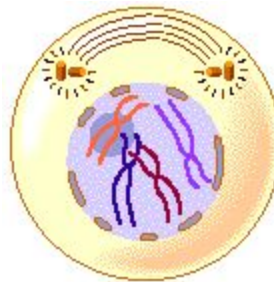


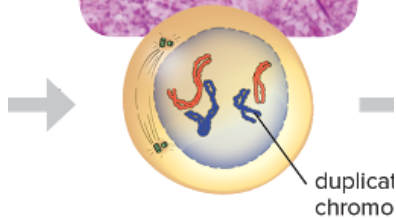
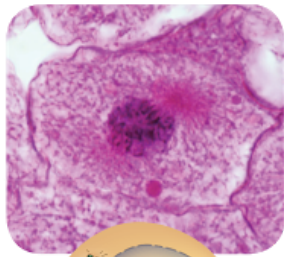
# PROPHASE

The first and longest phase of mitosis is prophase. During prophase, *chromatin* condenses into *chromosomes*, and the *nuclear envelope, or membrane, breaks* down. In animal cells, the centrioles near the nucleus begin to separate and move to opposite poles of the cell. As the centrioles move, a *spindle starts to form* between them.

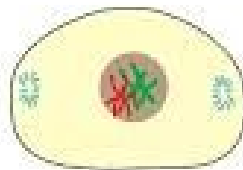
- The nuclear membrane begins to disappear.
- DNA condenses into duplicated chromosomes. Each contains two copies of the same DNA.



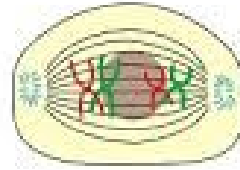
**Prophase**  
The chromosomes appear condensed, and the nuclear envelope is not apparent.



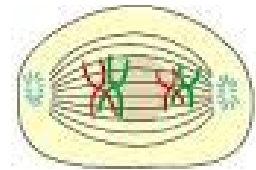
## PROPHASE 1



Early Prophase 1



Mid Prophase 1

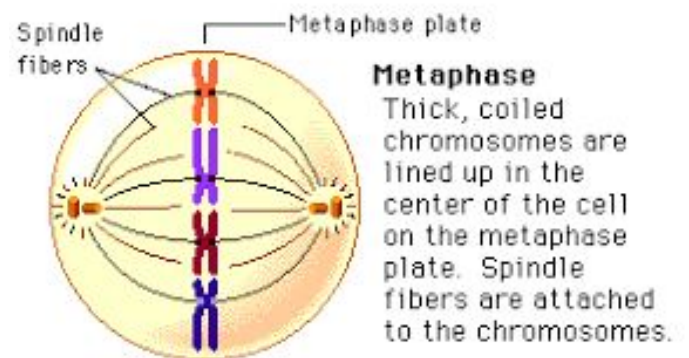
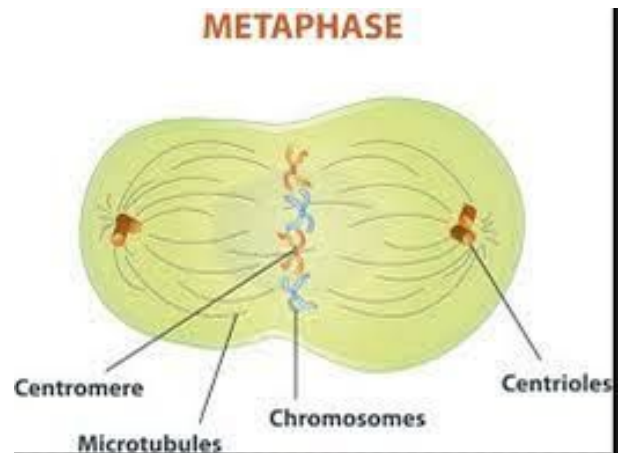
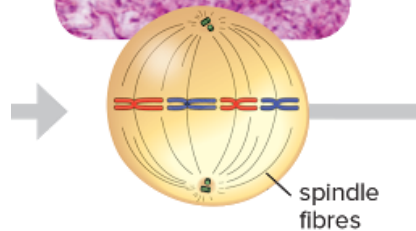
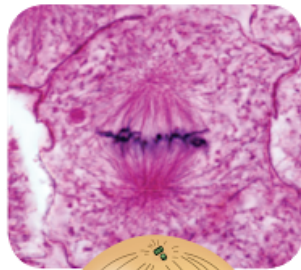


Late Prophase 1

## METAPHASE

During metaphase, *spindle fibers* attach to the *centromere* of each pair of sister chromatids. The sister chromatids line up at the *equator*, or center, of the cell. The spindle fibers ensure that sister chromatids will separate and go to different daughter cells when the cell divides.

