

Lesson Outline**LESSON 1*****The Cell Cycle and Cell Division*****A. The Cell Cycle**

1. Most cells in an organism go through a cycle of growth, development, and division called the _____.
2. Because of the cell cycle, organisms grow and _____, replace old or damaged cells, and produce new cells.

B. Phases of the Cell Cycle

1. There are two main phases of the cell cycle—interphase and the _____ phase.
2. _____ is the period of growth and development for a cell.
3. During interphase, most cells go through three stages—rapid growth and _____ of the organelles; replication of _____, the genetic information in a cell; and preparation for _____.
4. During the mitotic phase, a cell _____.

C. Length of a Cell Cycle

1. _____ makes up most of the cell cycle.
2. During interphase, the DNA in the cell is called _____.

D. Phases of Interphase

1. Interphase begins with a period of rapid growth—the _____ stage.
2. During the _____ stage of interphase, the cell replicates its strands of chromatin.
3. _____ are the two identical strands of DNA that make up the duplicated chromosome.
4. The sister chromatids are held together by a structure called the _____.
5. The final stage of interphase—the _____ stage—is a period of growth and final preparation for mitosis.

Lesson Outline continued

E. Organelle Replication

1. Before a cell divides, it makes copies of all its _____.
2. In _____, the nucleus and its contents divide.
3. In _____, the cytoplasm and its contents divide.
4. Two new _____ result from mitosis and cytokinesis.

F. Phases of Mitosis

1. During _____, duplicated DNA condenses into chromosomes.
2. During _____, the chromosomes line up in the middle of the cell.
3. During _____, sister chromatids in each duplicated chromosome separate and are pulled in opposite directions by the spindle fibers.
4. During _____, chromosomes begin to uncoil, and two new identical nuclei form.

G. Dividing the Cell's Components

1. After mitosis, _____ usually divides a cell's cytoplasm, forming a new cell membrane around each daughter cell.
2. In animal cells, a(n) _____ in the middle of the cells gets deeper until the cell _____ comes together to divide the cell.
3. In plant cells, a(n) _____ grows outward toward a new cell wall until two new cells form.

H. Results of Cell Division

1. The cell cycle results in two new _____ that are genetically identical to each other and to the original cell, which no longer exists.
2. The cell cycle is important for reproduction in some organisms, growth in _____ organisms, replacement of worn-out or damaged cells, and repair of damaged tissues.