

List the 3 phases of interphase in order and describe what happens in each

Get a chromebook

What is the name of the process that happens after interphase?

What is happening in this process?

What is produced at the end of cell division?

How do the number of chromosomes in each cell compare at the end of cell division?

**List the 3 phases of interphase in order and describe what happens in each**

G1: Cell Grows, organelles replicate

S: DNA Replication

G2: Grows, prepares to start division

**What is the name of the process that happens after interphase?**

mitosis

**What is happening in this process?**

division of nucleus (DNA)

**What is produced at the end of cell division?**

2 identical daughter cells

**How do the number of chromosomes in each cell compare at the end of cell division?**

number of chromosomes is the same at the end as the beginning

**To pick up: Lab**

**Chrome Book**

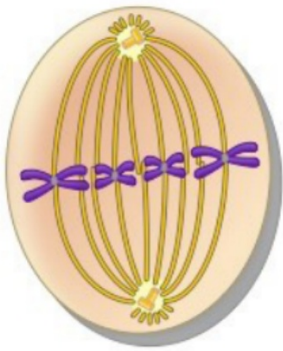
**To get out: Warm Up Sheet**

**Homework- leave it on your desk with questions facing up.**

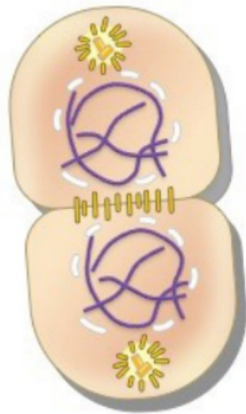
**Homework: 10 pt miniquiz tomorrow on phases of the cell cycle**

**Warm Up:**

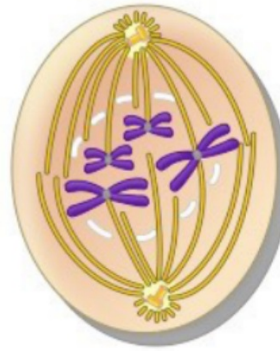
**Put the following pictures in order!**



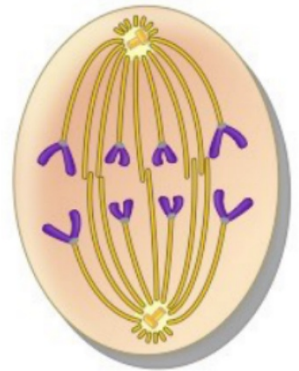
**A**



**B**



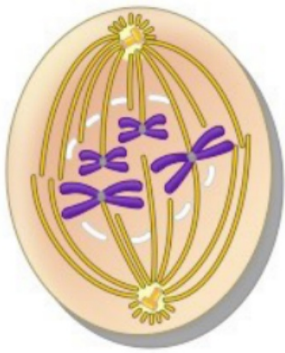
**C**



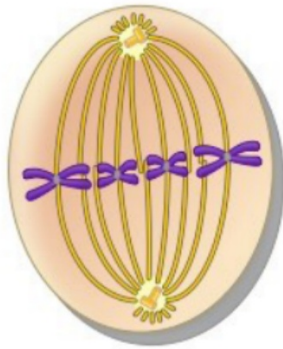
**D**

Warm Up:

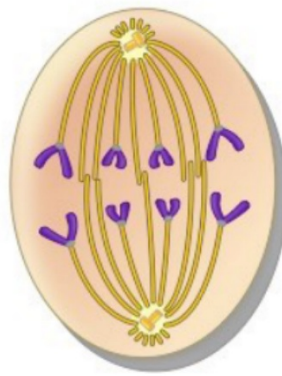
Put the following pictures in order!



