1.

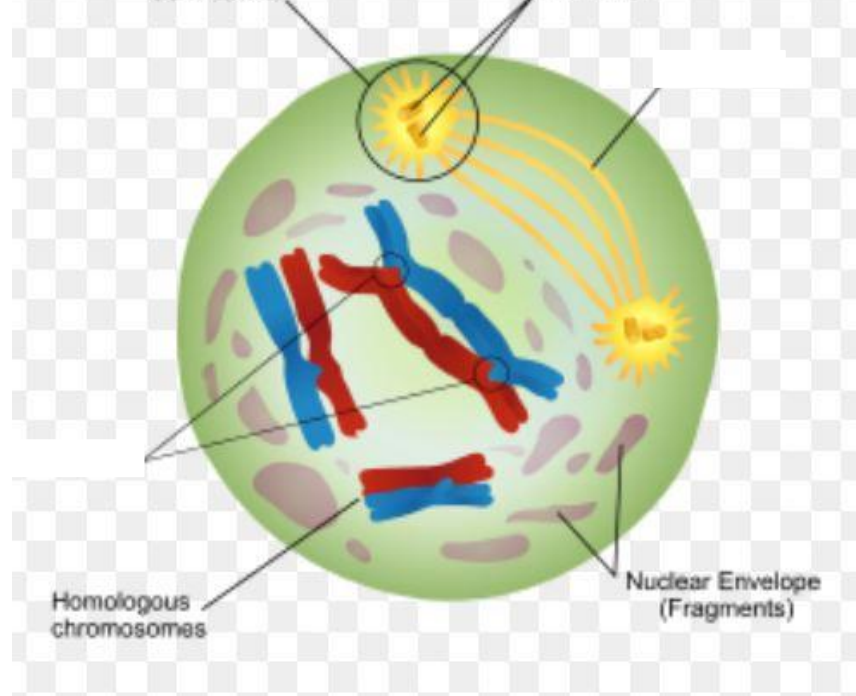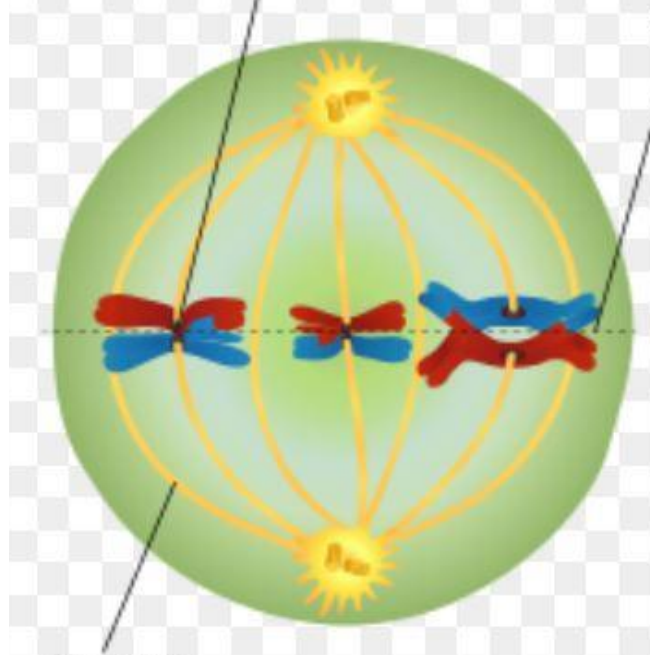Homologous chromosomes

Nuclear Envelope (Fragments)

