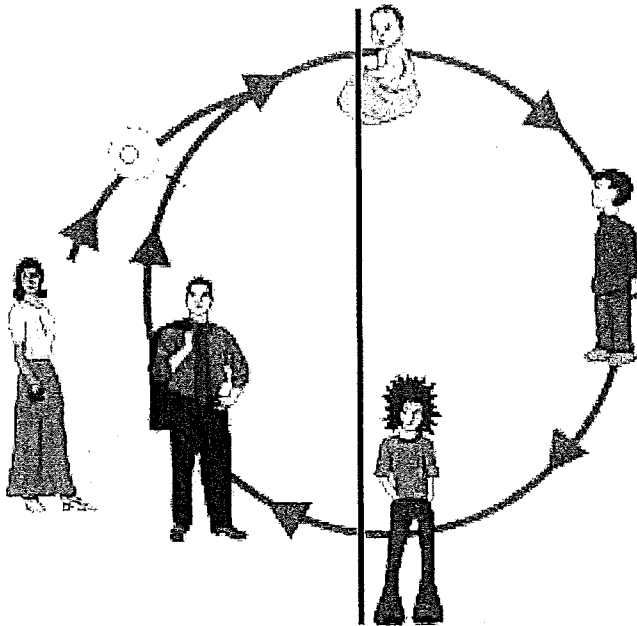


**NOTES:** The cell cycle has four main stages.

- G<sub>1</sub> (Gap 1): Cells grow, carry out normal functions, and copy their organelles.
- S (Synthesis): Cells replicated DNA.
- G<sub>2</sub> (Gap 2): Cells go through additional growth.
- M (Mitosis): Cells undergo cell division, which involves both mitosis and cytokinesis.

### BRIEF OVERVIEW

- There are two kinds of cell division: \_\_\_\_\_ and \_\_\_\_\_.
- Mitosis is a \_\_\_\_\_ process, producing two genetically identical " \_\_\_\_\_ " cells from a single " \_\_\_\_\_ " cell.
- Mitosis replaces cells lost through \_\_\_\_\_.
- Meiosis shuffles the "genetic deck", generating daughter cells that are \_\_\_\_\_ from one another and from the original parent cell.
- \_\_\_\_\_ cells are capable of meiosis: those that will become eggs in \_\_\_\_\_ and \_\_\_\_\_ in males.



ADD THE FOLLOWING LABELS TO THE HUMAN LIFE CYCLE:

MITOSIS

MEIOSIS

GROWTH AND REPAIR

REPRODUCTION

HAPLOID CELLS

DIPLOID CELLS

### MATCHING: HAPLOID VS. DIPLOID CELLS

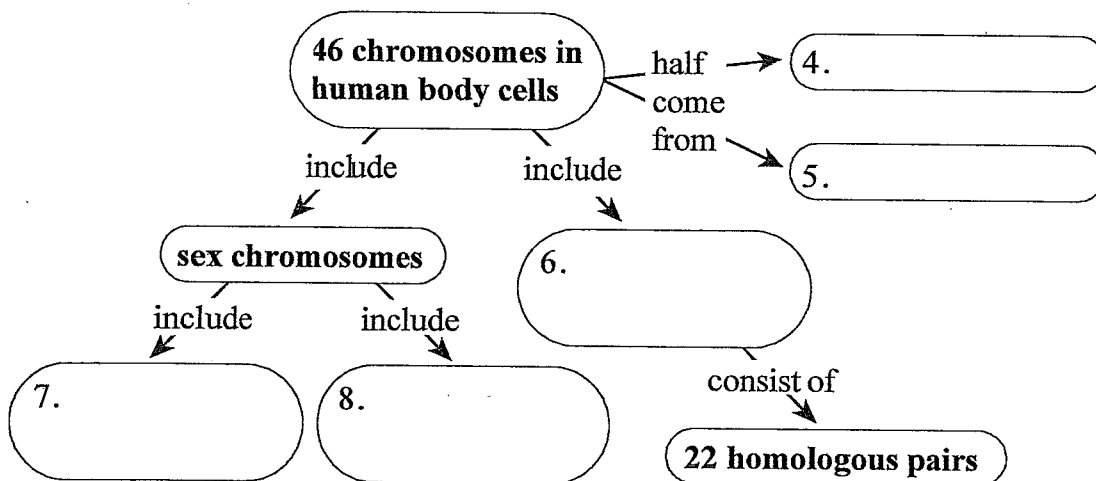
- |  |   |
|--|---|
| <ol style="list-style-type: none"> <li>Haploid Cells</li> <li>Diploid Cells</li> </ol> | <ol style="list-style-type: none"> <li>A cell with two copies of each chromosome (homologous pairs). Ex: Somatic (body) cells.</li> <li>A cell with only one copy of each chromosome. Ex: Sex cells.</li> </ol> |
|--|---|