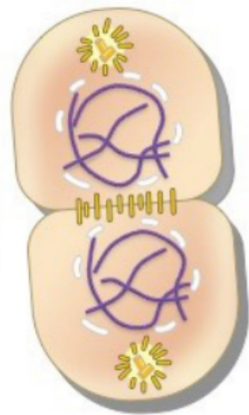
C



A



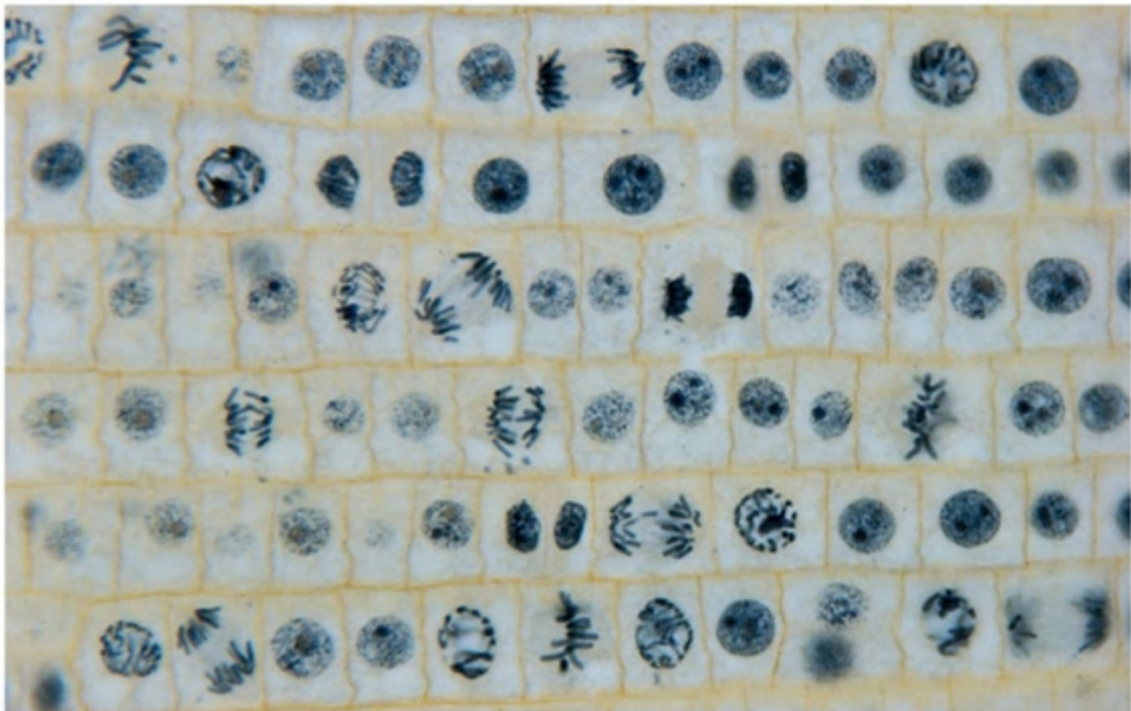
D



B

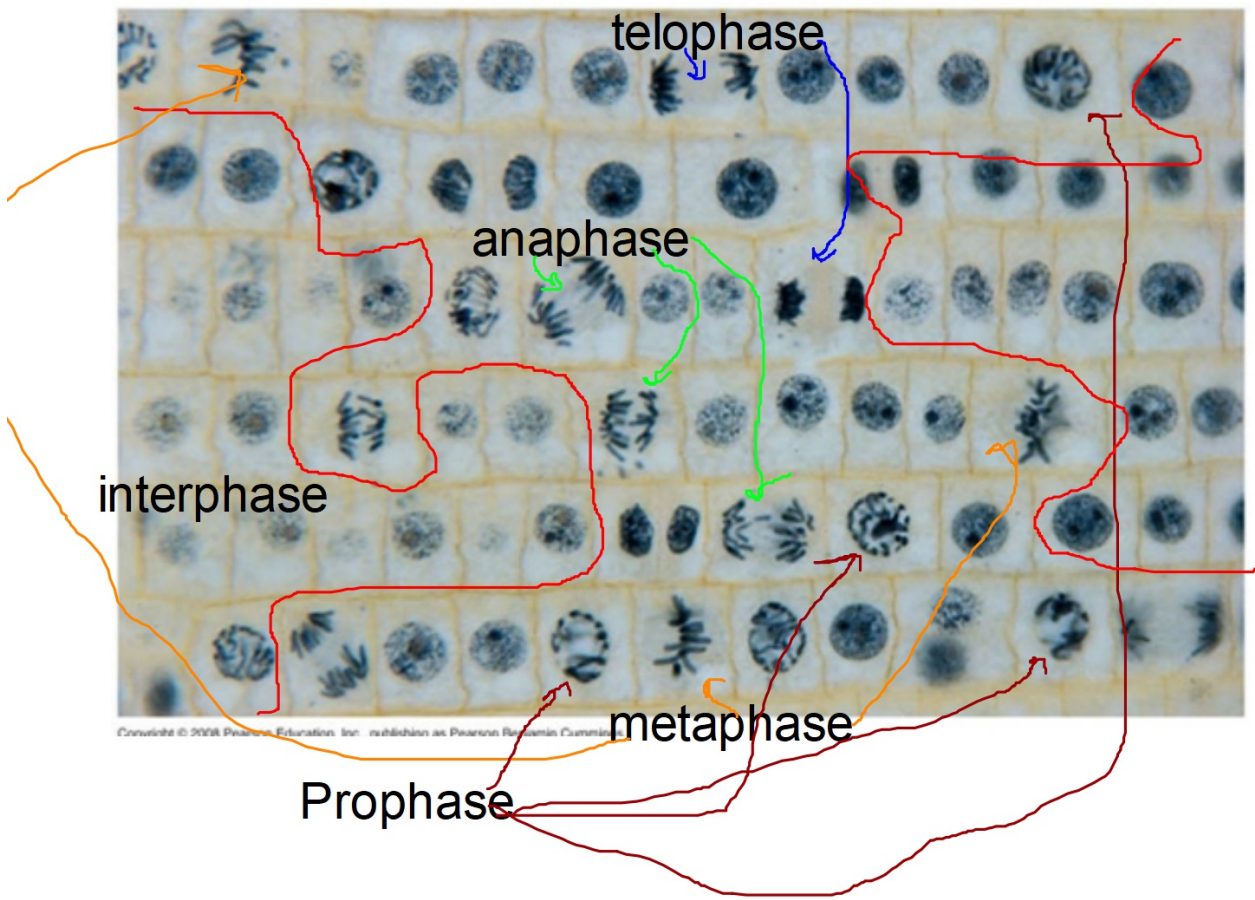


**Onion root tip cells**



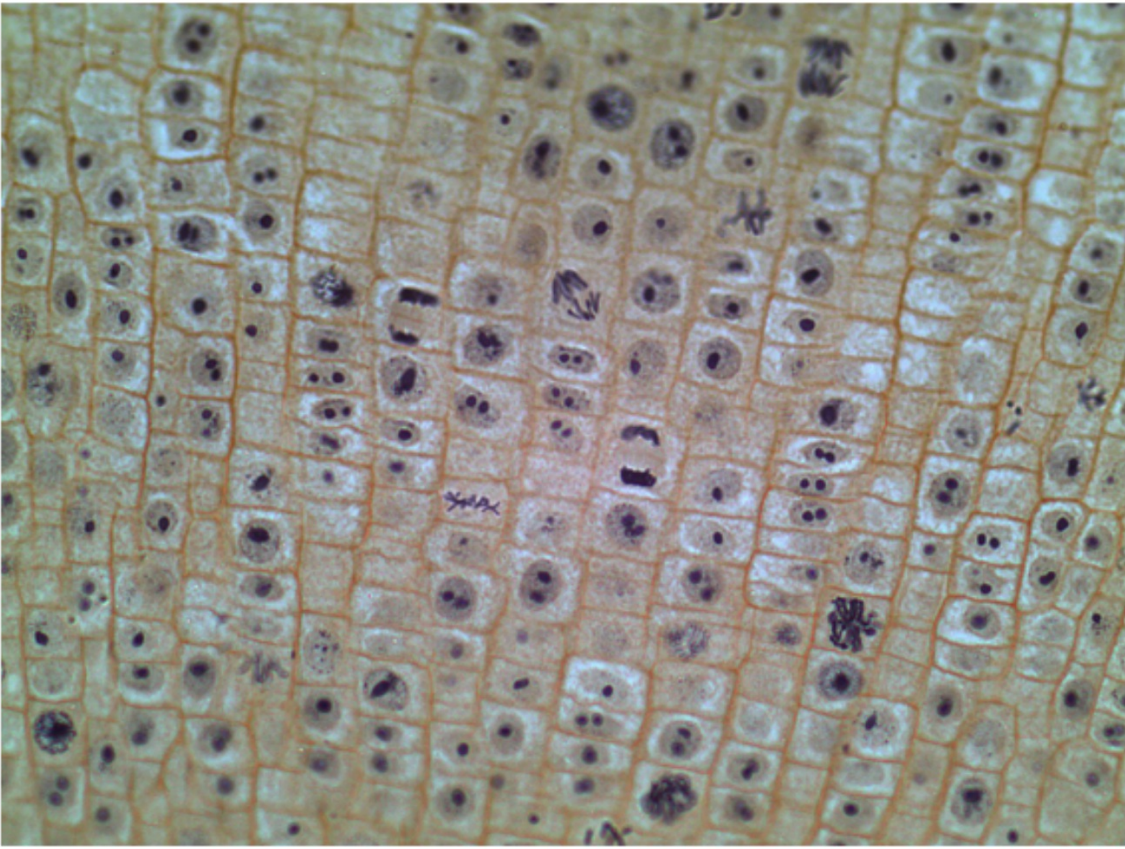
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Can you identify cells in  
interphase  
Prophase  
metaphase  
anaphase  
telophase



1 you identify cells in





## Online Onion Root Tips

### Determining time spent in different phases of the cell cycle



Click on the phase in which this cell belongs.

[INTERPHASE](#) [PROPHASE](#) [METAPHASE](#) [ANAPHASE](#) [TELOPHASE](#)

#### [Vocabulary](#)

**Go to weebly and open up "Practice Identifying stages of mitosis"**



## Mitosis: Onion Roots

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

Date: \_\_\_\_\_

**Background:** Growth of new roots is due to the production and elongation of new cells. These new cells are produced through the process of *mitosis*. Mitotic divisions are usually confined to the cells near the tip of the root. Mitosis is one part of the cell cycle. The cell cycle is the sequence of events that includes cell growth (interphase), and division (mitosis and cytokinesis). In this lab, you will be looking at the cells in an onion root tip.

### Purpose:

To see if each phase of mitosis happens for an equal amount of time in onion root tip cells.

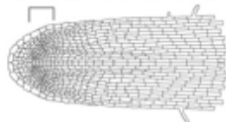
### Materials:

You will choose materials for your experiment from the following:

Microscope, prepared onion root tip slide, ruler

### Procedures:

1. Place an onion root tip slide on the microscope stage. Under high power (400x), move and focus the slide until the field of view is filled with as many cells in various phases of the cell cycle as possible.



