

Mitosis in Plant Cells Lab

Names: _____ Period # _____

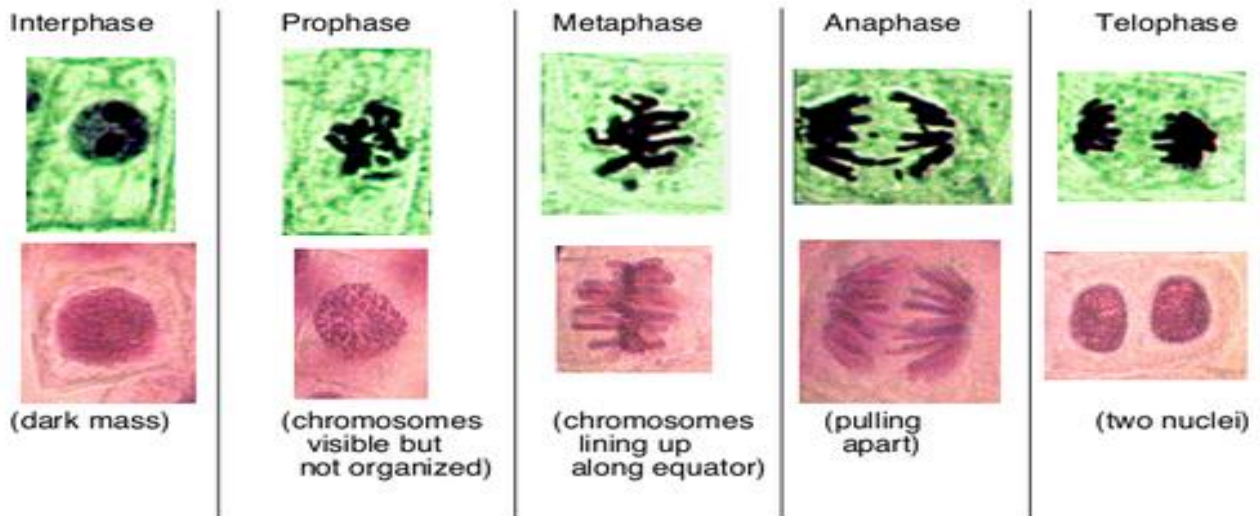
Reproduction of most cells in plants and animals uses the type of cell division called Mitosis. In this activity, you will study mitosis in plant cells by examining prepared slides of onion root-tip cells.

Investigation: How can plant cells in different phases of mitosis be distinguished from each other?

Materials: Prepared slide of onion root tip cells, Microscopes, Computers.

Goals:

1. Compare cells in different phases of mitosis and observe the location of their chromosomes.
2. Observe what phase of mitosis is most common in onion root tip cells.



PROCEDURE

1. Mr. Hanson will share these Lab Guidelines with you. You will need to first edit the title in the upper left hand corner of this

document: Mitosis in Plant Cells Lab, your names and Period #.
You will need to share it with your partner and Mr. Hanson.

- 2. Use the Data Table below to place your data you collect in. Insure that your data numbers are in red, and bold.**
- 3. Obtain a prepared slide of onion root tip cells from Mr. Hanson.**
- 4. Set your microscope on the 4th power and examine the cells. Move the slide until you can see the tip of the root. You will see several large, round cells. These cells are called the root cap. Move your clide until you see the cells in the area just behind the root cap. Turn the nosepiece to the 10th power.**
- 5. Find one area of cells where you can see the most phase of mitosis. Count how many cells you see in each phase and record your data in the table.**
- 6. Compare the cells in the region behind the root cap to those in the root cap. Mr. Hanson will explain this on the SmartBoard.**
- 7. In addition, in order to use 40X lens, you must lower the stage a little and then as you raise the stage to get the cells in magnification, insure that you do not scratch the slide or microscope lens, or put pressure on the slide and break it. Be very careful using the 40X lens.**
- 8. Once completed, bring your slide back to Mr. Hanson, and shut down your microscope by turning the objective lens to 4X, lower the stage, and turn off the light.**
- 9. Calculate the percent of cells found in each phase of mitosis.**

Number of Root-Tip Cells Observed		
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Phase of Mitosis	Number of Cells Observed	Percent of Cells Observed
Interphase		
Prophase		
Metaphase		
Anaphase		
Telophase		
Cytokinesis		

Final: Graph your results using Google Docs Spreadsheet. You will need to:

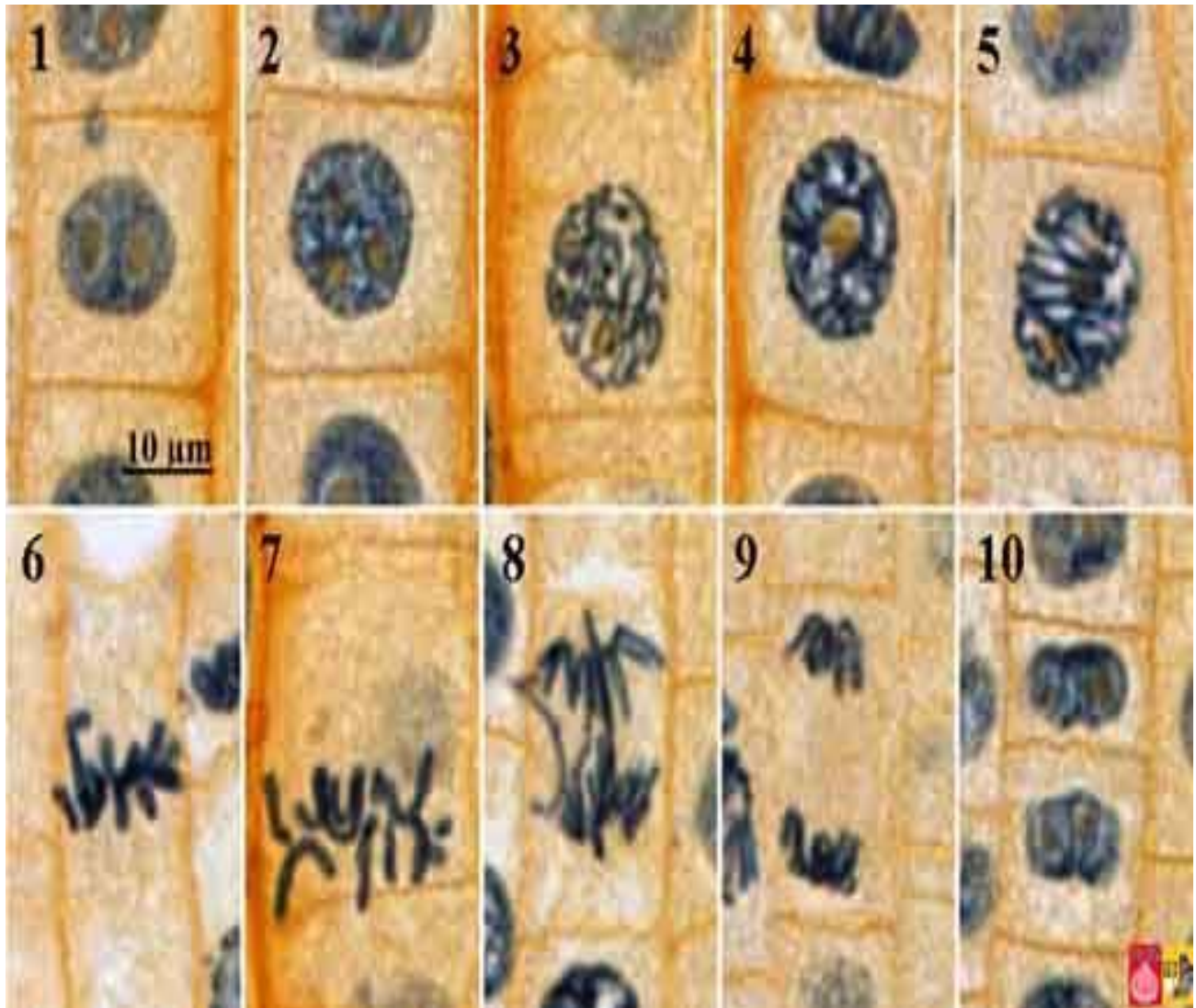
- 1. Type in the Phases of Mitosis in the A column.**
- 2. Type in the Percent of Cells observed in the B column.**
- 3. Title of your Spreadsheet should be Mitosis in Plant Cells Spreadsheet, your names and period #.**
- 4. Highlight these cells and Insert a Graph, click on Chart, and select the Pie Chart with %.**
- 5. As soon as the Pie Chart comes up, click on the word “Chart” on the Pie Chart. Title your Pie Chart: Percentage of Cells in the Different Phases of Mitosis.**
- 6. Share this document with Mr. Hanson and your partner.**

Questions:

- 1. Which phase of mitosis takes the longest period of time?**
- 2. Which phase of mitosis contained the least % of cells?**
- 3. Which phase of mitosis contained the most % of cells?**
- 4. Why would we use a plant root tip to observe the Phases of Mitosis in cells?**
- 5. Which part of the Cell Cycle are cells growing and developing, DNA is copied, and preparing for Mitosis?**
- 6. Which phase of mitosis can you begin to see the chromosomes?**
- 7. Which phase of mitosis does the chromosomes line up?**
- 8. Which phase of mitosis shows the chromosomes being split apart?**
- 9. Which phase of mitosis shows the chromosomes on opposite ends of the cell and beginning to form a nuclear membrane?**
- 10. Which part of the Cell Cycle shows the division of the cytoplasm and two new cells?**