Prophase I

- Chromosomes condense; nuclear membrane breaks down.
- **Crossing over** occurs.
    - Homologous (matching) chromosomes swap genes.
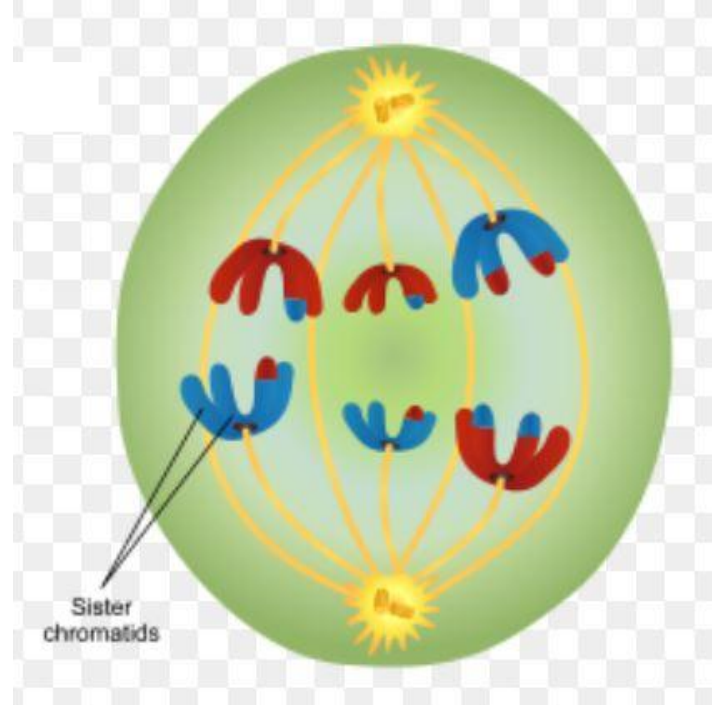   - **Crossing over** increases **genetic diversity!**

2.

Metaphase I

-Homologous chromosome pairs move to the <u>center</u> of the cell

-Pairs line up **randomly**. This is called **independent assortment**.

-**Independent assortment** increases **genetic diversity**
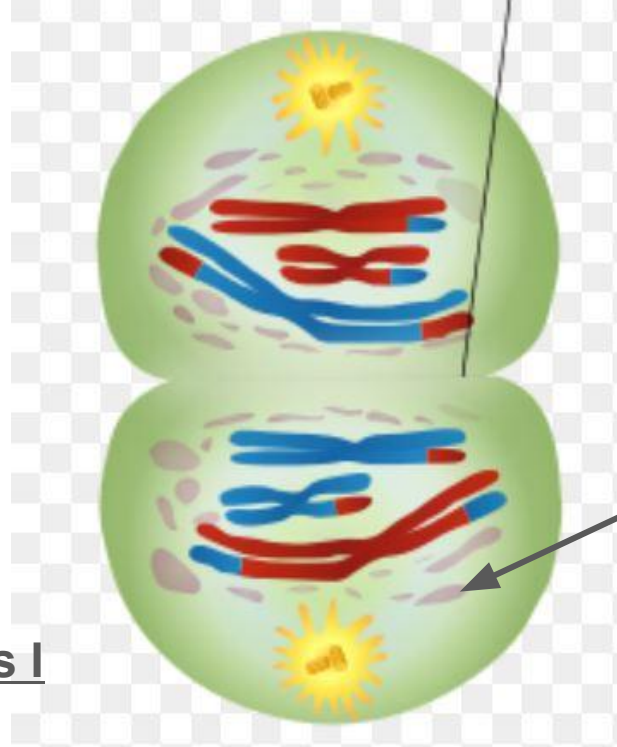
3.

Sister
chromatids

Anaphase I

- Homologous pairs are separated.
- Sister chromatids are still attached.

