

DNA & Cell Cycle Elevator

Name: _____

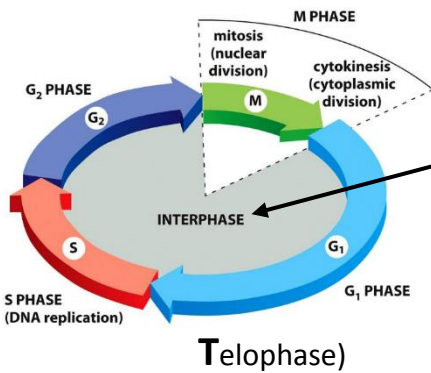
Period: _____

TEKS to Know:

- 1) (5A) – Describe the stages of the cell cycle, including deoxyribonucleic acid (DNA) replication and mitosis.
- 2) (5D) – Recognize that disruptions of the cell cycle lead to diseases such as cancer.
- 3) (6A) – Identify components of DNA.
- 4) (6A) - Describe how information for specifying the traits of an organism is carried in DNA.
- 5) (6B) - Recognize that components that make up the genetic code are common to all organisms.
- 6) (4B) – Investigate and explain cellular processes including synthesis of new molecules.

Bare Bones (5A) –

- The following are the steps of the cell cycle; **DRAW ARROWS TO THE DIFFERENT PHASES**



- The first 3 stages make up **INTERPHASE** –

- 1) **G1** – Cell **G**rowth
- 2) **S** – DNA **S**ynthesis (DNA gets copied for baby cell so that it has the same number of chromosomes as the parent cell)
- 3) **G2** – More **G**rowth; **Preparation for cell division**
- 4) **M** – **M**itosis Cell division (**P**rophase, **M**etaphase, **A**naphase, **T**elophase)

Answer the following questions while using the information above:

1. What 3-part phase will make up the majority of the cell cycle? _____
2. During what two phases does the parent cell grow? _____
3. Cells will divide during what 4-part phase? _____
4. What phase is responsible for the replication of DNA for the new cell? _____

MITOSIS



PROPHASE – Nuclear membrane breaks down, chromosomes floating freely in cell.



METAPHASE – Chromosomes align in the **M**iddle of the cell.



ANAPHASE – Chromosomes are pulled **A**part to opposite sides of the cell.



TELOPHASE (AND CYTOKINESIS) – Chromosomes get a new nucleus to make **T**wo cells.

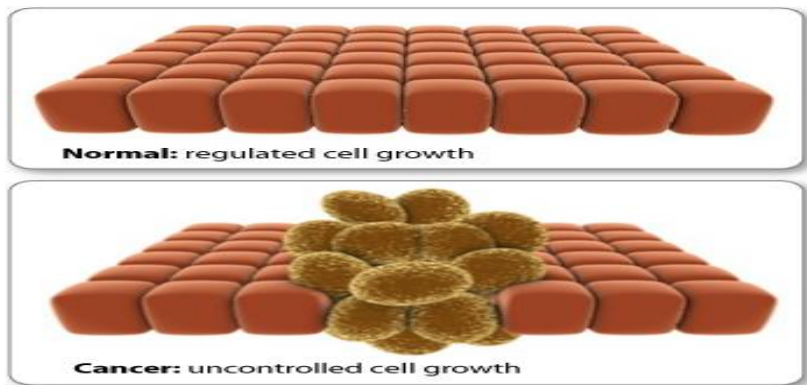
Answer the following questions while using the information above:

1. What phase will align the chromosomes in the center of the cell? _____
2. Which phase will send the chromosomes to different sides of the cell? _____
3. This is the phase begins to form more than one cell: _____
4. This phase will allow the chromosomes to drift around in the cell with no nucleus: _____

Bare Bones (5D) –

The cell cycle has given **CHECKPOINTS**, and if they become damaged, then cells divide **CONTINUOUSLY**.

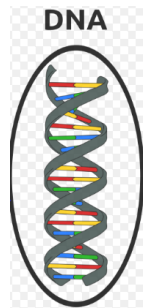
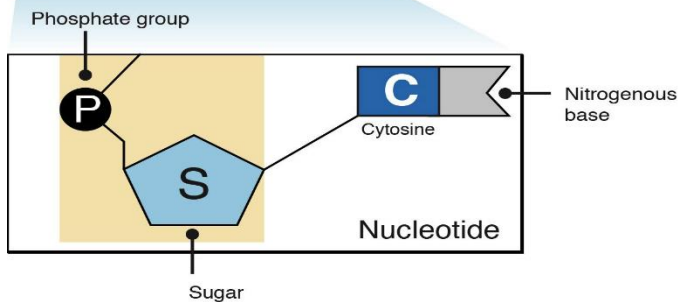
This is how cancer begins:



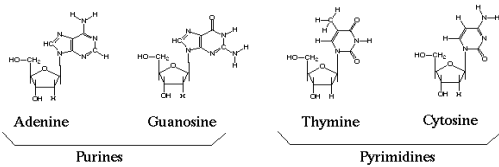
Bare Bones (6A) –

The building blocks of DNA has 3 parts:

1. Phosphate group
 2. Ribose Sugar
 3. Nitrogen Group (A, T, G, C)
- BACKBONE**



The Nucleotides of DNA



A & G are called **PURINES** (Aggies fans are PURE fans)
 T & C are called **PYRIMADINES** (TCU is a PYRAMID)

Bonds are formed with one Purine and one Pyrimidine:

A=T G≡C
A always with T G always with C

Bare Bones (6B) –

- DNA always runs in the 5'-3' direction and provides the blueprint for the organism.
- Daughter cells always have identical DNA and the same number of chromosomes as the parent cell after mitosis

Bare Bones (4B) –

DNA Replication has 4 enzymes

- 1) **H**elicase – unwinds the **H**ydrogen bonds of double helix (Helen the homewrecker).
- 2) DNA polymerase – Puts down new nucleotides in 5'-3' direction (DaNA the matchmaker).
- 3) **L**igase – Seals gaps in new strand like **G**lue.
- 4) Gyrase – Twists the DNA to form the spiral double helix

5D, 6A, 6B, and 4B will help you answer the following questions:

1. Name the first enzyme of replication and what it does:	5. Name the last enzyme of replication and what it does:
2. Without cytokinesis, how many cells would there be at the end of the cell cycle?	6. Describe how the DNA of a daughter cell compares to the parent cell:
3. What is the most common result if cells continue dividing uncontrollably?	7. The order of A, T, G, C determines the traits. What's the name of the letters?
4. How many Hydrogen bonds between A and T?	
5. How many between G and C?	

