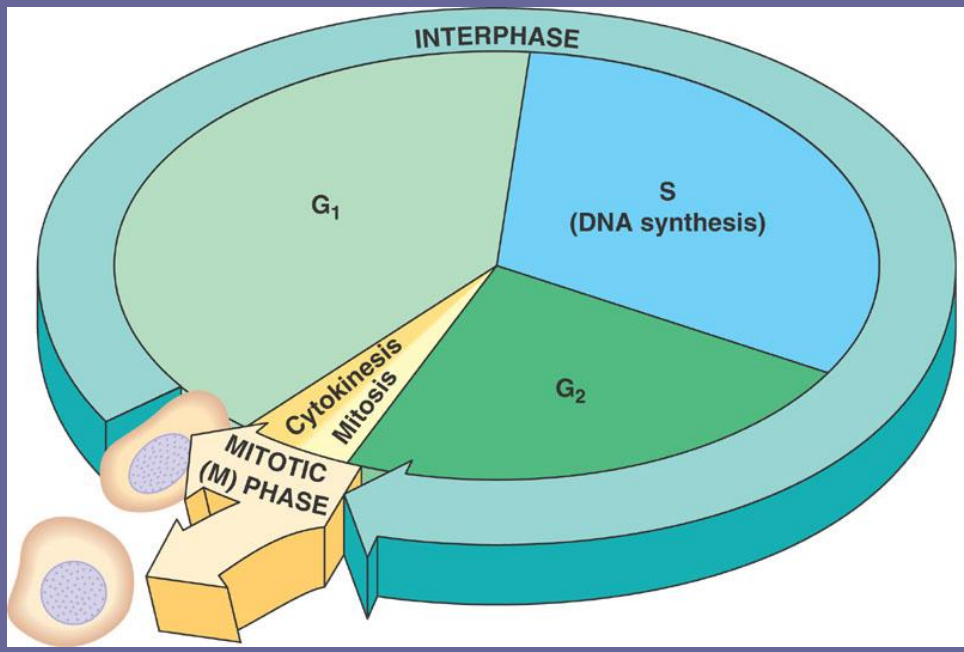
Cell Division and Mitosis

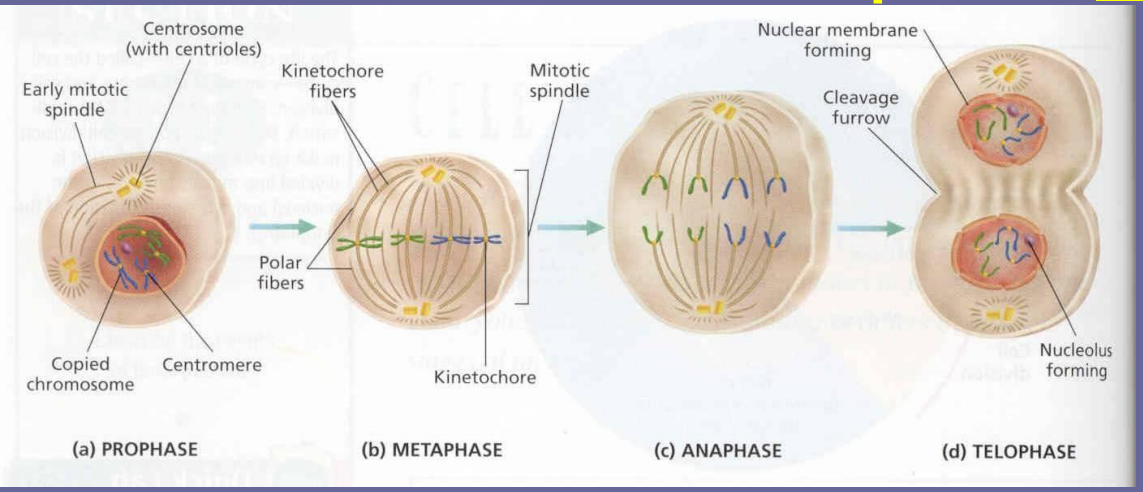
Life of a cell

Cell Cycle

- Makes up the entire life of the cell
- Consists of 2 main parts
  - **Interphase** and **Cell Division**
- **<u>Interphase</u>** is divided into 3 stages
  - G1(**g**rowth 1)
  - S1 (DNA **<u>S</u>**ynthesis)
  - G2 (**g**rowth 2 organelles copied)
- **<u>Cell Division</u>** is divided into 2 stages (mitosis, cytokinesis)



Mitosis = division of 1 diploid nucleus into 2 ***identical*** diploid nuclei



- **Diploid cell (2n).** – cells with 2 of every chromosome.

