Interphase

Anything other than mitosis is considered to be 'interphase.' This is where the eukaryotic cell spends the majority of its life. It is where the cell does its 'daily living' – gathering nutrients, metabolising, growth occurs, transcribing DNA, translating mRNA etc. Interphase can be split into 3 sub phases:

1. G_1
    a. High amount of protein synthesis occurs
    b. Cell grows to about double its size
    c. More organelles are produced
    d. If the cell is not to divide again it will enter G_0
2. S
    a. Cell duplicates its DNA
    b. Also known as the Swanson phase
3. G_2
    a. Cell resumes its growth in preparation for division

The duration of time spent in interphase and in each sub phase is variable and depends on the cell type and the species that the organism belongs to.

In programmed cell death, interphase is followed by, or pre-empted by, apoptosis.

Prophase

This is the first stage of mitosis.

- Chromatin condenses into chromosomes
    - These become visible under the microscope
    - There are two identical copies of each chromosome in the cell due to prior replication (S phase)
- The mitotic spindles begin to form
    - Made up of microtubules
    - Form at opposite ends of the cell