Science 9 Name:

Block:

**1.3: How do living things sexually reproduce?**

**Concept 1: Male and female reproductive cells combine to produce a zygote**

Sexual reproduction requires \_\_\_\_\_\_\_\_\_\_\_\_ parents, each contributing a \_\_\_\_\_\_\_\_\_\_ cell called a

\_\_\_\_\_\_\_\_\_\_. The male contributes \_\_\_\_\_\_\_\_\_\_cells while the female contributes an \_\_\_\_\_\_\_\_\_\_cell

(also known as an \_\_\_\_\_\_\_\_\_\_\_\_). When the male and female gametes combine, \_\_\_\_\_\_\_\_\_\_\_\_\_\_

occurs.





Fertilization

**Concept 2: Reproductive cells are formed by a cell-dividing process called meiosis**

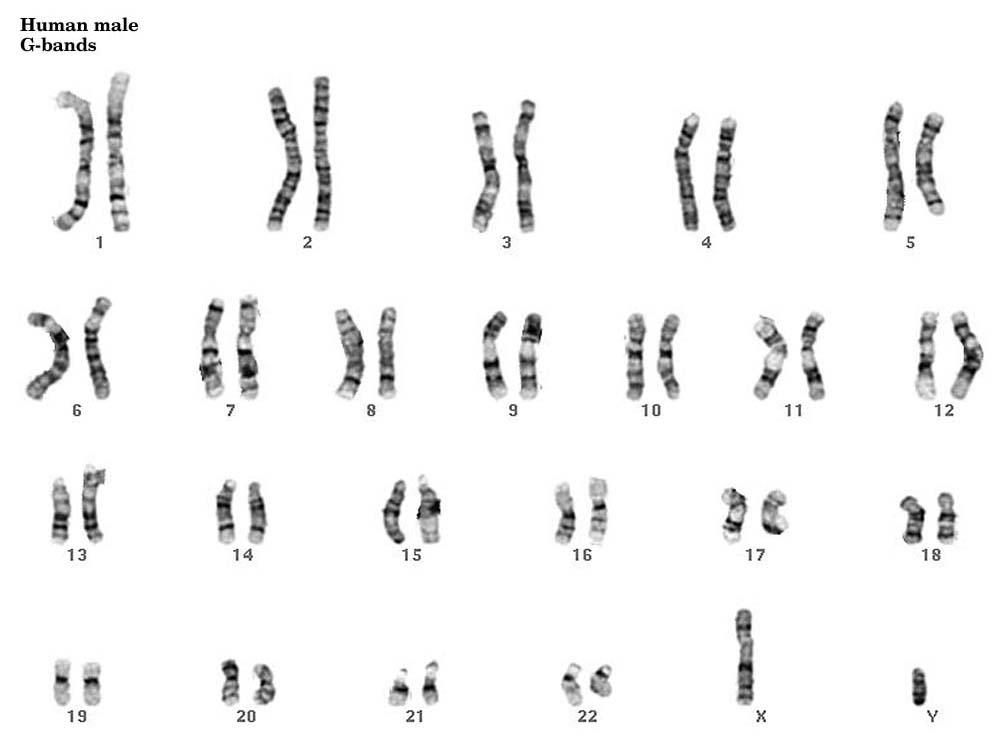
Although human cells have \_\_\_\_\_\_\_\_\_ chromosomes, each chromosome is not unique. In fact, each

chromosome has a pair that carries almost identical information, called an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ pair. One

chromosome from each pair comes from the \_\_\_\_\_\_\_\_\_\_ while the other comes from the \_\_\_\_\_\_\_\_\_\_.

Human cells have \_\_\_\_\_\_\_\_ homologous pairs.

Homologous pair



Chromosomes are numbered 1-22 and X/Y, and organized into homologous pairs. Notice that the homologous pairs have similar patterns of banding and are the same length. One of each pair comes from the mother and the other from the father.

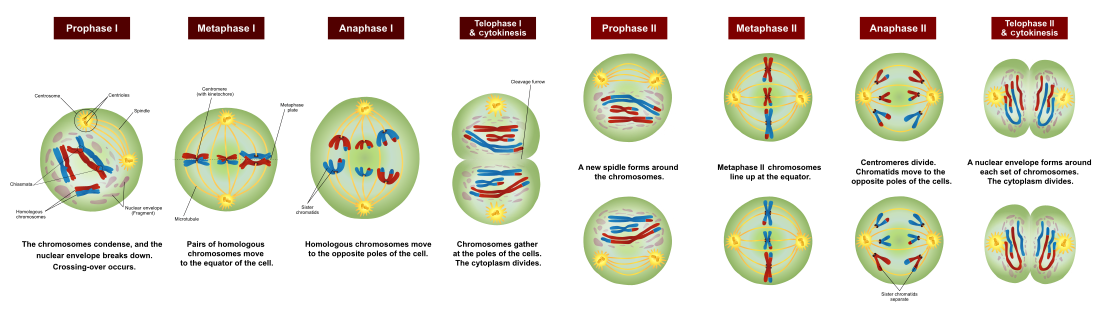
|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Type of cell:** | **Number of chromosomes (in a human cell)** | **Number of copies of each chromosome** | **Formed through:** |
| **Diploid** | http://passel.unl.edu/Image/siteImages/SomaticGameteCellLG.gif |  |  |  |
| **Haploid** | http://passel.unl.edu/Image/siteImages/SomaticGameteCellLG.gif |  |  |  |
| What is the goal of meiosis? | | | | |