**The bracketed area of this diagram shows where you are most likely to find dividing cells.**

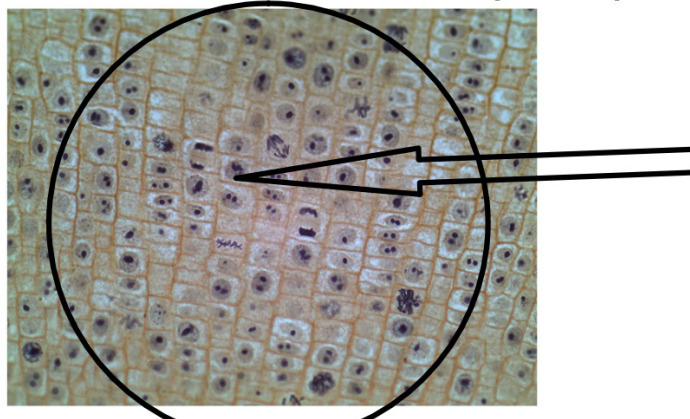
2. Begin counting the cells one column at a time from left to right. You will need to count at least 100 cells. If you need more cells, move the slide to the right and continue counting rows.
3. Indicate the stage of each cell for your partner to tally on the table under "Group: Total Number of Cells". Use the chart below to keep track of the phase of each type of cell.
4. Each group should share their phase totals with the class. Write these averages on the table.
5. Complete the calculations in table 1 for the % in each phase.

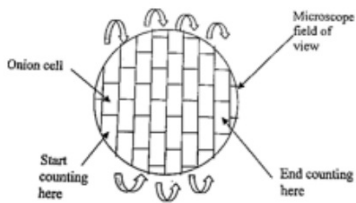
Tally Chart: Record the phase for each cell. Key: I= Interphase P= Prophase  
M= Metaphase A= Anaphase T= Telophase

|    |    |    |    |    |    |    |    |    |     |
|----|----|----|----|----|----|----|----|----|-----|
| 1  | 11 | 21 | 31 | 41 | 51 | 61 | 71 | 81 | 91  |
| 2  | 12 | 22 | 32 | 42 | 52 | 62 | 72 | 82 | 92  |
| 3  | 13 | 23 | 33 | 43 | 53 | 63 | 73 | 83 | 93  |
| 4  | 14 | 24 | 34 | 44 | 54 | 64 | 74 | 84 | 94  |
| 5  | 15 | 25 | 35 | 45 | 55 | 65 | 75 | 85 | 95  |
| 6  | 16 | 26 | 36 | 46 | 56 | 66 | 76 | 86 | 96  |
| 7  | 17 | 27 | 37 | 47 | 57 | 67 | 77 | 87 | 97  |
| 8  | 18 | 28 | 38 | 48 | 58 | 68 | 78 | 88 | 98  |
| 9  | 19 | 29 | 39 | 49 | 59 | 69 | 79 | 89 | 99  |
| 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |

One person looks in the microscope and identifies what they see as they look at the different cells. They need to look at 100 cells and identify the phase.

The other person records I, P, M, A, or T to identify the stage the cell is in





Use this image to identify what phase the onion cells are in.

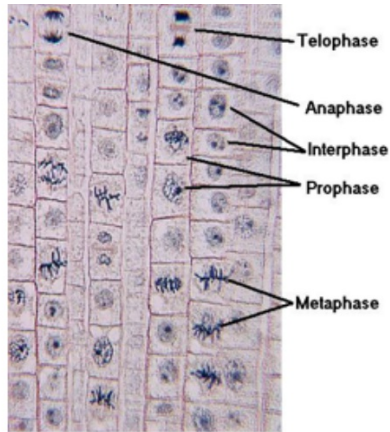


Table 1: Dividing Onion Root Tip Cells

Open google excel spreadsheet for class data

Data:

| Phase       | Group # of cells | Class Total number of Cells | Average % spent in each phase | % of pie chart |
|-------------|------------------|-----------------------------|-------------------------------|----------------|
| Interphase  |                  |                             |                               |                |
| Prophase    |                  |                             |                               |                |
| Metaphase   |                  |                             |                               |                |
| Anaphase    |                  |                             |                               |                |
| Telophase   |                  |                             |                               |                |
| Total cells | 100              |                             | 100                           | 100            |

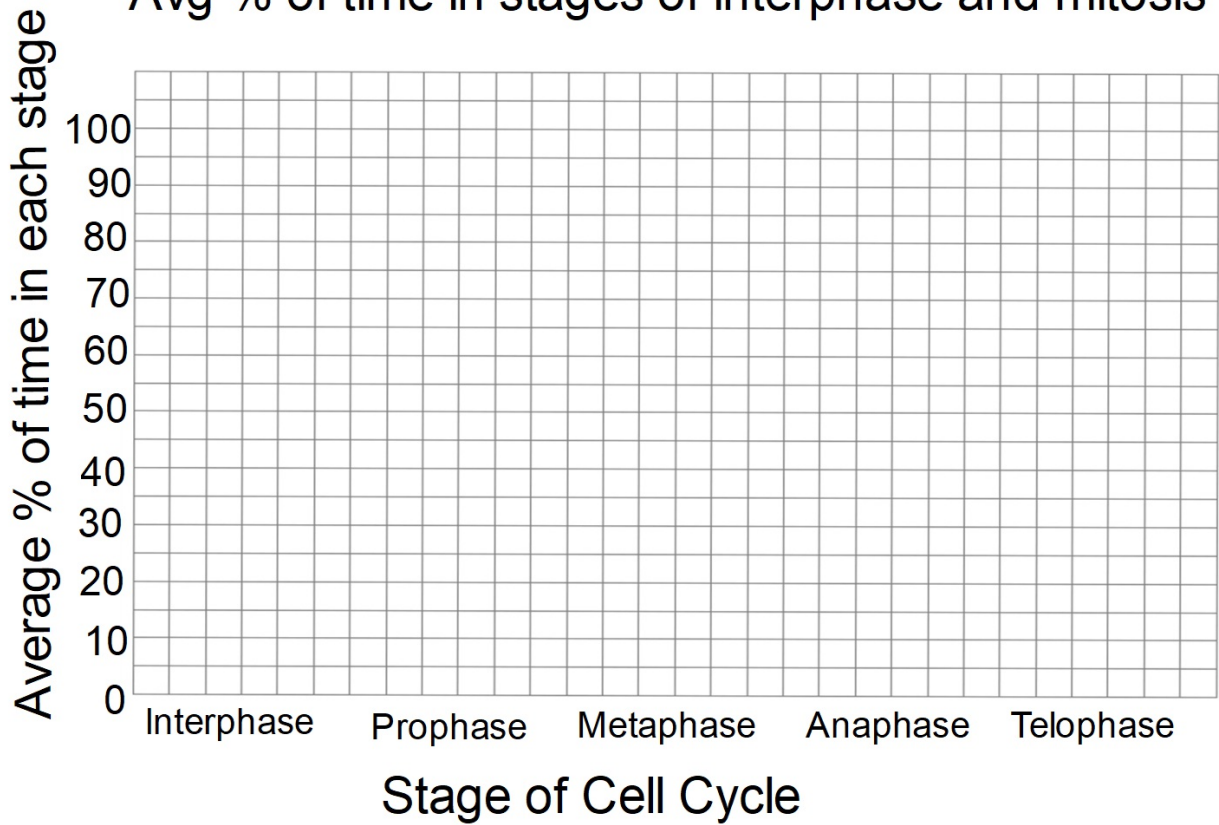
Divide class total for the phase/ total cells for class

Convert % to decimal and multiply by 360.

## Bar Graph

Turn sideways

Avg % of time in stages of interphase and mitosis



Directions: After completing the pre-readings, the mitosis lab activities, and researching web-based information, please answer the following questions.

1. Based on the table and pie chart, what can you infer about the relative amount of time a cell spends in mitosis?

2. What is the significance of using class data instead of individual group data?

Did all the groups report consistent data or were there any “outliers”? What criteria did you use to determine the outlier?

3. (Honors) Explain the protective significance of chromosomes condensing into tight coils during mitosis. (What would happen if you tried to separate 46 balls of yarn that were all unraveled? How does coiling up the chromosomes help to keep it organized?)

4. (Honors) When the DNA is tightly coiled into chromosomes it can't be read to make proteins. Why is it a problem that cancer cells spend so much time in mitosis and very little time in interphase?

