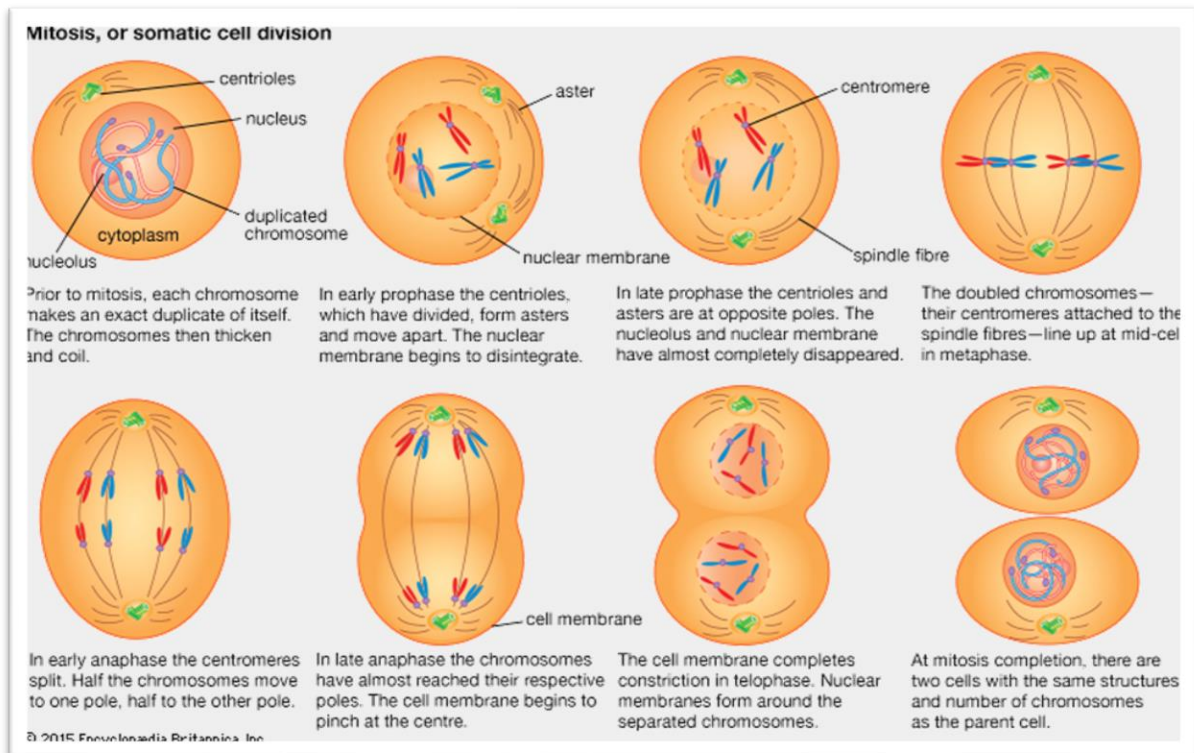


Cell Processes and Energy

Section 4: Phases of Mitosis

The mitotic phase can be broken into four stages. The first and longest stage is called **prophase**. This is where chromatin fibers form chromosomes in the nucleus. Each chromosome consists of a pair of identical chromatids joined at the centromere. The nucleolus disappears, and cells stop making ribosomes. A football-shaped mitotic spindle structure forms, pulling chromosomes toward the cell's center. **Metaphase** is the second and shortest stage of mitosis. Again, the chromosomes are pulled toward the center of the cell. The spindles connect the centromere of each chromosome to the two poles of the spindles. When the chromosomes line up at the center, anaphase begins. The third stage, **anaphase**, is where the sister chromatids separate. Each chromatid is considered a "daughter." Spindles start to shorten, pulling the split chromatids toward opposite ends or poles of the cell. The result is two identical chromosomes. In the final stage, **telophase**, chromatids move to opposite sides of the cell, and two new nuclei are formed, one on each side of the cell. Two daughter cells are formed when a new double membrane forms, allowing cytoplasm to divide and separate by cytokinesis.



Review:

1. During what phase are chromosomes pulled towards the center of the cell?
2. Describe what happens during anaphase.
3. During what phase do two nuclei form?