4.
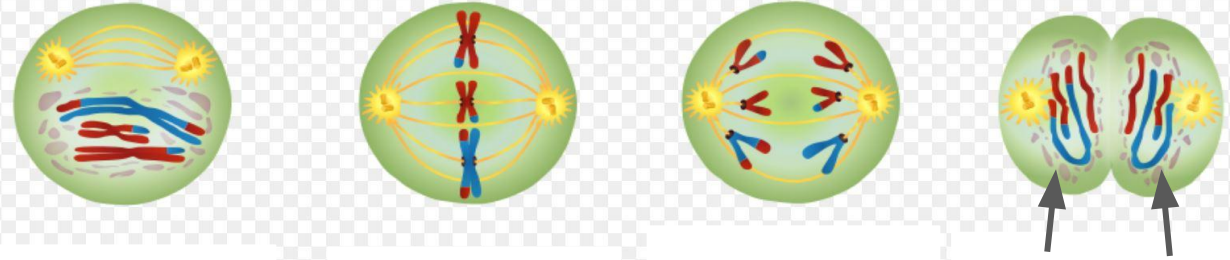

Nuclear envelope is re-forming around the chromosomes

Telophase I and Cytokinesis I

- Chromosomes gather at opposite ends of the cell.
- The cytoplasm divides.
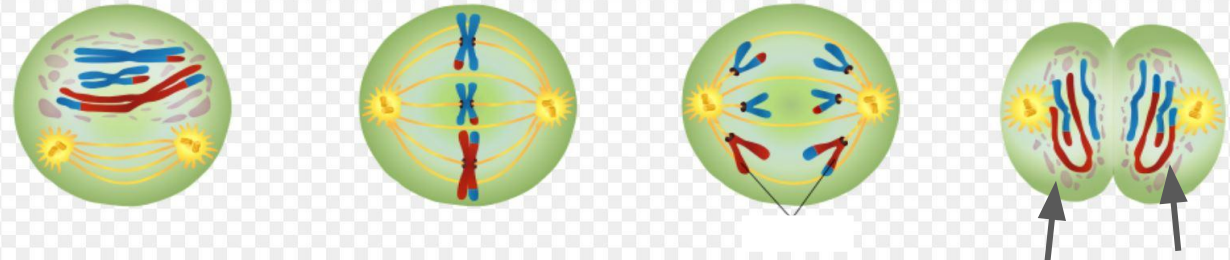- Each cell is genetically different (unique)

5.

Prophase II   Metaphase II   Anaphase II   Telophase II & Cytokinesis

Daughter cell #1

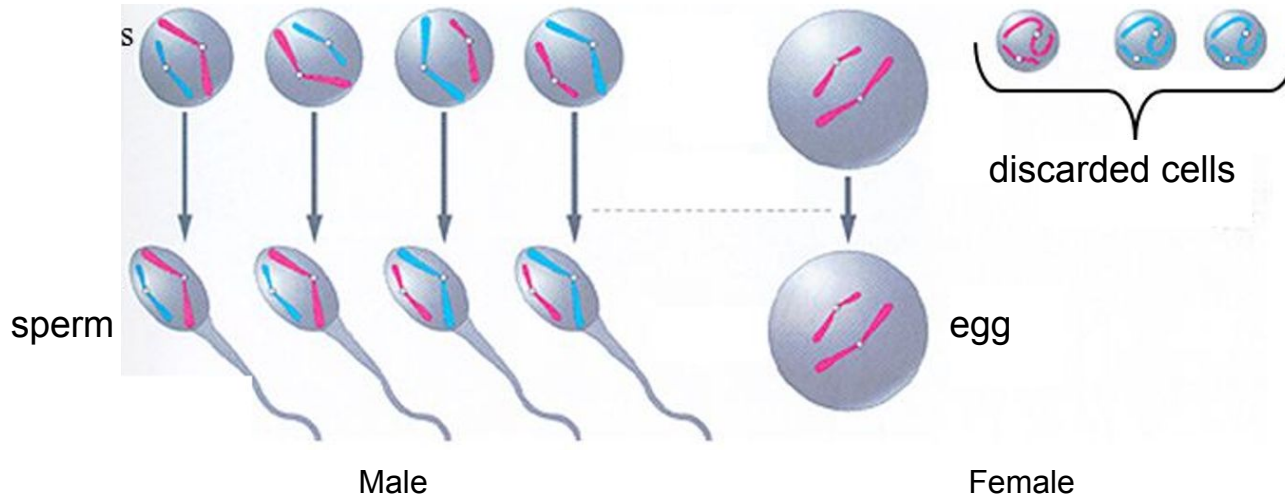Daughter cell #2

Daughter cells #1 and 2

Daughter cells #3 and 4

Meiosis II

- PMAT II and cytokinesis II

- The 2 unique daughter cells from Meiosis I divide again (looks like mitosis).
- The product: ***four unique haploid* daughter cells!**

6.

discarded cells

sperm

egg

Male   Female

Gametogenesis

The **four, unique, haploid daughter cells** created by Meiosis become **egg** or **sperm**.

Haploid sperm + halpoid egg = diploid baby