**D. Word Origins** Circle the Greek and Latin word parts in each vocabulary term. Then use the Greek and Latin meanings to construct a very basic definition of the vocabulary word.

pro-	= at the start	mal-	= bad, evil
centro-	= middle	-mere	= part, segment
cyto-	= cell		
telo-	= end	-meta	= change; occurring after
kin-	= movement	mitos-	= thread

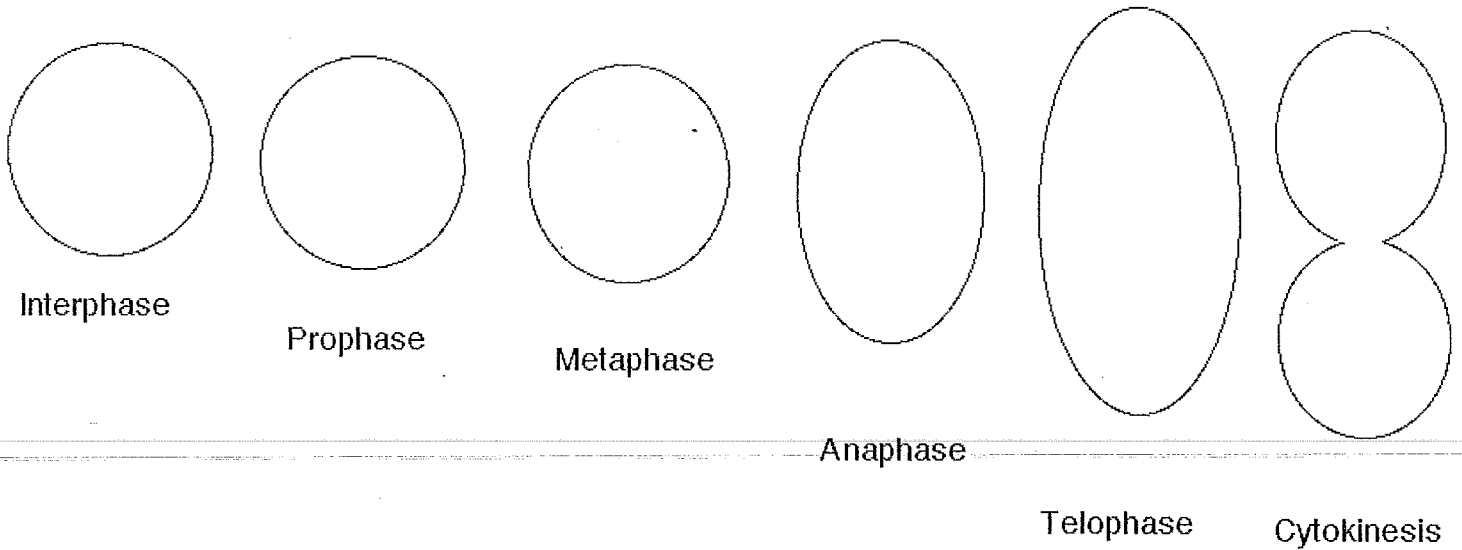
WORD	DEFINITION
1. malignant	
2. prophase	
3. telomere	
4. cytokinesis	
5. telophase	
6. centromere	
7. mitosis	
8. metaphase	

Fill in the Concept Map below to summarize what you know about chromosomes.



**Sketch the phases of mitosis.**

Make sure to include the chromosomes, spindle fiber, and nucleus.



