# Lab 9: Cell Division

## Name and Course Section:

## Procedure (for mitosis)

an onion root tip cell in

prophase 400X

an onion root tip cell in interphase 400X

an onion root tip cell in metaphase 400X

an onion root tip cell in

anaphase 400X

an onion root tip cell in

telophase 400X

**Data Table for Estimating Mitosis Stage Length in Onion Root Tip Cells**

|  |  |  |  |
| --- | --- | --- | --- |
| **Cell Stage** | **# of instances**  **(make tally marks)** | **Proportion of total number of cells** | **Time (in minutes) of stage** |
| Interphase |  |  |  |
| Prophase |  |  |  |
| Metaphase |  |  |  |
| Anaphase |  |  |  |
| Telophase |  |  |  |
| Total |  |  |  |

**Show work for calculation of time (column 4) on table above:**

a whitefish blastula cell in prophase 400X

a whitefish blastula cell in interphase 400X

a whitefish blastula cell in in metaphase 400X

a whitefish blastula cell in anaphase 400X

a whitefish blastula cell in telophase 400X

## Procedure (for meiosis)

**Interphase, pre-replication**

Ploidy Level:

**Interphase, post-replication**

Ploidy Level:

**Metaphase I**

Ploidy Level:

**Prophase I**

Ploidy Level:

**Anaphase I**

Ploidy Level:

**Telophase I**

Ploidy Level:

**Metaphase II**

Ploidy Level:

**Prophase II**

Ploidy Level:

**Anaphase II**

Ploidy Level:

**Telophase II**

Ploidy Level:

## Summary Questions

1. A human cell typically contains 46 chromosomes. How many chromosomes would each of the 2 daughter cells contain if the cell completed mitosis? How many chromosomes would each of the 4 daughter cells contain if the same cell completed meiosis?
2. Based on your experimental results, rank the stages of mitosis (including interphase) in order from slowest to fastest. Next, suggest a plausible reason why your slowest stage takes so long.
3. Use your own words to describe how the process of cytokinesis differs between plant and animal cells.
4. For each of the following times during mitosis in the cell cycle, state whether the chromosomes are in single-stranded (SS) or double-stranded (DS) form:
   * At the very beginning of interphase:
   * At the end of interphase:
   * At the beginning of prophase:
   * At the beginning of metaphase:
   * At the beginning of anaphase:
   * At the beginning of telophase: