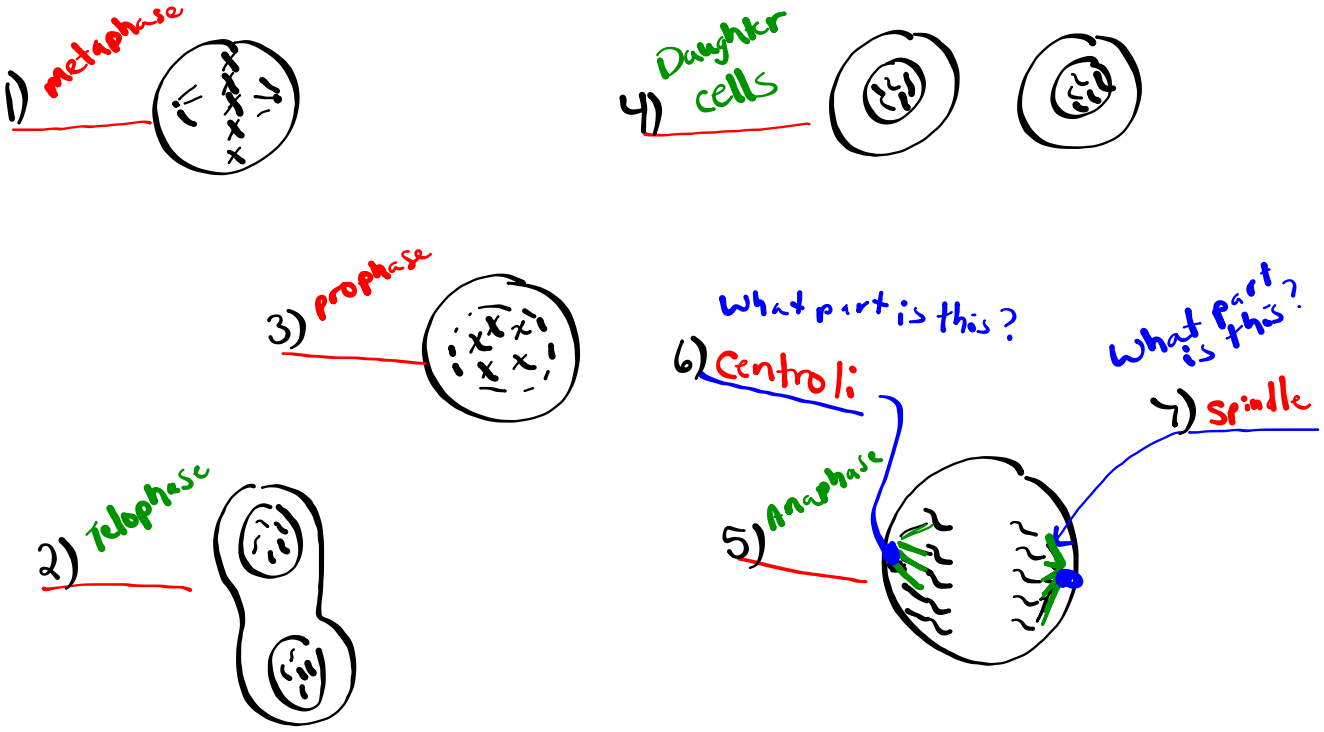
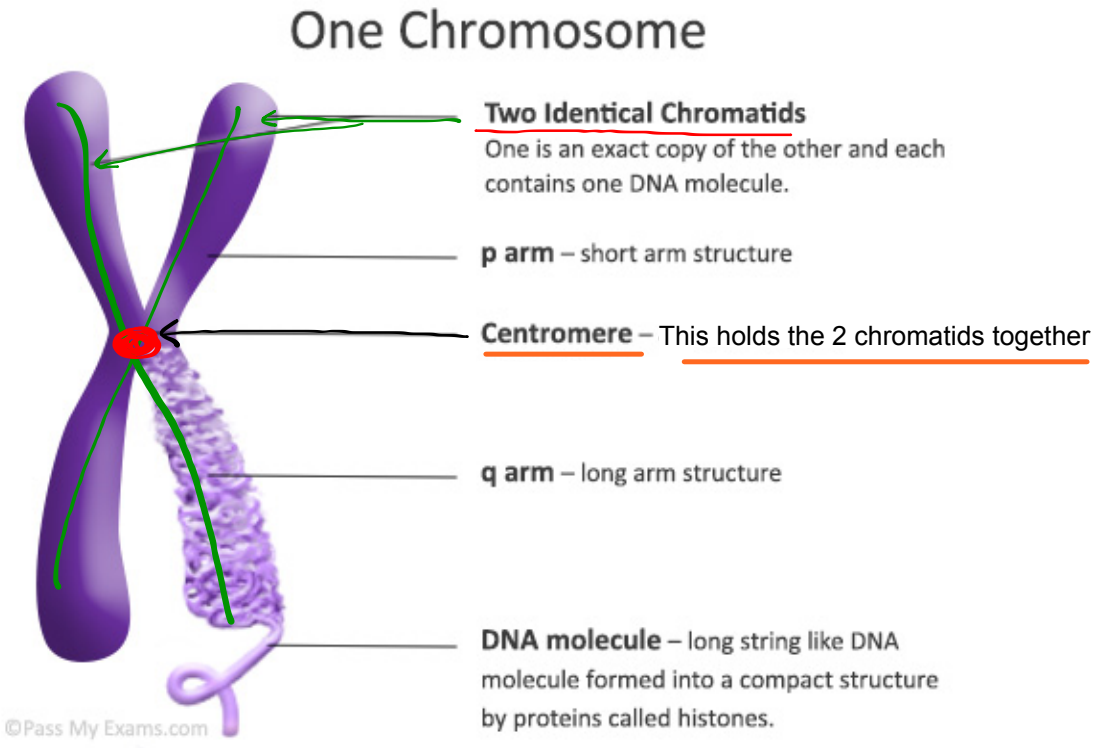


