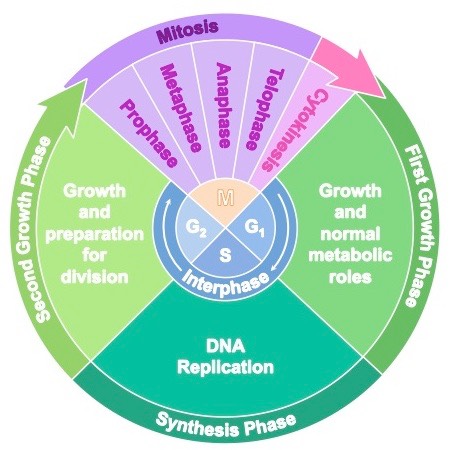
**Bio 2 – I can explain and recognize main stages of the cell cycle.**

**Notes The Cell Cycle and Mitosis**

|  |
| --- |
| **Cells Divide to Make Identical Copies** |
| **Why?**  **a) Repair/\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of BODY tissue/cells**  **b) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_of organism**  **c) Reproduction by some asexual organisms** |



**Overview of the Cell Cycle**

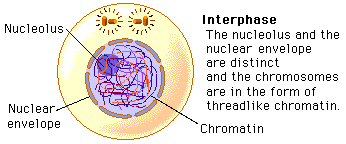
**The cell cycle includes:**

1)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

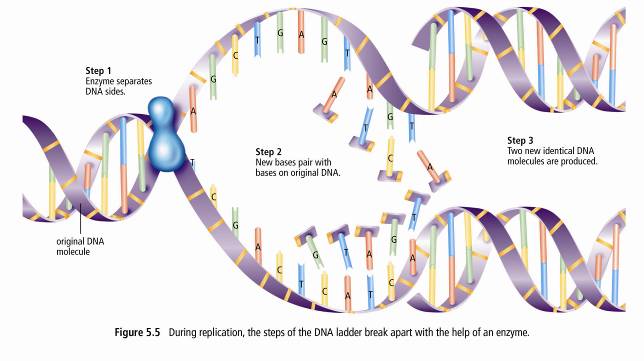
2)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**1) INTERPHASE**

Longest phase of the cell cycle where cell carries out  
regular cell functions, grows and prepares for cell division

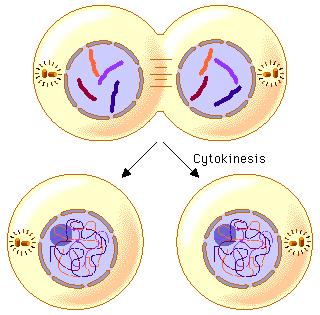
* Cell increases in \_\_\_\_\_\_\_\_\_\_\_\_
* Organelles are duplicated
* DNA is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and exists as chromatin   
  -loosely coiled strands of DNA

**DNA is COPIED!**

STEPS:  
1. Enzyme separates \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
  
2. New bases \_\_\_\_\_\_\_\_\_\_ with bases on original DNA  
  
3. Two \_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ DNA molecules are produced

**2) MITOSIS – Nuclear Division**

Stages of Mitosis: **P M A T** (\_\_\_\_\_\_\_\_phase, \_\_\_\_\_\_\_\_phase, \_\_\_\_\_\_\_phase, \_\_\_\_\_\_\_phase)