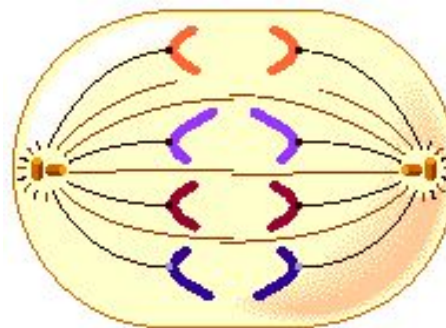
- Structures called spindle fibres guide chromosome movement.
- Chromosomes line up along the middle of the cell.



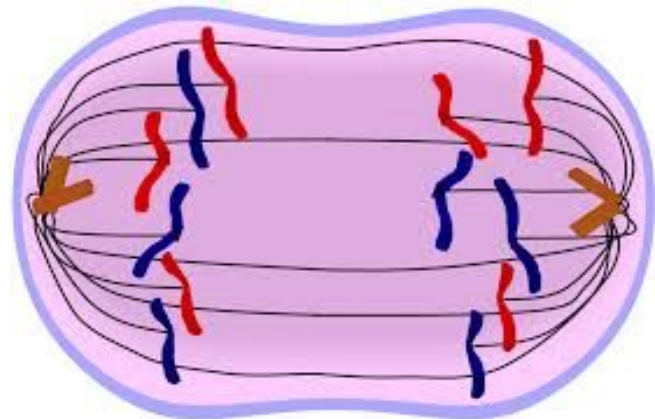
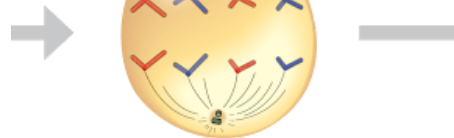
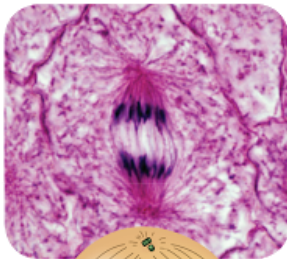
## ANAPHASE

During anaphase, sister chromatids *separate* and the centromeres divide. The sister chromatids are *pulled apart* by the shortening of the spindle fibers. This is like reeling in a fish by shortening the fishing line. One sister chromatid moves to one pole of the cell, and the other sister chromatid moves to the opposite pole. At the end of anaphase, each pole of the cell has a complete set of chromosomes.

- The copies of DNA are separated and go to each end of the cell.



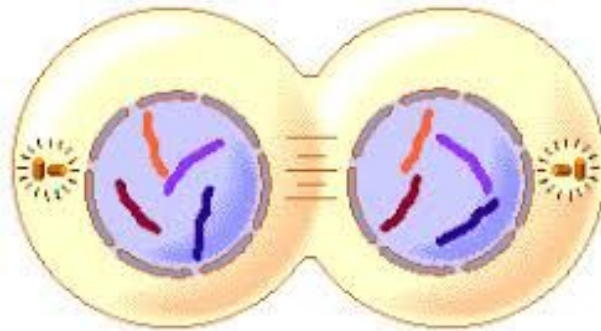
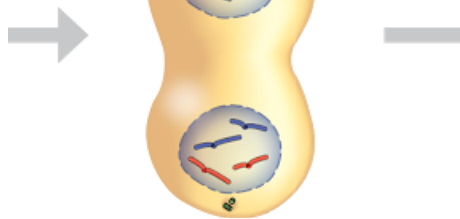
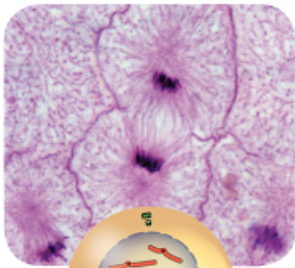
**Anaphase**  
The chromosomes have separated and are moving toward the poles.



## TELOPHASE

During telophase, the chromosomes begin to *uncoil and form chromatin*. This prepares the genetic material for directing the metabolic activities of the new cells. The *spindle* also breaks down, and new nuclear membranes form.

- Two nuclei form and each nucleus contains a complete copy of the cell's DNA.



**Telophase**  
The chromosomes are at the poles, and are becoming more diffuse. The nuclear envelope is reforming. The cytoplasm may be dividing.