**Meiosis**

Meiosis is composed of two phase: \_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_. During meiosis I \_\_\_\_\_ haploid

cells are formed from \_\_\_\_\_\_\_ diploid parent cell. During meiosis II \_\_\_\_\_\_\_\_\_ haploid daughter cells

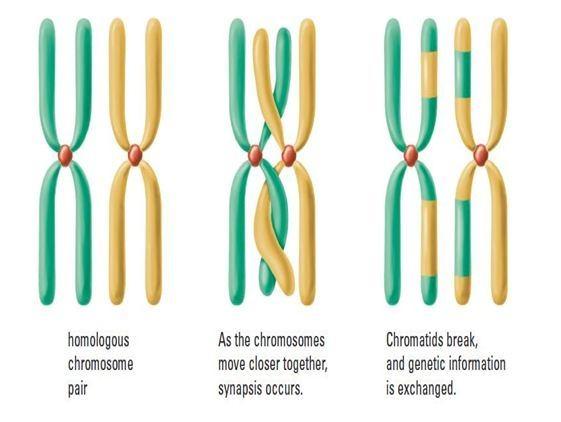
are formed from \_\_\_\_\_\_\_\_\_ haploid parent cells.



Watch meiosis video: https://www.youtube.com/watch?v=toWK0fIyFlY&t=1s

|  |  |  |
| --- | --- | --- |
| **Interphase** | * \_\_\_\_\_\_\_ is replicated * Organelles are replicated * Cell grows | 3687792_orig.jpg (1000×493) |
| **Prophase I** | * \_\_\_\_\_\_\_\_\_\_\_\_\_\_ disappears * DNA condenses into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * \_\_\_\_\_\_\_\_\_\_\_\_ chromosomes pair up | 3687792_orig.jpg (1000×493) |
| **Metaphase I** | * \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ attach to chromosomes * Chromosomes line up along the middle of the cell | 3687792_orig.jpg (1000×493) |
| **Anaphase I** | * Homologous chromosomes separate and move to each end of the cell | 3687792_orig.jpg (1000×493) |
| **Telophase I** | * Two \_\_\_\_\_\_\_\_\_\_ form and each nucleus contains a complete copy of the cell’s DNA * The cell is ready to divide | 3687792_orig.jpg (1000×493) |
| **Cytokinesis** | * Cell divides into \_\_\_\_\_\_\_\_ cells | 3687792_orig.jpg (1000×493) |
| **Prophase II** | * Nuclear \_\_\_\_\_\_\_\_\_\_\_\_ disappear | 3687792_orig.jpg (1000×493) |
| **Metaphase II** | * Chromosomes line up \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_ along the middle of the cell | 3687792_orig.jpg (1000×493) |
| **Anaphase II** | * \_\_\_\_\_\_\_\_\_\_\_\_\_ chromosomes are pulled apart and one copy moves to each end of the cell | 3687792_orig.jpg (1000×493) |
| **Telophase II** | * \_\_\_\_\_\_\_\_\_nuclei form * Cell prepares to divide | 3687792_orig.jpg (1000×493) |
| **Cytokinesis** | * Two cells divide into four cells | 3687792_orig.jpg (1000×493) |

**Variation and Diversity**



Sexual reproduction introduces diversity during meiosis in two main

ways:

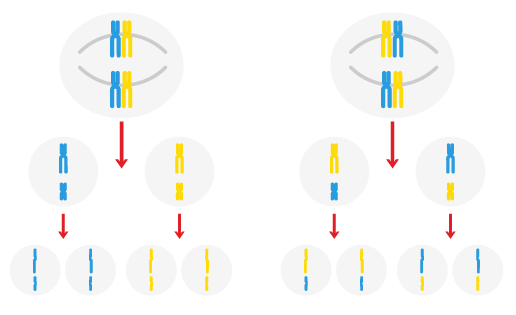
1. Crossing over: during \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the legs of two

homologous chromosomes cross over and exchange

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ material.

1. Independent assortment: during \_\_\_\_\_\_\_\_\_\_\_\_ the homologous pairs line up randomly,

resulting in a random combination of chromosomes in each \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_cell.



Two unique ways that two homologous pairs can line up, and the unique gametes that would be produced