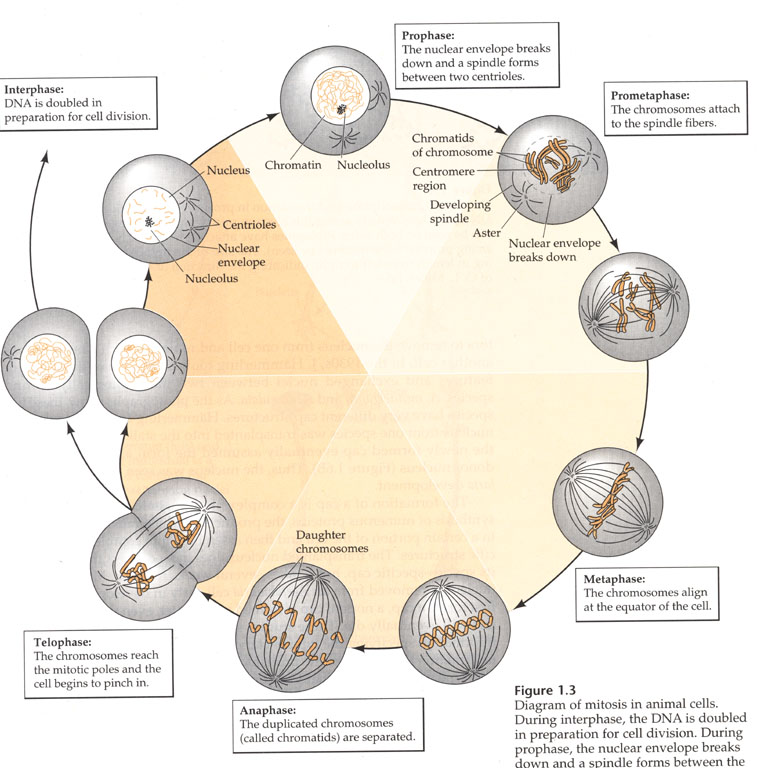
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**3) CYTOKINESIS – Cell division**

* Cytokinesis is the splitting of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* In animals the cell membrane **pinches** in middle dividing the cell into two.
* In plants a cell plate grows across the middle of cell, resulting in the formation of cell walls between two daughter cells.

**The RESULT OF CELL DIVISION:** ***Two \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_daughter cells*** *that have the same number and type of chromosomes as the parent cell!*

***In the diagram below label the cell life cycle stages and the phases of mitosis!******Terms to use: cytokinesis, prophase, anaphase, telophase, metaphase, interphase***

****

**Mitosis Begins**   
Early \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Late \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
(cell Division)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

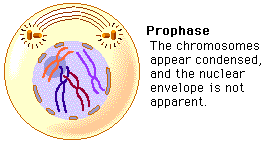
1) Complete the blanks below using the following terms and textbook: Some terms could be used more than once!

*straight, pole(s), reform, chromatin, centrioles, sister, centromere, disappear, contraction of spindle fibres, chromatids, separate, opposite, X-shaped, nucleus, middle,* ***cytokinesis, anaphase, telophase****, middle,* ***prophase****, break down, chromosomes, spindle, two, nuclear*

2) Sketch **2 chromosomes** at each stage and label the important cell structures involved in that stage of MITOSIS.   
Colour each X shaped chromosome a different colour! Illustrate what the cell looks like at each stage (in boxes).

**Mitosis –** the splitting of the\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| **P - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | |
| * The ­­­ (unravelled DNA) in the nucleus, condenses to form  \_\_\_\_\_\_\_\_\_\_\_\_ chromosomes. * As this is happening the nucleolus begins to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * \_\_\_\_\_\_\_\_\_\_\_\_\_\_ membrane breaks down and disappears | * The (in animal cells only) move to opposite ends (poles) of the cell. * \_\_\_\_\_\_\_\_\_\_\_\_\_\_ fibres form from  the centrioles (animal cells) or poles (plant cells) * Spindle fibres attach to chromosomes at their \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  (late prophase) |

****

|  |
| --- |
| **A- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| * The chromatid pairs are split into two chromosomes by the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ which pull the centromere apart.        * Each sister chromatids is now called a chromosome. * The chromosome pairs then travel to opposite \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the CELL. |

|  |
| --- |
| **M - metaphase** |
| * The tugging action of the spindle fibres pulls the X-SHAPED chromosomes   into a \_\_\_\_\_\_\_\_\_\_\_\_ line across the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(equator) of the cell. |

|  |  |
| --- | --- |
| **T - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | |
| * One complete set of chromosomes is now at each \_\_\_\_\_\_\_\_\_\_\_\_ of the cell. * The spindle fibres \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * A nuclear membrane reforms around each set of chromosomes | * The nucleolus \_\_\_\_\_\_\_\_\_\_\_\_ * Now there are \_\_\_\_\_\_ nuclei  in one cell with identical DNA * the cell is ready for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (division of the cell cytoplasm) |

**Sketch Stage:**

**Do This:** *Mitosis Worksheets*