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

Divide and Conquer (Divide et impera, meaning divide and rule, Julius Caesar)

1. Go to <http://bio.rutgers.edu/~gb101/lab2_mitosis/index2.html>

2. Why is looking at an onion root tip a good place for observing the phases of the cell cycle?

3. Refresh your recollection of the phases of the cell cycle by looking at p. 285 of your text.

4. Click “Begin assignment” and read the introductory instructions.

5. Watch the video of mitosis. There is audible narration.

6. Click to begin and then follow the directions.

Onion root tip. Draw a colored picture of a root tip cell in each stage (I, P, M, A, T/C). You must scroll around until the site allows you to click on a particular cell.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Interphase | Prophase | Metaphase | Anaphase | Telophase/Cytokinesis |
|  |  |  |  |  |

7. Continue to whitefish blastula (Mitosis in an Animal Cell), read the instructions, and then click to begin.

Whitefish blastulae. Click on each frame and identify the phase each highlighted cell is in. Start at the top left and work left to right as you go down. You may just put I, P, M, A, and T/C instead of the phase names.

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

8. Go to <http://www.biology.arizona.edu/cell_bio/activities/cell_cycle/cell_cycle.html>

9. Read the introductory material. Click “Next” and read about the phases.

10. What major event happens in interphase?

11. Click “Next” and read the directions. You are going to be identifying cells and calculating how long onion

root tip cells spend in each phase of the cell cycle. The cell cycle for onion root tips takes about 1,440

minutes (24 hours) to complete.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Interphase | Prophase | Metaphase | Anaphase | Telophase/Cytokinesis | Total |
| # of cells |  |  |  |  |  | 36 |
| % of cells |  |  |  |  |  | 100 |
| Min. spent in each phase |  |  |  |  |  | 1,440 |

12. To find %............. # per phase x 100 = % of cells per stage

36

13. # of min. spent in each phase = % of cells per stage (converted back to decimal form) x 1440 min.

14. 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?

15. If a parent cell begins with 12 chromosomes, how many chromosomes will each of the two daughter cells

have? \_\_\_\_\_\_\_\_\_\_\_\_\_

16. Create a pie chart using the data from the table. Label all stages – Interphase, Prophase, Metaphase,

Anaphase, Telophase/Cytokinesis. Label Mitosis, also. You must do some math………You know the

percentages from above. Knowing these and the fact that a circle has 360o, you can figure out the

angles. Add color.

