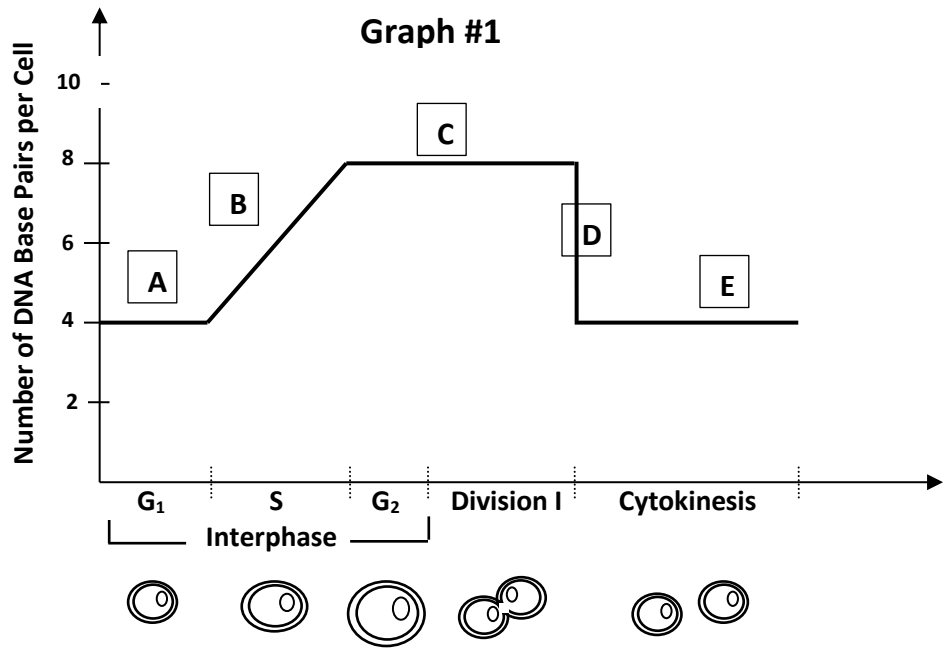
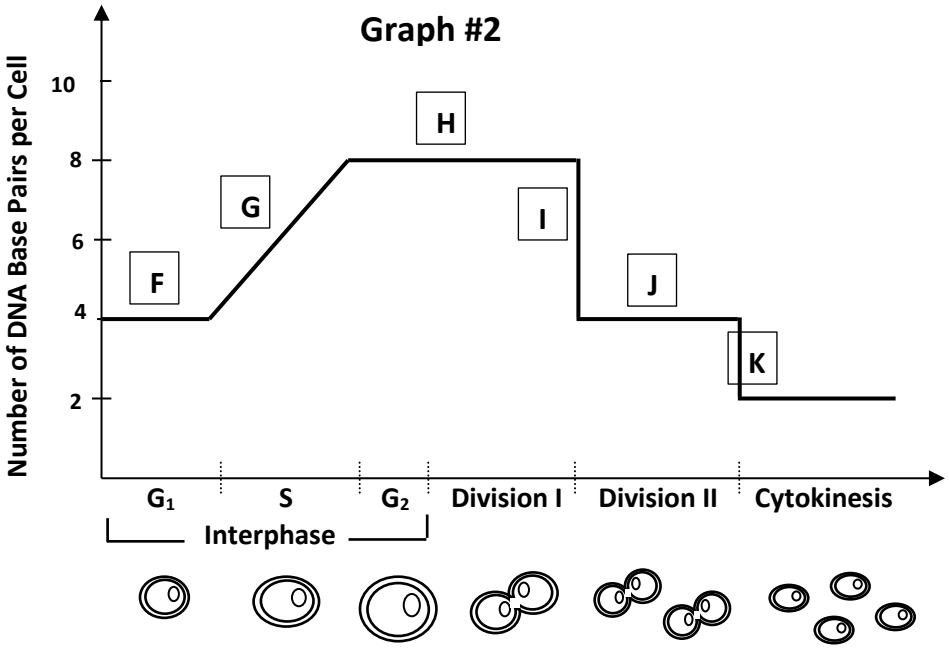
Cell Division: The Big Picture





<u>Directions</u>: Analyze the graphs to the left, then answer the questions below.

1. The two graphs to the left represent two different cell division processes. Look at **Graph #1** and fill in the chart.