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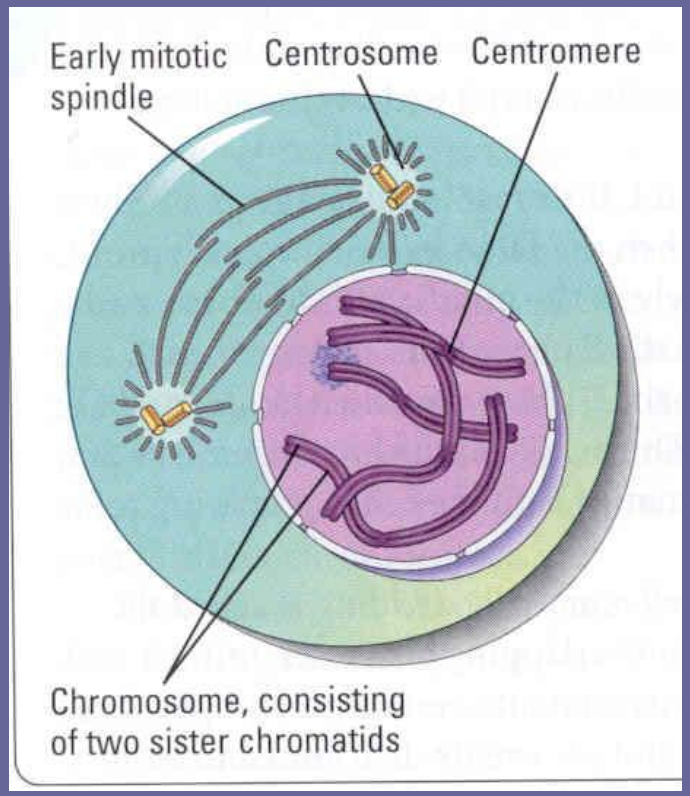
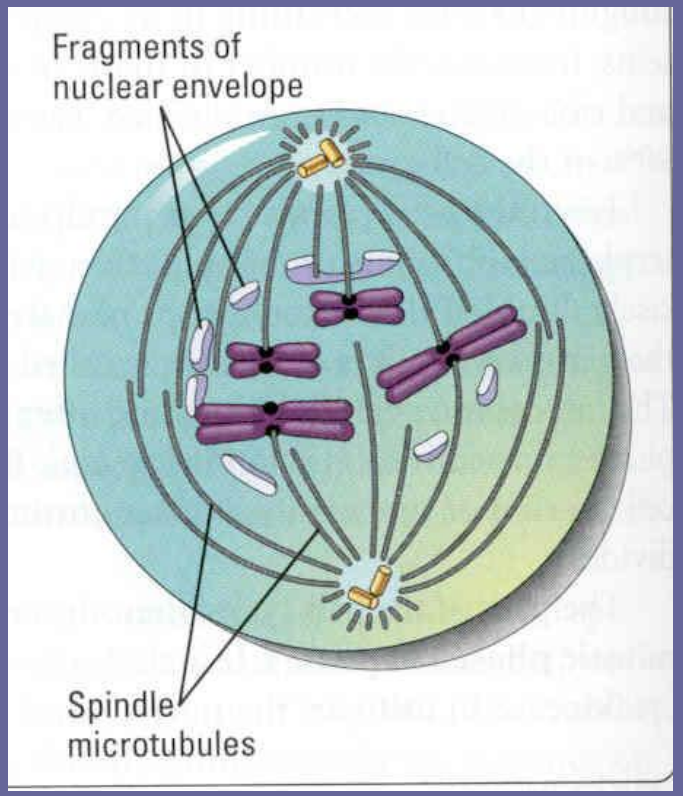
- All ***somatic*** cells undergo mitosis for **growth**, **repair** or **replacement** of old cells