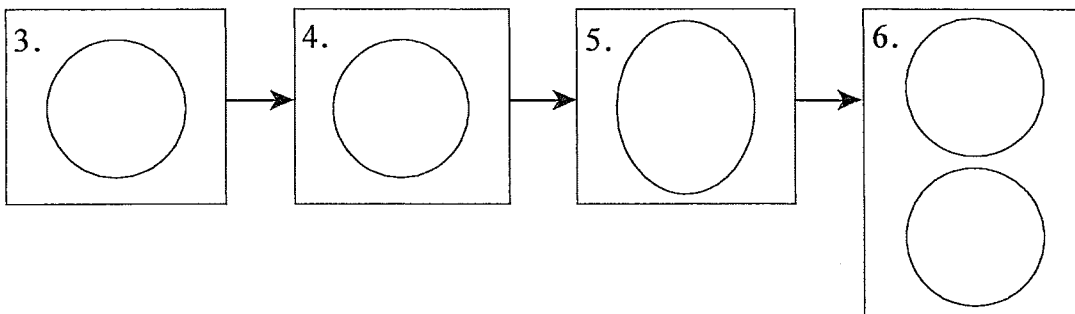
**Main Idea: CELLS GO THROUGH TWO ROUNDS OF DIVISION IN MEIOSIS.**

**Circle the word or phrase that best completes the statement.**

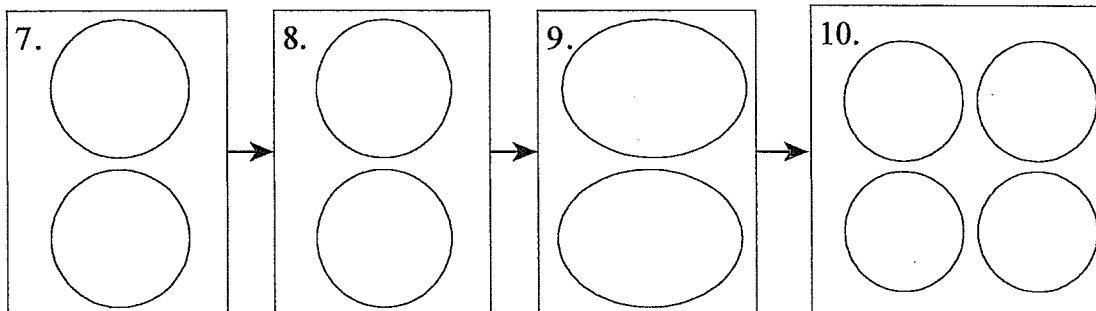
1. After a chromosome is replicated, each half is called a *sister chromatid* / *polar body*.
2. Two chromosomes that are very similar and carry the same genes are called *somatic* / *homologous* chromosomes.

**In the space below, sketch the phases of meiosis I and II and write the name of each phase below it.**

**Meiosis I**



**Meiosis II**



Read the descriptions in the table below and then decide which column should be labeled *Mitosis* and which column should be labeled *Meiosis*.

Makes diploid cells.	Makes haploid cells.
Makes genetically identical cells.	Makes genetically unique cells.
Happens throughout an organism's life.	Happens at specific times in an organism's life.
Involved in asexual reproduction.	Involved in sexual reproduction.

7. Circle all of the following statements that are true for homologous chromosomes.

- One is from the mother and one is from the father.
- They are a pair of chromosomes.
- They are fertilized gametes.
- They have the same genes, but they differ in length and appearance.

### Vocabulary Check

Fill in the blank with the word or phrase that best completes the sentence.

10. The exchange of chromosome segments between homologous chromosomes is called \_\_\_\_\_.

1. How do gametes differ from somatic cells?

\_\_\_\_\_

2. The prefix *homo-* means "the same." Explain how this meaning relates to the definition of homologous chromosomes.

\_\_\_\_\_

3. How does meiosis relate to haploid cells? How does fertilization relate to diploid cells?

\_\_\_\_\_

\_\_\_\_\_

If cell division is not properly regulated, the result may be a type of disease called \_\_\_\_\_. Cell division is normally regulated by \_\_\_\_\_ which is inside of the nucleus.