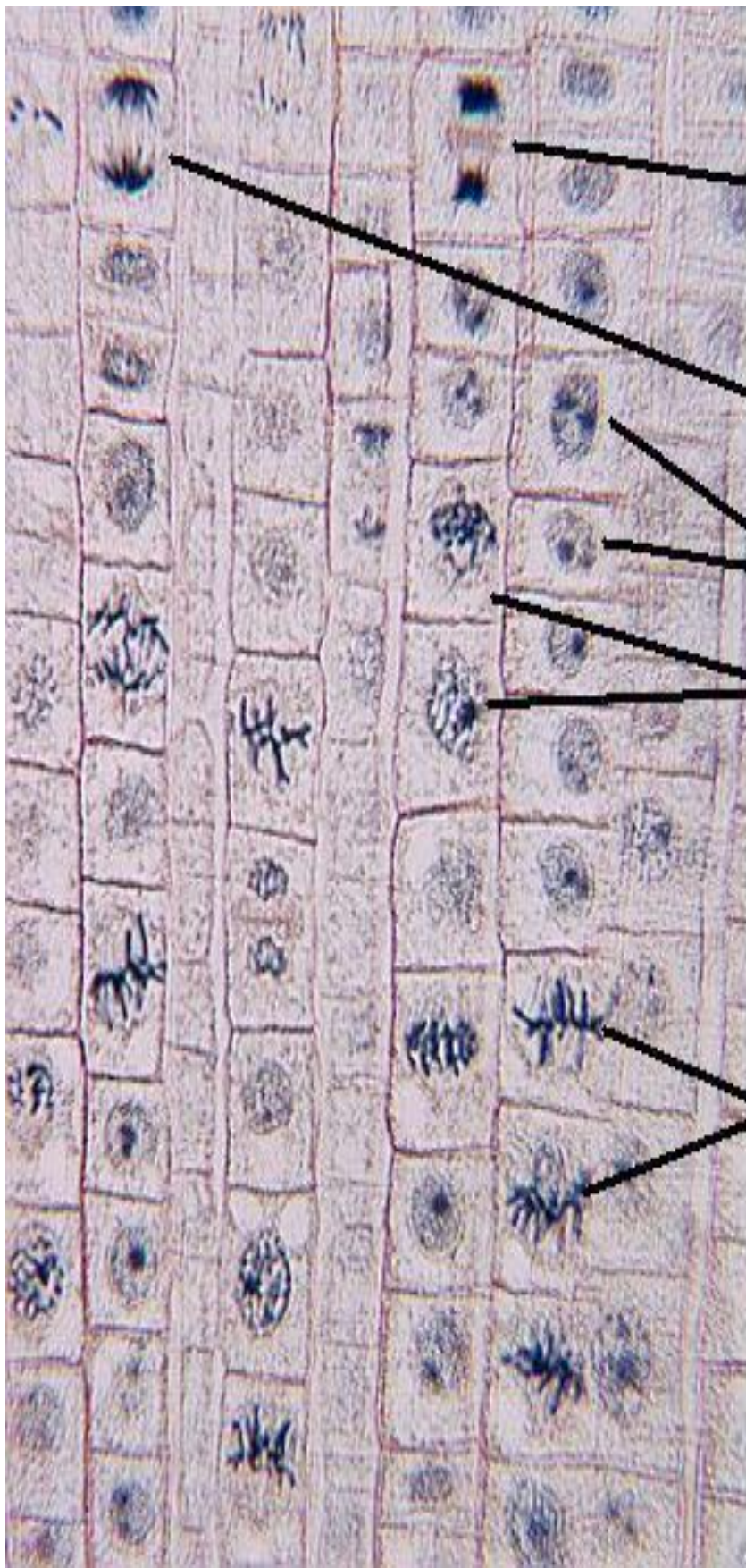
Lab is worth 100 points.

Pie Chart is worth 50 points.



Questions:

1. Which #s above shows the cells in Interphase:
2. Which #s above shows the cells in Prophase:
3. Which #s above shows the cells in Metaphase:
4. Which #s above shows the cells in Anaphase:
5. Which #s above shows the cells in Telophase:
6. Which #s above shows the cells in Cytokinesis:



Telophase

Anaphase

Interphase

Prophase

Metaphase