

## **Concept 9.2**

### **The cell cycle multiplies cells.**

#### **Chromosomes and Cell Division**

##### **Chromosomes:**

Chromatin - a combination of DNA and protein molecules.

Chromosomes - as a cell prepares to divide , its chromatin fibers condense, and form compact structures.  
(Humans have 46 chromosomes in their body cells, many with hundreds of genes.)

Sister chromatids - Identical joined copies of chromosomes formed before cell division.

Centromere - The region where the two chromatids are joined.

##### **The Cell Cycle:**

**Interphase** - cell carries out its metabolic processes and performs its functions.  
( Upto 90 % of the cell cycle )

##### **Phases of Interphase:**

**S phase** - Duplication of the DNA  
( S stands for DNA synthesis)

**G1** - period before the S phase where the cell grows.

( G stands for gap )

**G2** - period after the s phase where duplicated chromosomes remain loosely packed as chromatin fibers and cell prepares to divide.

**M phase** - Mitotic phase where the cell is actually dividing. It includes **mitosis** and **cytokinesis**.

**Mitosis** - The nucleus and the duplicated chromosomes divide and are evenly distributed forming two daughter nuclei.

**Cytokinesis** - The process by which the cytoplasm is divides in two.