Name _____ Block _____ Date _____

Test 4 Study Guide – Cell Division (BIO.5a-b)

Cell Cycle

Draw a model of the cell cycle. Include and label the following phases in the correct order: interphase, gap 1, synthesis, gap 2, M, mitosis, and cytokinesis. (hint: the circle diagram)

Complete the following chart to describe what is happening in each part of the cell cycle. Make sure the phases are in the correct order

Phase Name		Phase Description
Interphase		
M-phase		

Explain the difference between normal cells and cancer cells. In other words, what causes cancer?

Explain what happens when a cell enters “gap 0” phase.

Mitosis
Describe the product of mitosis (how many cells, how do they compare, and are they diploid or haploid).

Describe the 3 functions of mitosis. Why do organisms perform mitosis?

1.

2.

3.

Draw the 4 phases of mitosis. Label each picture with the phase name.

Picture				
Phase name				

Chromosomes
Describe the function of chromosomes.

Explain human chromosomes:

- How many do we have total? _____
- How are they organized? _____
- Where do we get them from? _____

Explain the difference between a haploid cell and a diploid cell.

Describe what a “homologous pair of chromosomes” is. How are they related, and how are they created?

Meiosis
Describe the product of meiosis (how many cells, how do they compare, and are they diploid or haploid).

Describe the only function of meiosis. Why do organisms perform meiosis?

Complete the chart below by listing each stage of meiosis, drawing a picture, and summarizing what is happening at each stage.

	Stage	Picture	Description
Meiosis I			
Meiosis II			

Describe what happens during crossing over and when it occurs.

Describe independent assortment and when it occurs.

Explain why crossing over and independent assortment are important. What do they increase?

Explain why genetic diversity is important in a group of organisms.

Explain the difference between sexual and asexual reproduction.

List 2 examples of gametes.

1.

2.

Describe the purpose of gametes. (Hint: fertilization)

Meiosis vs. Mitosis
Write each of the following terms in the correct part of the Box-and-T chart below

diploid daughter cell	haploid daughter cell	one cell division	two cell divisions	making sex cells (gametes)
growth	cell replacement	asexual reproduction	sexual reproduction	division of the nucleus
DNA replicated beforehand	crossing over	independent assortment	homologous chromosomes pair up	daughter cells genetically identical
daughter cells genetically unique	2 daughter cells	4 daughter cells	diploid at the beginning	increases genetic diversity

Both mitosis and meiosis…

Only mitosis…	Only meiosis