INSTRUCTIONS FOR LAB 3 – MITOSIS AND MEIOSIS

You <u>DO NOT</u> have to put any of this lab into your composition book.

Exercise 3A.1 - Mitosis
Use Biology Project website
Online Onion Root Tip Mitosis Lab. University of Arizona
http://www.biology.arizona.edu/cell_bio/activities/cell_cycle/cell_cycle.html You can find this link on my website.
Go through entire tutorial "onion root tips"
- ❖ Draw pictures
- ❖ Do Analysis Questions in packet

Exercise 3A.2 - Mitosis
Use Biology Project website
- ❖ Fill out Table 3.1 using data from Biology Project website activity, calculate percentages
- ❖ Do Analysis Questions in packet

Exercise 3B.1 - Meiosis
- ❖ Do all questions and fill out Table 3.2
- ❖ You can come into tutorial to use the models or create drawings based on the examples in the lab book.
- ❖ Do Analysis Questions in packet.

Exercise 3B.2 – Meiosis
Instead of doing the procedure, go to the following website:
http://www.biologyjunction.com/sordaria_lab_pictures.htm
You can find this link on my website.

- ❖ Use slides 1-5 on this website to get the data you need for Table 3.3.
- ❖ Count until you have 50 octads. **<u>ONLY</u>** use the ones where you can see **<u>ALL 8</u>** ascospores.
- ❖ Do Analysis Questions in packet and add the questions from this worksheet to the end of the packet.

Mitosis and Meiosis
Analysis Questions

1.   How does crossing over benefit a species? How might it harm the species?

2.   How does Meiosis I differ from Mitosis? How is it the same?

3. Distinguish between somatic cells and germ cells as to their location, formation and function.

4. What are MPFs, Cdks and cyclins? What is the relationship among these molecules in controlling the cell cycle?

5. Can a cell that is normally non-dividing be stimulated to divide? When does this happen and how is it accomplished in an organism?

6. Cancer cells do not *respect their neighbors*. Describe what this means in more technical terminology. How is this different than normal cell functioning?

Review the data below and answer the questions that follow.

Table 2. Time spent in stages of the cell cycle in normal and cancerous chicken stomach cells.

	Interphase	Prophase	Metaphase	Anaphase	Telophase	Total time
Normal Chicken Stomach Cells	540 mins	60 mins	10 mins	3 mins	12 mins	
Cancerous Chicken Stomach Cells	75 mins	15 mins	2 mins	1 minute	3 mins	

7. Determine the time of the cell cycle for both normal and cancerous cells. How does it differ?

8. What percent of time does a normal cell spend in interphase?

9. What percent of time does a cancerous cell spend in interphase?