1) How many chromosomes are in the above diagram? 5

2) When does cytokinesis occur? After telophase

3) If a cat cell has 16 chromosomes, how much does its daughter cell have? 16 (identical to parent)


One Chromosome
Two Identical Chromatids
One is an exact copy of the other and each contains one DNA molecule.
p arm – short arm structure
Centromere – This holds the 2 chromatids together
q arm – long arm structure
DNA molecule – long string like DNA molecule formed into a compact structure by proteins called histones.
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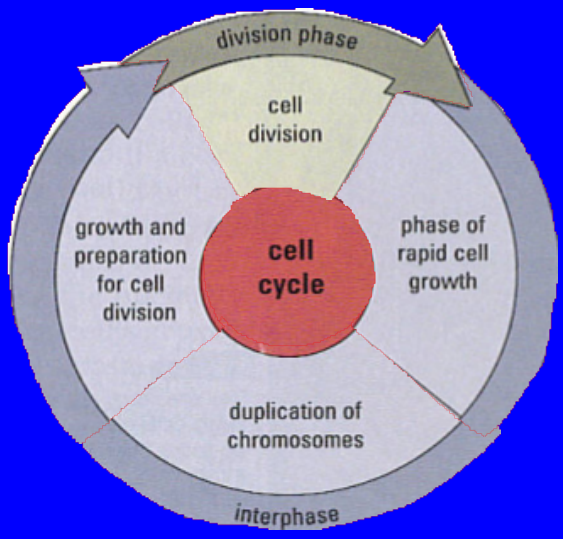
The Cell Cycle

Cells divide and rest. The sequence of event from one division to the next is called the cell cycle.



