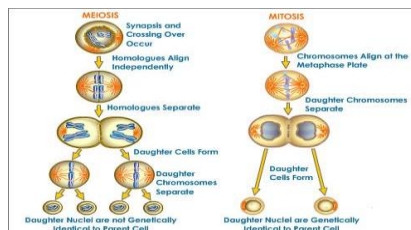


Cell Division Internet Activity



In this investigation you will view sites that illustrate the process of meiosis and compare it to mitosis. For each site, answer the corresponding questions.

Go to the following site on mitosis:

<http://www.lpscience.fatcow.com/jwanamaker/animations/mitosis.html>

1. How many chromosomes does the cell in the animation start with?

Six chromosomes

2. What must the chromosomes do before the cell divides? How many chromosomes are there now?

The chromosomes must replicate; there are now 6 double-stranded chromosomes

3. Where do the chromosomes line up? What happens in the next step?

The double-stranded chromosomes line up single file at the middle of the cell (metaphase). In the next phase (anaphase), the double-stranded chromosomes are pulled apart.

4. How many cells are produced? How do they compare to the original cell?

Two daughter cells are produced at the end of mitosis that are genetically identical to each other and the original cell.

Go to the following site on meiosis:

<http://www.lpscience.fatcow.com/jwanamaker/animations/meiosis.html>

5. What must occur to the DNA before meiosis can begin?

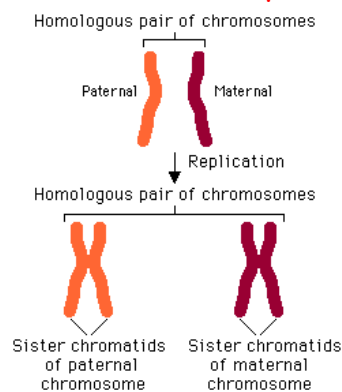
The DNA (chromosomes) must replicate (become double-stranded) before meiosis can begin.

6. How many chromosomes does the cell in this animation start with? What is the term we use for this number?

The cell in this animation starts with 6 chromosomes; this is the diploid or $2n$ chromosome number.

7. How many pairs of chromosomes are in this cell? What do we refer to the pair of chromosomes as? Draw an example using colored pencils.

There are three pairs of homologous chromosomes in this cell.



8. How are the pairs represented in the animation?

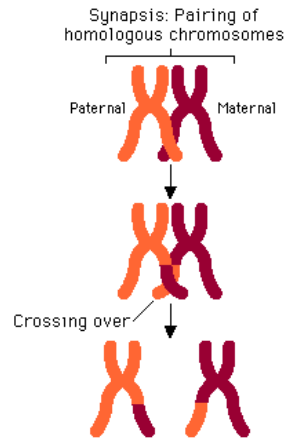
The homologous pairs are represented by similar colors.

9. What are the copies of chromosomes held together by (look at the diagram)?

The sister chromatids in each of the double-stranded chromosomes are held together by a centromere.

10. What do the chromosomes sometimes do once each pair has lined up together? Draw an example using the chromosome pair you drew in #7.

Once paired up, homologous chromosomes may cross over.



11. How many chromosomes are in each cell at the end of meiosis I?

There are three double-stranded chromosomes in each of the two daughter cells at the end of meiosis I.

12. How does the next cell division (meiosis II) compare to mitosis? Explain your answer.

The steps of the two are the same and chromosomes line up single file to separate into two sets of single-stranded chromosomes.

13. How many cells are produced at the end of meiosis? How do the resulting cells compare to the original?

Four daughter cells with the monoploid (n) number of chromosomes are produced at the end of meiosis. These daughter cells are genetically similar but not identical to the original.

Go to the following site: <http://www.pbs.org/wgbh/nova/baby> and click on "How Cells Divide" and launch interactive.

14. As you view the animation, fill out the chart below by placing a check in the box or boxes to indicate which the event occurs in (some events might have checks for both mitosis and meiosis)

	Mitosis	Meiosis
DNA replicates	X	X
Centrioles appear	X	X
Genes are exchanged between chromosomes		X
Homologous chromosomes pair up		X
Spindle fibers form	X	X
Chromosomes line up in the middle of the cell	X	X
Homologous chromosomes split		X
Cytokinesis occurs	X	X
Two cell divisions		X
Sister chromatids split	X	X
Four daughter cells produced		X