What do you see in each part of the graph? (increase, decrease, same)	How **<u>much</u>** does the line affect the number of base pairs?
A.	
B.	
C.	
D.	
E.	

2. Now look at **Graph # 2** and fill in the chart.

What do you see in each part of the graph?	How **<u>much</u>** does the line affect the number of base pairs?
F.	
G.	
H.	
I.	
J.	
K.	

3. Below, indicate which graph represents <u>meiosis</u> and which graph represents the <u>cell cycle</u>. Explain your answers using the changes in DNA base pairs per cell as evidence.

Graph #1: _____Explain_____

_____

Graph#2:_____Explain_____

_____

4. Each type of cell division can be involved in reproduction. Below, identify which cell division process is used for <u>sexual</u> reproduction and which is used for <u>asexual</u> reproduction. Explain your response.

Graph#1:_____Explain_____

_____

Graph#2:_____Explain_____

_____

5. Which of these must occur during S phase of the cell cycle so that two daughter cells can be produced during M phase?

A. The DNA must be replicated.
B. The chromosomes must be joined.
C. The cytoplasm must be separated.
D. The cell membrane must be expanded.

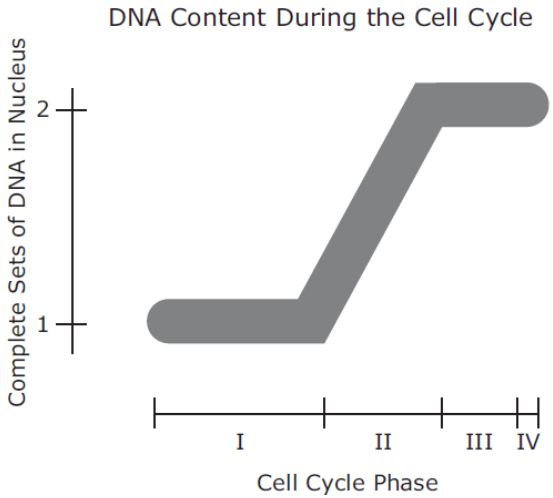
6. Crossing-over between nonsister chromatids during meiosis is significant in heredity. This process most likely leads to an increase in which of the following?

F. The expression of dominant traits
G. Number of gametes
H. The occurrence of polyploidy
J. Genetic variation

7. The model represents the change in the DNA content of a cell during the cell cycle.

Which part of the model represents the S phase?

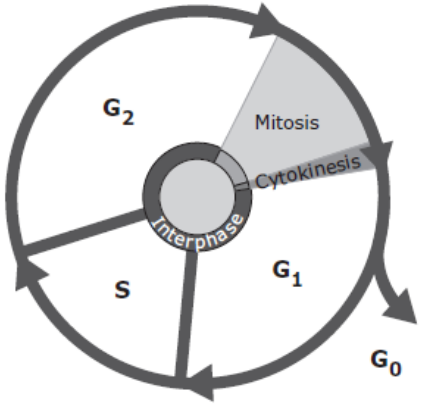
F. I
G. II
H. III
J. IV



8. Telophase is a stage of a cellular process that begins after the chromosomes have moved to opposite poles of the cell. During which cellular process does telophase occur?

A. Translation
B. Interphase
C. Transcription
D. Mitosis

9. The diagram below represents the cell cycle.



When cells leave the cell cycle, they exit during G1 phase and then enter G0 phase, a resting period. Most normal cells can leave G0 phase and reenter the cell cycle at G1 phase before entering S phase. Cancer cells are different because they cannot enter G0 phase and are likely to do which of the following?

A. Fail to complete S phase
B. Mutate during G phase
C. Repeat the cell cycle continuously
D. Die after completing mitosis

10. Sexual reproduction in animals depends on the production of gametes. Which of these processes produces gametes in animals?

F. Mitosis
G. Fertilization
H. Meiosis
J. Binary fission

11. Human body cells each have 46 chromosomes in their nuclei. Meiosis is necessary in order to ensure that each gamete produced in the human body has —

A. 12 chromosomes
B. 23 chromosomes
C. 46 chromosomes
D. 92 chromosomes

12. Scientists can bioengineer skin in a laboratory to treat severe burns and other types of skin injuries. This bioengineered tissue is grown from living cells. The cellular process that enables the cells to grow and develop into tissue is —

F. conjugation
G. meiosis
H. budding
J. mitosis