# Cell Cycle and Mitosis Webquest          Name

_____

**Prokaryotic Cell Division:**
Go to the following sites to learn about prokaryote cells:
http://www.cellsalive.com/cells/bactcell.htm
http://en.wikipedia.org/wiki/Binary_fission

1. Name three ways prokaryote cells differ from eukaryote cells (name characteristics of the prokaryote cells):

- _____          *_____

- _____

2. Draw a prokaryote cell




Prokaryote cells use a process called binary fission to divide. Go to the following site for the definition of binary fission:
**http://www.emc.maricopa.edu/faculty/farabee/biobk/BioBookglossB.html#binary%20fission**

3. Write the definition of binary fission: _____

_____


Watch the animation on binary fission:
**http://www.emc.maricopa.edu/faculty/farabee/biobk/BioBookmito.html** and click on "Prokaryotic Cell Division"

4. Describe what you saw in the animation. How does binary fission work:

_____

_____


**Eukaryotic Cell Division:**
There are several reasons for the cell to divide. Two reasons are shown at the following website:
**http://plaza.ufl.edu/alallen/pgl/modules/rio/stingarees/module/what.html**

5. Name the two reasons shown for cell division.

- _____          *_____

There are several parts of the cell involved in cell division. Click on the parts shown at the following site and read what they do.
**http://plaza.ufl.edu/alallen/pgl/modules/rio/stingarees/module/index.html**

6. List the four organelles involved in cell division.

- _____          *_____

- _____          *_____

DNA can take many forms. When the cell is resting, it takes the form of chromatin. Look at chromatin in the following site:
**http://www.cgl.ucsf.edu/chimera/ImageGallery/entries/large_images/chromatin3-large.png**

7.  Describe the appearance of chromatin? _____

_____

When the cell needs to divide, the DNA must coil up tightly into chromosomes. When DNA has not copied itself, the chromosomes will only have one strand. These strands are called chromatids. After DNA replicates, each strand (chromatid) has a twin that is attached to it. These pairs of twin chromatids are called sister chromatids. Sister chromatids are connected by a centromere. See what chromatids and sister chromatids look like on the following site:
**http://library.thinkquest.org/28751/review/division/1.html**

8.  Draw and label a picture of the sister chromatids and the centromere.




**Stages of Mitosis:**
Go to the following website:
**http://www.cellsalive.com/mitosis.htm**
\*\*On the left side of the screen is a navigation bar, click on the link to "MITOSIS". View the animation and read the text below the animation on this page.

9.  List the stages of mitosis (Notice – there's an extra phase here…"prometaphase" – sometimes that is added as an "in-between" phase between prophase and metaphase. In my class you are only responsible for knowing PMAT)
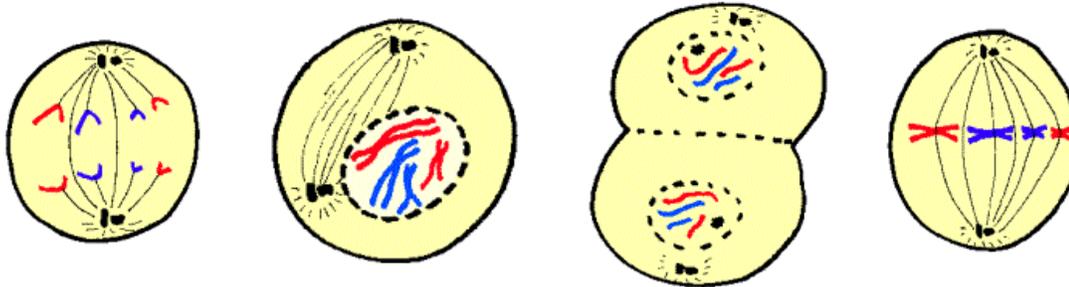
- _____          *_____

- _____          *_____

10. In which stage does each of the following occur:

- Chromatin condenses into chromosomes

- Chromosomes align in center of cell.

- Longest part of the cell cycle.

- Nuclear envelope breaks down.

- Cell is cleaved into two new daughter cells.

- Daughter chromosomes arrive at the poles.

11. Identify the stages of mitosis in these cells:



_____        _____        _____        _____

**Onion Root Tip - Online Lab Activity:**
**http://www.biology.arizona.edu/cell_bio/activities/cell_cycle/cell_cycle.html**
*Read the introduction, then click the "next" button.
*Check out the different phases & read them & hit "next".
*Read the "assignment" then hit "next"
*You will have 36 cells to classify. When you're finished, record your data in the chart below.

|  | Interphase | Prophase | Metaphase | Anaphase | Telophase | Total |
|---|---|---|---|---|---|---|
| Number of cells |  |  |  |  |  | 36 |
| Percent of cells |  |  |  |  |  | 100% |

(calculate percentage: number of cells divided by total cells x 100 )

12. What do you notice about the stages from your calculations in the table?

13. What did you notice about the difference between Interphase & Prophase?

**Meiosis:**
Go to **http://www.lpscience.fatcow.com/jwanamaker/animations/meiosis.html** and read the text. Then click on the arrow to learn about meiosis.

14. How many chromosomes does the cell in this animation start with ? _____

15. The homologous pairs are represented by similar _____

16. Copies of chromosomes are held together by the _____

17. Each chromosome finds its _____

18. Draw "crossing over" – using your pencil to shade in the areas that exchange parts.

19. How many chromosomes are at each pole of the cell? _____

20. During meiosis 2, chromosomes line up again along the cell's _____

21. Only _____ copy of each chromosome moves toward the poles. Which means only _____ chromosomes of the original six.

22. New membranes form around each _____

23. Each cell divides, forming a total of _____ cells.

**Mitosis vs. Meiosis:**

Go to: **http://www.pbs.org/wgbh/nova/baby/** and Click on "How Cells Divide." Read the Introduction and then Click on "Mitosis vs. Meiosis"

24. After viewing the animation. Fill out the chart below, by placing a check in the box or boxes.

| Event | Mitosis Only | Meiosis Only | Both |
| --- | --- | --- | --- |
| **Two Cell Divisions** | | | |
| **Centrioles Appear** | | | |
| **Chromosomes Pair UP** | | | |
| **Spindle Fibers Form** | | | |
| **Cytokinesis** | | | |
| **Four Daughter Cells** | | | |

**Complete each of the following activities:**
**http://www.quia.com/servlets/quia.activities.common.ActivityPlayer?AP_rand=1538401416&AP_activityType=12&AP_urlId=3371&AP_continuePlay=true&id=3371**
1. Read the instructions on the web site and complete the activity asked.
2. When you have successfully completed the activity, you will see "You Win" and you can see the hidden picture. ((Notice – there's an extra phase here..."prometaphase" – sometimes that is added as an "in-between" phase between prophase and metaphase. In my class you are only responsible for knowing IPMATC)
EXPLAIN WHAT THE PICTURE IS:


**http://www.quia.com/rr/89527.html**
1. Press "Start" on Rags to Riches game!! Answer the questions to gain $$!!
2. Write down 10 questions and the correct answers for each of the 10 questions. Attach the questions to this paper.

For an overview of what Mitosis looks like, go to the following site and watch the animation:
**http://www.johnkyrk.com/mitosis.html**
Write down the main events for each of the 6 main stages show in the animation.