



|                   | Mitosis  | Meiosis   |
|-------------------|--|---|
| <b>Process</b>    | <ul style="list-style-type: none"> <li>- single division</li> <li>- no crossing over ∴ no exchange of genes</li> <li>- single file of chromatids at metaphase</li> <li>- takes place in somatic cells</li> <li>- number of chromosomes remains constant in daughter cells</li> </ul> | <ul style="list-style-type: none"> <li>- double division</li> <li>- crossing over to allow exchange of genes</li> <li>- double file of chromatids at metaphase</li> <li>- takes place in germ cells</li> <li>- number of chromosomes reduces to half in daughter cells</li> </ul> |
| <b>Outcomes</b>   | <ul style="list-style-type: none"> <li>- daughter cells are identical to each other</li> <li>- daughter cells are identical to parent cell</li> <li>- 2 diploid somatic cells are produced</li> </ul>  | <ul style="list-style-type: none"> <li>- daughter cells are not identical to each other</li> <li>- daughter cells are not identical to parent cell</li> <li>- 4 haploid gametes are produced</li> </ul>   |
| <b>Importance</b> | <ul style="list-style-type: none"> <li>- growth</li> <li>- repair of body tissues</li> <li>- genetic continuity</li> </ul>   | <ul style="list-style-type: none"> <li>- variation</li> <li>- genetic continuity: by reducing the number of chromosomes to half allows a constant number for the human species</li> </ul>   |
| <b>Examples</b>   | Skin cells, amoeba, red blood cells  | Sperm, oocytes (eggs)   |

Name: \_\_\_\_\_

## Discovering Biology—Chromosome Numbers Worksheet

Complete the table below to show the number of chromosomes present in different stages of cell division in a variety of species.

**Table 5.1** Number of Chromosomes Present at Different Stages of Cell Division

|            | Number of Chromosomes in Daughter Cells of Mitosis | Diploid Number | Haploid Number | Number of Pairs of Homologous Chromosomes | Number of Chromosomes Present in Meiosis at the Beginning of the Following Phases |             |              |
|------------|--|----------------|----------------|---|---|-------------|--------------|
|            |  |                |                |   | Prophase I  | Telophase I | Telophase II |
| Cabbage    | 18   | 18             | 9              | 9   | 18  | 9           | 9            |
| Trillium   |  |                |                | 5   |   |             |              |
| Black Bear |  |                |                |   |   |             | 38           |
| Human      |  |                |                |   |   | 23          |              |
| Fruit Fly  |  | 8              |                |   |   |             |              |
| Peanut     | 40   |                |                |   |   |             |              |