Cell Cycle: reduction of chromosomes

# Major Processes

1. Replication of
2. Pairing of ( )
3.
4. Separation of
5. Separation of

**2 Phases of Meiosis**:

**Meiosis I**: Separation of

* each chromosome has \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* chromosomes that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ - Humans: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Interphase I**: Like mitosis: Replication of DNA - forms sister

**Prophase I**:

 Like mitosis except

 1. Longer:

1. : Pairing of homologous chromosomes
* each made of sister chromatids
* - makes - four chromatids
1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of homologous pairs 🡪
2. leads to
* chromatids

 - happens in the same place

**Metaphase I**:

 Like mitosis except

- microtubules only attach to one side of kinetochore

**Anaphase I**:

 Separation of : sister chromatids

**Telophase I and Cytokinesis**:

 may or may not reform nucleus and nucleolus

 cell divides and forms (only a half set)

**Interphase II**: ????????

**Prophase II**:

 spindle reforms

**Metaphase II**:

 line up along metaphase plate

**Anaphase II**:

 separation of

**Telophase II/Cytokinesis**:

 nuclei form and cells divide

Result of Meiosis II: 4 haploid cells – each has half of the genetic material of the parent cell

**COMPARISON OF MITOSIS AND MEIOSIS**

Mitosis:

Meiosis: