

Mitosis & Meiosis Web Quest

Part 1 Mitosis

Interactive Mitosis Tutorial

Go to <http://www.sci.sdsu.edu/multimedia/mitosis/>

1. What is mitosis? _____
2. Cells that are non-reproductive undergo mitosis. Which are the reproductive cells?

3. Mitosis occurs in eukaryotic cells. Describe a eukaryotic cell.

Click For An Example. Then click on *What is Mitosis?*

You are now viewing a circle that represents a cell's life cycle. Move around the circle and describe what happens in each part of the cycle.

Put the cursor over the *Interphase G1*, then the *Interphase S*, then the *Interphase G2*

4. Describe what happens in the *Interphase G1* phase

5. Describe what happens in the *Interphase S* phase

6. Describe what happens in the *Interphase, G2* phase

Next put the cursor over the 5 primary phases of mitosis and summarize what occurs in each phase

7. Prophase _____
8. Prometaphase _____
9. Metaphase _____
10. Anaphase _____
11. Telophase _____

Click on *Contents*. Click on the *Interactive Mitosis Animation*. Adjust the speed to slow.

View the video and familiarize yourself with the movements of the chromosomes during each phase of mitosis.

11. Do a simple sketch of each phase below . Label each sketch.

Name _____ Date _____ Period _____

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Click on Contents. Click on *Plant Eukaryote Mitosis*. View the movie.

12. How does plant cell mitosis differ from the mitosis of cells that lack a cell wall?

Mitosis Animation

On this site the phases of mitosis can be studied in more detail

Go to <http://www.stolaf.edu/people/giannini/flashanimat/celldivision/crome3.swf>

Click the arrow to play the animation one step at a time.

Click once. (G1)

1. How many chromosomes are there? _____

Click once. (S)

2. What happened to each chromosome? _____

Click once. (G2)

3. What is happening to the chromosomes? _____

What do you think those grey rectangles represent? _____

Click once. (Prophase)

4. Summarize what has happened? _____

Click once (Metaphase)

5. How are the chromosomes aligned (where are they in the cell)? _____

What is attaching to the chromosome? _____

What do you hypothesize the purpose of these structures are? _____

Click once (Anaphase)

6. What is happening to each chromosome pair _____

Click once & click again (Telophase & Cytokinesis)

7. Summarize what has happened to each chromosome pair in telophase?

8. Summarize what has happened during cytokinesis?

Name _____ Date _____ Period _____

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Part 2 Meiosis

Meiosis Tutorial

Go to <http://www.biology.arizona.edu/cell_bio/tutorials/meiosis/main.html>

On the *Meiosis Tutorial* page click on *Reproduction* and answer the following questions or fill in the blanks.

Sexual reproduction

1. New individuals are formed by a combination of two _____ cells. (_____).
2. What is fertilization? _____
3. What are the gametes in females? _____ in males? _____.
4. Are the gametes haploid? _____. What does that mean in terms of their chromosome number? _____.
5. What is the new individual called? _____. How many chromosomes sets does the individual have? _____. What does *diploid* mean? _____.
6. Summarize the process of meiosis? _____

Return to the *Meiosis Tutorial* page. Click on *Chromosomes in a Diploid Cell*.

1. A diploid ($2n$) of human chromosome consists of _____ chromosomes
2. The haploid (n) number of human chromosomes consists of _____ chromosomes.
3. Autosomes are all the chromosomes except the sex chromosomes. You receive how many autosome chromosomes from each parent? _____
4. You receive one sex chromosome from each parent. If you are a female what combination did you receive? _____ a male? _____
5. Define haploid _____, diploid? _____
6. Most plants and animals are made of _____ cells
7. Eggs and sperm are _____.

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Meiosis Animation

Go to <http://www.stolaf.edu/people/giannini/flashanimat/celldivision/meiosis.swf>

Click on the animation until you reach *Telophase 1 Cytokinesis*. Repeat as many times as necessary to answer questions & summarize the first stage of meiosis

1. At the start of this example how many chromosomes are in the cell? _____
2. What happens in the "S" phase to the chromosomes? _____
3. If a chromosome replicates but remains attached does it count as one or two chromosomes?
One _____
4. What happens to the chromosomes at the end of prophase 1 that is different from mitosis?
_____ Did you notice any trading of pieces between the red and blue chromosomes? _____
5. At which phase do the chromosomes separate? _____
6. At the end of telophase 1 & cytokinesis what do you end up with?
Number of cells _____ number of chromosomes in each cell? _____
Is each cell haploid or diploid? _____. Notice again that some trading of chromosome pieces has occurred. This is called *crossing over*.

Continue to click on the animation until you reach the end of *Meiosis 2*. Repeat as many times as necessary to answer questions & summarize the second stage of meiosis.

1. How many cells are there in *prophase 2*? _____
2. If a chromosome has replicated and the two pieces are still attached is that considered one chromosome or two? One _____
3. How many chromosomes are in each cell in *prophase 2*? _____
4. What happens to the chromosomes in *Anaphase 2*? _____
5. What is the final product of this example of meiosis at *Telophase 2 & Cytokinesis*?

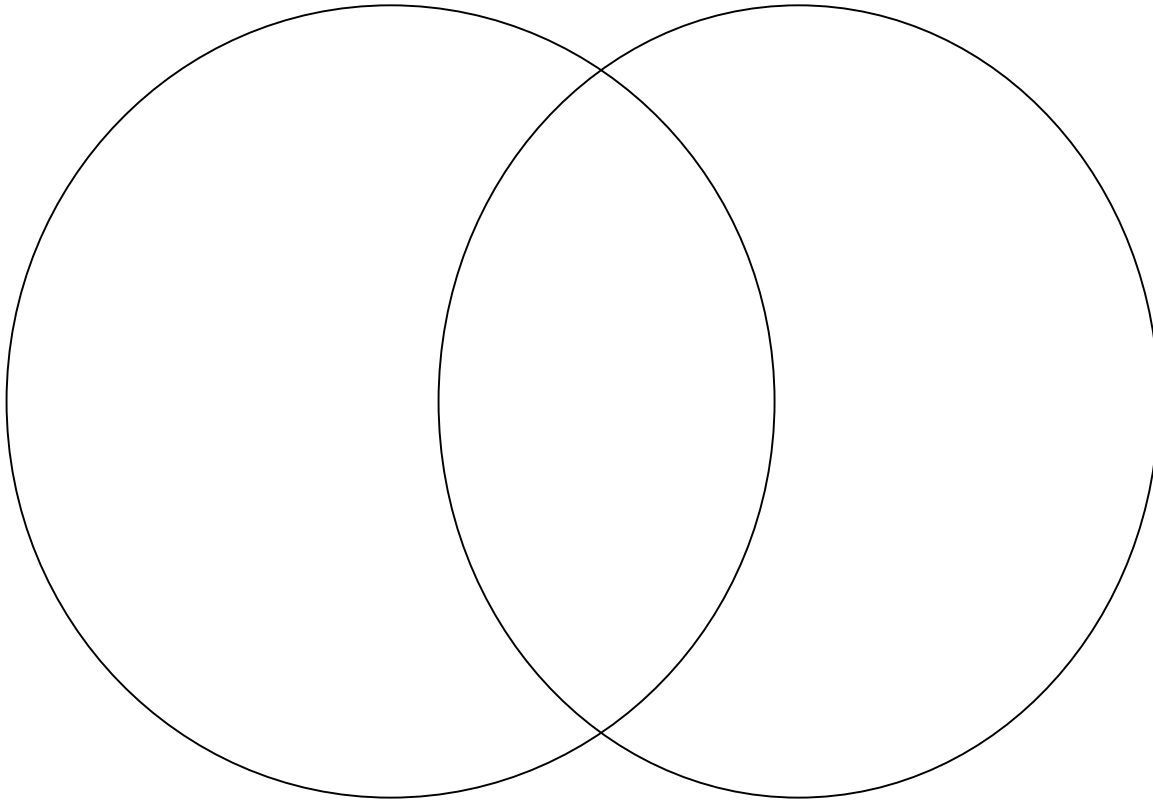
Name _____ Date _____ Period _____

Mitosis & Meiosis Web Quest

Using all the previous sites plus the *mitosis graphic website*

<http://www.accessexcellence.org/AB/GG/meiosis.html>

compare & contrast mitosis & meiosis on the Venn Diagram below.



Review

Go back to the *meiosis tutorial website*

http://www.biology.arizona.edu/cell_bio/tutorials/meiosis/main.html

Click on the *Test yourself (10 problems)* link. See how you do!!