Names: _____ Class: _____ Date: _____

Biology
Mr. Croft

Mitosis Laboratory

100 Points

Part I: Observing Mitosis in Plant Cells Using Prepared Slides of the Onion Root Tip

Procedure:
1. Examine prepared slides of an onion root tip.
2. Locate the meristematic region of the onion with the low power objective, and then use the high power objective to study individual cells.
3. Identify **one cell** which clearly represents each phase. Draw detailed, labeled pictures of each phase – see data table for 5 phases. (10 points per picture)

Questions:
1. Why is it more accurate to call mitosis "nuclear division" rather than "cellular division"? (10 points)

2. Explain why the whitefish blastula and onion root tip are selected for a study of mitosis. (10 points)

Part II: Time for Cell Replication

Procedure:
1. Observe every cell in one high power field of view and determine which phase of the cell cycle it is in. One person should call out the phase of each cell while the other partner records. Count three fields of view (partners should take turns counting).
2. Record your final data on the table on the back of this page.
3. Calculate the percentage of cells in each phase. Consider that it takes, on average, 24 hours (or 1,440 minutes) for onion root-tip cells to complete the cell cycle. You can calculate the amount of time spent in each phase of the cell cycle from the percent of cells in that stage.
   % of cells in stage X 1,440 minutes = _____ minutes of cell cycle spent in stage
4. Construct a bar graph of your data in the table with Percent of Total Cells Counted on the Y-axis and Cell Cycle Phase on the X-axis. (10 points)

Data Table:

	Number of Cells				Percent of Total Cells Counted	Time in Each Stage
	Field 1	Field 2	Field 3	Total		
Interphase						
Prophase						
Metaphase						
Anaphase						
Telophase						
			Total Cells Counted:			

Questions:

3. If your observations had not been restricted to the area of the root tip that is actively dividing, how would your results have been different? (10 points)

4. Based on the data in the table, what can you infer about the relative length of time an onion root-tip cell spends in each stage of cell division? (10 points)