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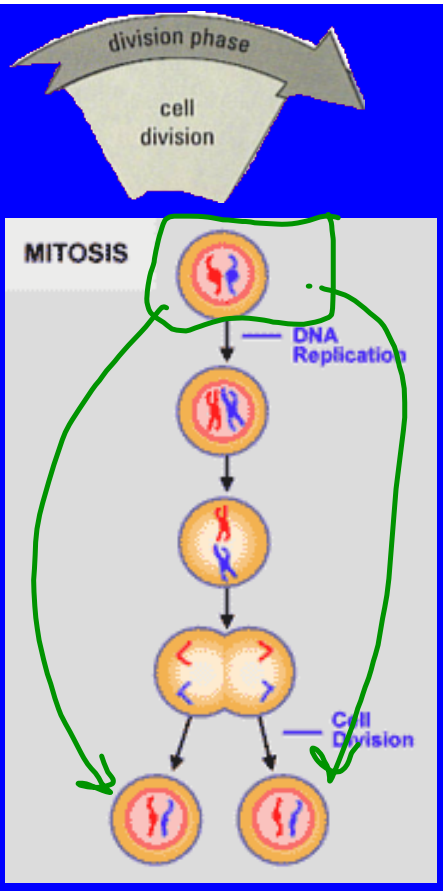
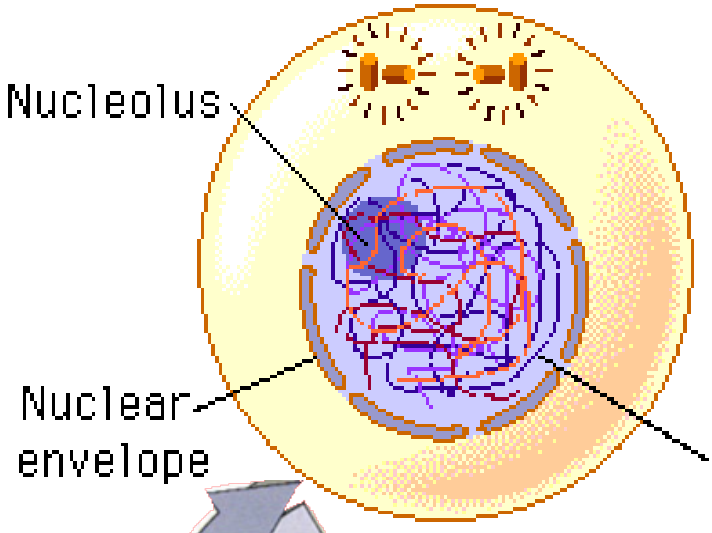


During mitosis (also called cell division), chromosomes are duplicated and move to opposite sides of the cell.

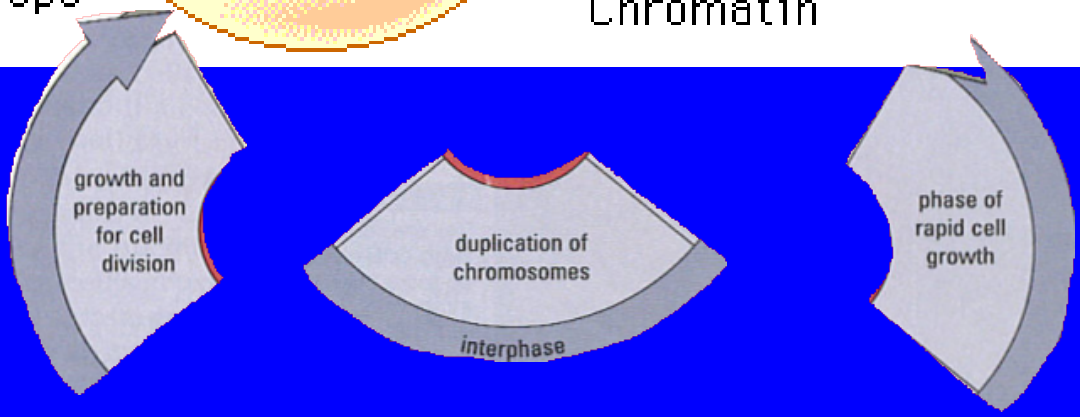
Return

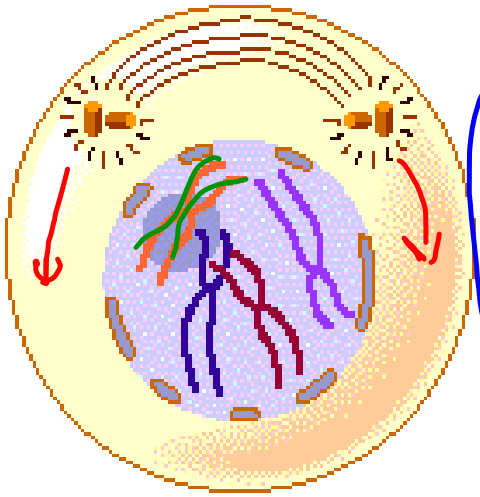
The stage between cell division is called interphase.