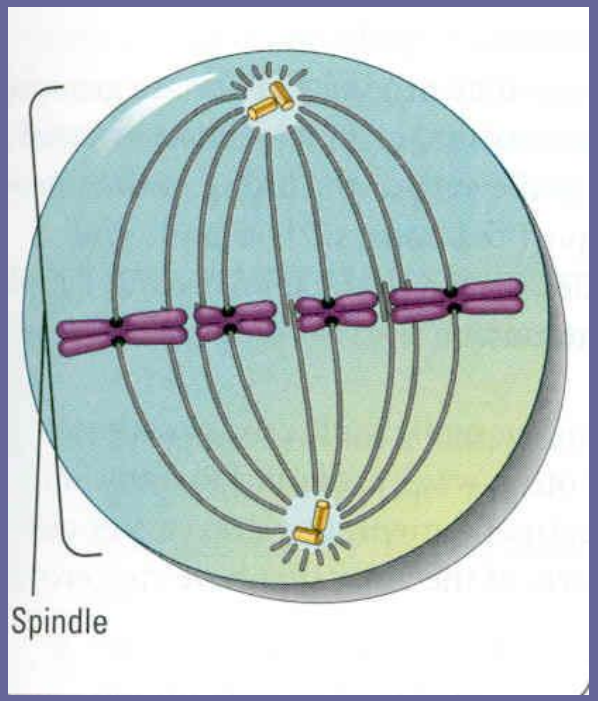
Prophase – 1st phase of mitosis.





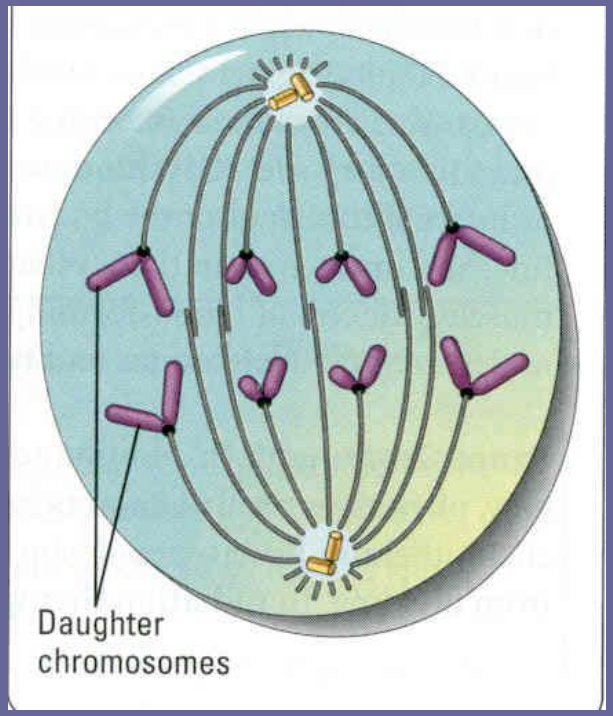
- Chromosomes are now visible
- Centrioles form spindle
- Nuclear envelope/membrane breaks apart

Metaphase – 2nd phase



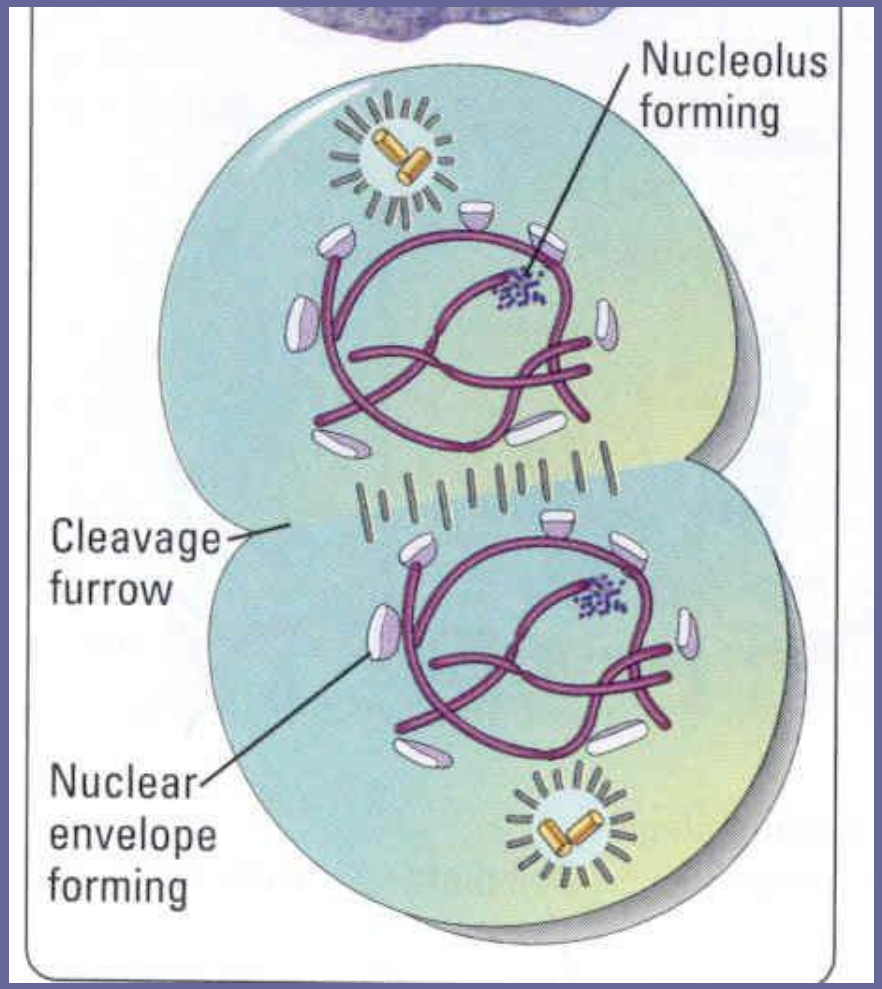
- Chromosomes meet in middle.
- Spindles attach to centromere
- Nuclear envelope/membrane is gone.

