**AP BIOLOGY REVIEW – DAY 3**

**DNA, MITOSIS, MEIOSIS**

1. Explain the mechanism for DNA replication.

a. Define these terms:

* + - 1. leading strand................................................................................................................................
      2. lagging strand................................................................................................................................
      3. 5’ & 3’ ends................................................................................................................................
      4. Okazaki fragments..........................................................................................................................
      5. origin of replication..........................................................................................................................
      6. RNA primer................................................................................................................................
      7. DNA polymerase................................................................................................................................ viii. helicase................................................................................................................................

ix. DNA ligase................................................................................................................................

1. Explain how DNA codes for a protein

a. Outline the steps in transcription and translation? Where does each occur?

* + - 1. ........................................................................................................................
      2. ........................................................................................................................
      3. ........................................................................................................................
      4. ........................................................................................................................
      5. ...................................................................................................................

b. Explain the role of the following:

* + - 1. RNA polymerase
      2. promoter
      3. operator iv. repressor

v. STOP codon

1. List the three parts and events of the cell cycle.
   1. .....................................................
   2. .....................................................
   3. .....................................................
2. List the phases of mitosis
   1. ...................................................
   2. ...................................................
   3. ...................................................
   4. ....................................................
3. What is the difference between meiosis I and meiosis II?.........................................................................................................
4. **Draw and Label:**  a DNA molecule in detail
5. **Draw and Label:** protein getting synthesized at the ribosome
6. **Draw and Label:** a cell in metaphase I of meiosis
7. **Draw and Label:** the cell cycle with checkpoints
8. In relation to AP Biology Investigation #11, you and your lab partner record the following counts of stomata in sunflower leaves.

*Table 1: Stomata per Examination Area*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Sunflower Plant** | **1** | **2** | **3** | **4** | **5** | **6** |
| **Stomata**  (*per examination area*) | **88** | **93** | **90** | **92** | **75** | **78** |

* 1. Calculate the mean or average number of stomata for these sunflower leaves, ***x*** .
  2. Order the number of stomata from lowest to highest and calculate the median number of stomata for the sunflower leaves.
  3. Calculate the standard deviation of the number of stomata for the sunflower leaves.
  4. Calculate the standard error in the number of stomata for the sunflower leaves.
  5. Explain in words what the difference in median and mean/average values means.
  6. Make a (very simple) bar graph with the mean of the number of stomata for the sunflower leaves. Draw the error bars on the graph. Interpret the standard error values.

1. Two different AP Biology instructors compute the means and standard errors for the first exam score for their two different AP Biology classes. The means and the SE bars are shown in the graphs below. For each of the teacher’s sets determine whether the difference between the means of the two classes is (a) definitely significantly different, (b) definitely not significantly different, or (c) unknown based on the graph whether they are significantly different or not. As usual, explain your answer.

Teacher 1

Teacher 2

**Class 1**

**Class 2**

**70**

**72**

**74**

**76**

**78**

**80**

**82**

**84**

**86**

**88**

**Midterm 1 Means**

**Class 1**

**Class 2**

**76**

**78**

**80**

**82**

**84**

**86**

**88**

**90**

**92**

**Midterm 1 Means**