Interphase
During this phase the cell grows and then prepares for cell division by duplicating its genetic material.

Return

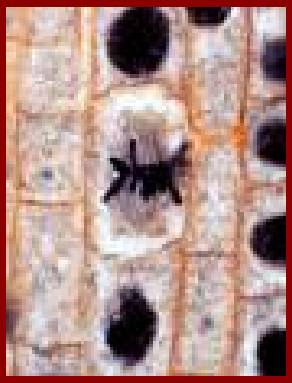


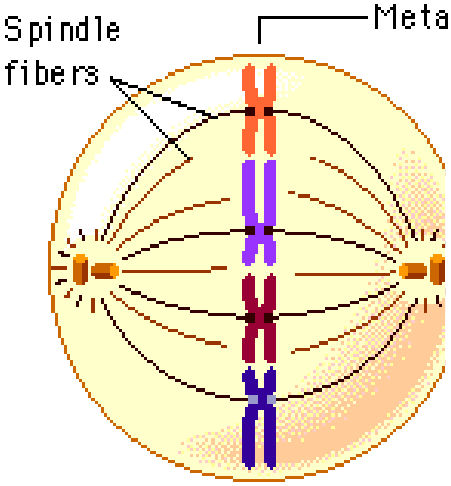


Prophase

The chromosomes, that are made up of two identical strands of genetic material, become shorter and thicker. Centroles move to opposite sides of the cell.

Return





Metaphase

The double stranded chromosomes line up in the middle. Spindle fibers join to each side of the chromosome.

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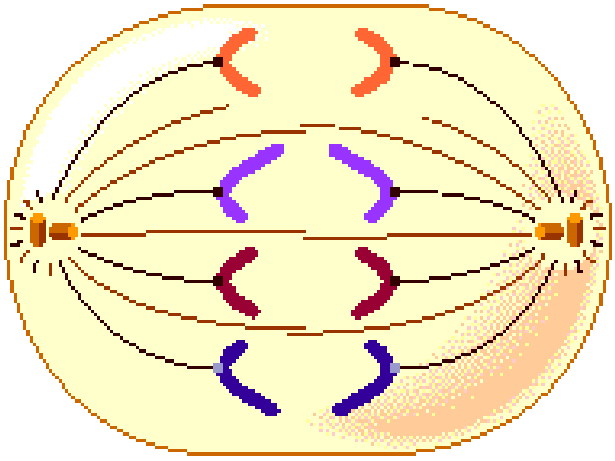
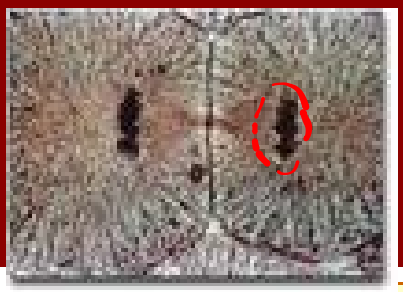
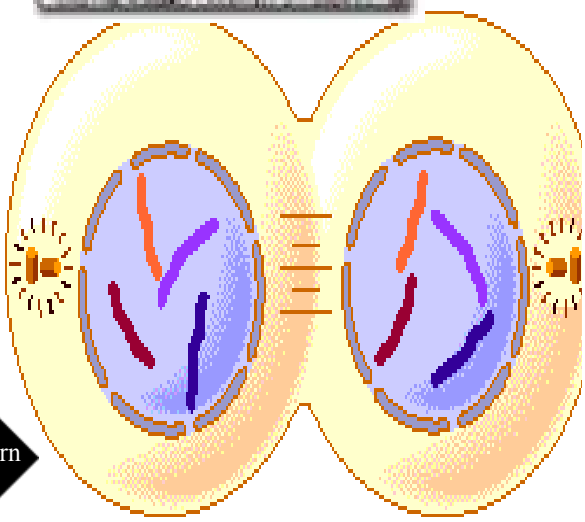


Anaphase

The chromosomes are separated and move toward the opposite poles.