Anaphase – 3rd phase



- Chromatids move away from each other.
- Spindles pull chromatids apart
- The nuclear envelope/membrane still absent

Telophase – 4th phase

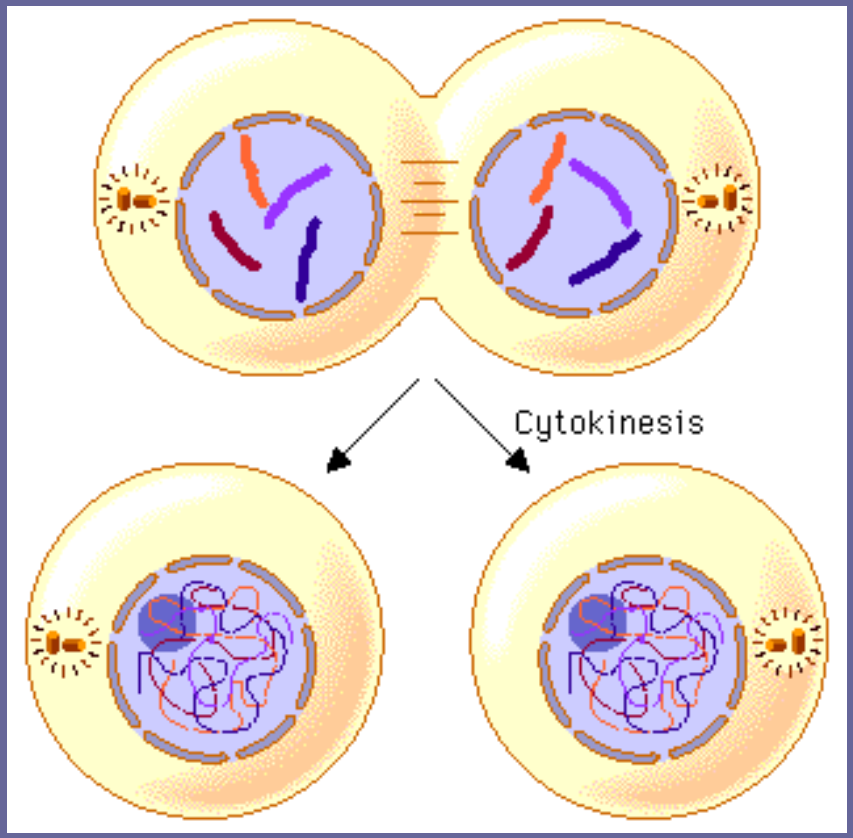


- Chromosomes begin to disappear.
- Spindle fibers disappear
- Two new nuclear envelopes/membranes begin to form

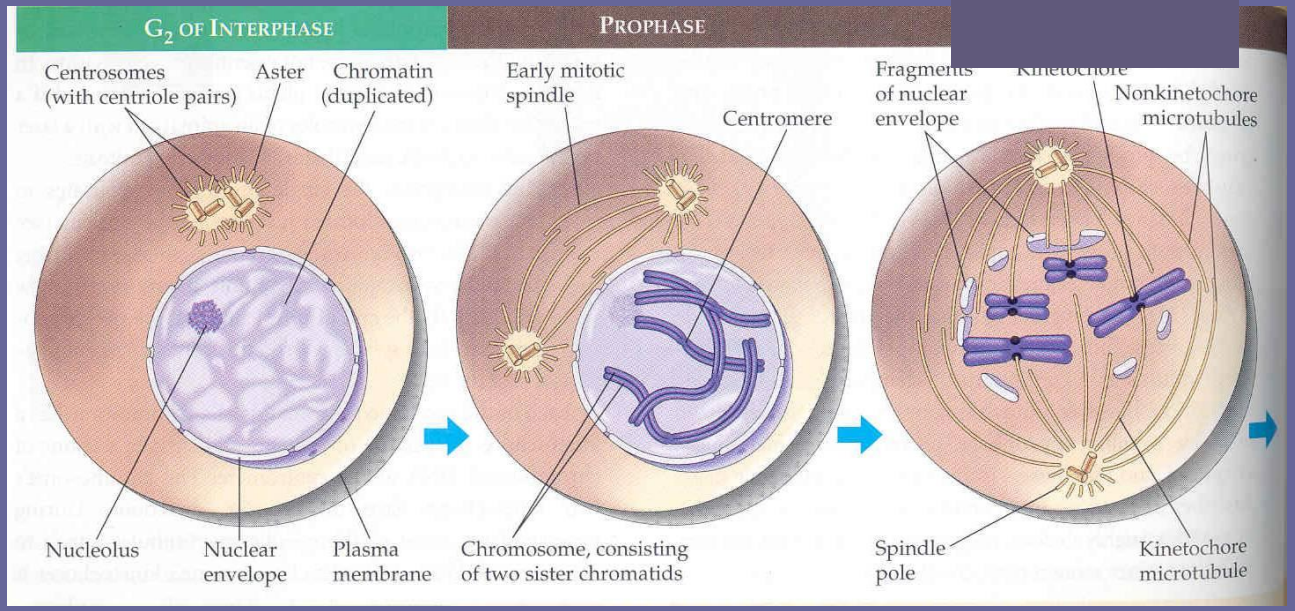
Cytokinesis

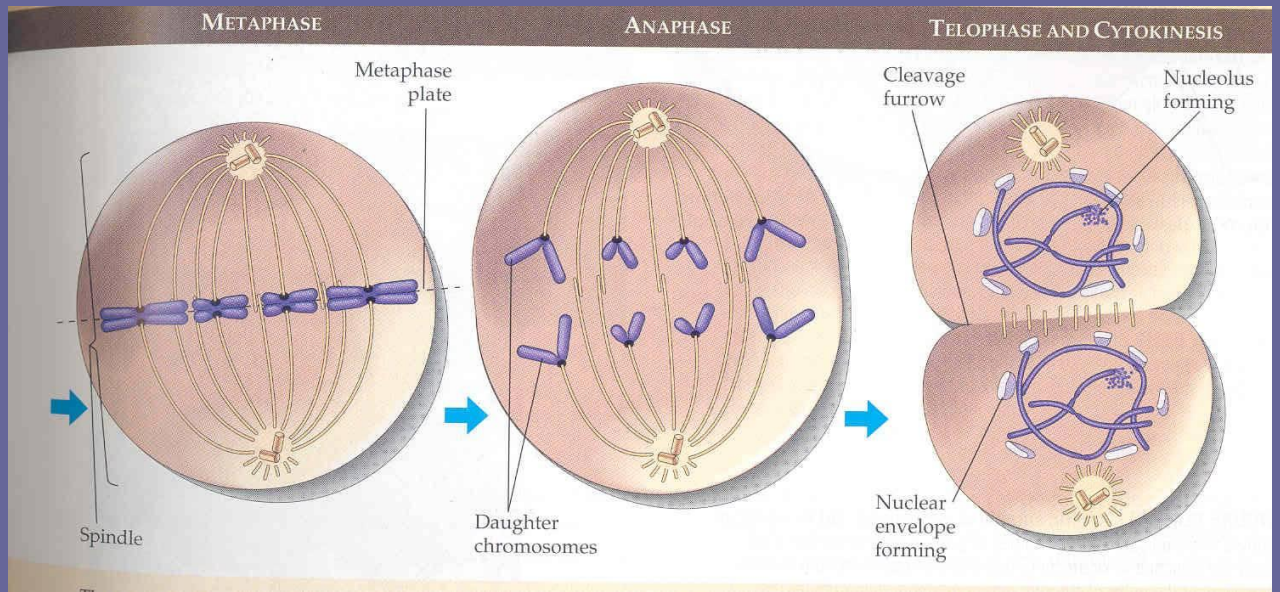
- Division of the cell membrane and cytoplasm.

- Forms **two** new Daughter cells
  - Not one old and one new because of semi-conservative replication



Mitosis - Overview





Mitosis in an actual cell