Return



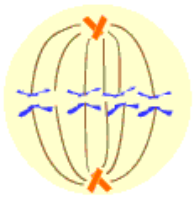


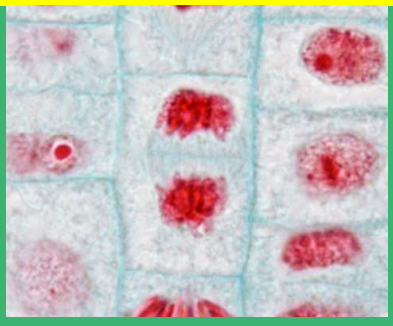
Return

Telophase

The chromosomes reach opposite poles of the cell, and a nuclear membrane begins to form around each .Cytoplasm separates into two equal parts.

Cell division continues with the separation of the cytoplasm into two equal parts. This is called cytokinesis.



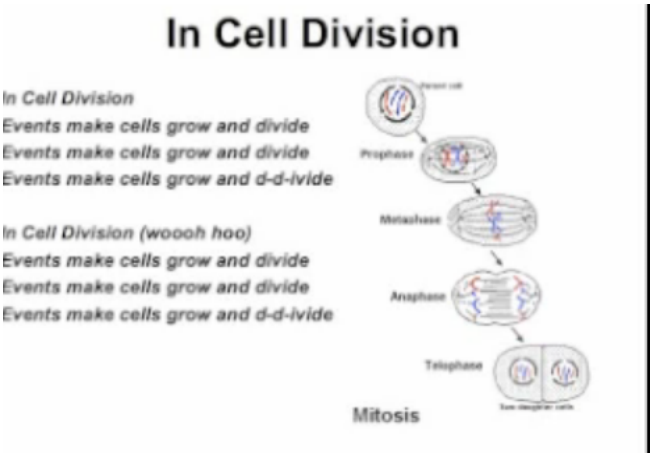


8

Interphase

Two daughter cells are formed and the process begins again.

http://www.youtube.com/watch?v=IlV9hExXZnM



Song

http://www.youtube.com/watch?v=ZEwddr9ho-4

In-Class Assignment/Homework

Page 153 #2,3,5,6,8,9

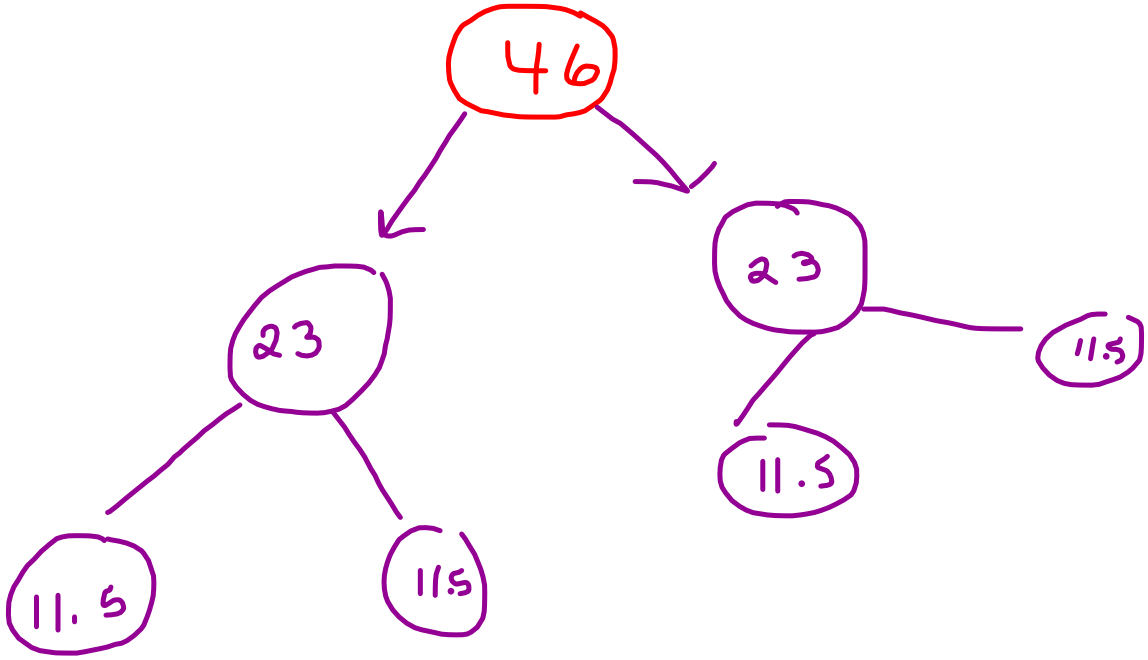
Page 153

1) Describe the cell cycle. What happens during interphase?

Ans:
Interphase is marked by rapid growth and duplication of genetic material

2) Why is duplication of the nuclear material necessary during the cell division?

Ans:
For the two new daughter cells to carry out the activities necessary for life, they need all the genetic information contained in the nucleus of the parent cell. During cell division the duplication of the genetic information allows cells to meet this requirement.


46
23
23
11.5
11.5
11.5
11.5

3) How do the new cells form during cell division compared with the initial cell?

Ans: The new cells are identical to the original cell.

5) A normal human cell has 46 chromosomes. After the cell has undergone mitosis, how many chromosomes would you expect to find in each cell?

Ans: 46 chromosomes

6) Cells alternate between phases of dividing and not dividing. The sequence of events from interphase to the next is called the cell cycle.

(a)Describe the differences between the two cell cycles in fig 5.

(b) Which cell cycle represents a cell of an embryo or fetus and which a cell in an adult? Give your reason.

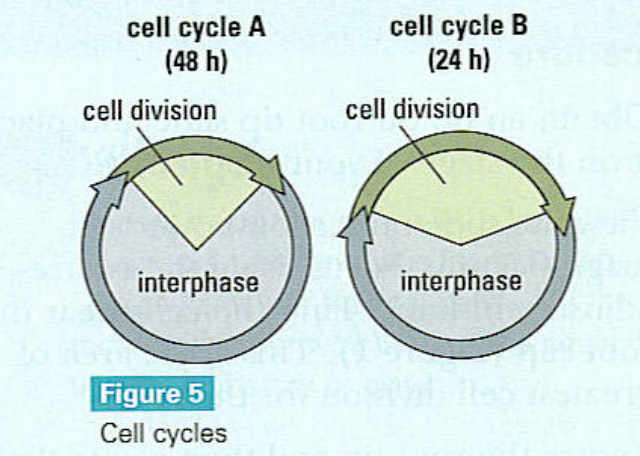


Figure 5
Cell cycles

(a) The cell represented by "Cell Cycle A" is dividing much slowly because it takes 48 hours to make one complete cell cycle compared to "Cell cycle B" which only takes 24 hours.

(b) Cell B represent the fetus because a fetus goes from one cell to trillions of cells in just 9 months.

8) X rays and other forms of high-energy radiation can break chromosomes apart. Physicians and dentist ask women if they are pregnant before taking X rays. Why don't they want to X ray pregnant women?

Ans: Cells of the embryo divide rapidly and each cell gives rise to many thousands or hundreds of thousands of similar cells. Damage to a single mother cell can cause problems in a large number of cells. The chromosome damage could cause problems with development

9) Draw a sketch of your body. Under the sketch, list area of the body where you think cell division is most rapid. Why do you think cells from these areas divide most rapidly? Check your answer once again at the end of the chapter.

Ans: Various diagrams can be provided.

- An area of rapid cell division is the skin, especially the hands and feet, which suffer a great many abrasions. These cells must be replaced quickly.

- Generally, cells exposed to wear, such as those that line the esophagus and stomach, are replaced quickly.