Open Response Questions: Designing an Experiment (adapted from Cliffs AP)

1. Identify independent and dependent variables.
   1. Independent = variable you manipulate (What are you testing?)
   2. Dependent = variable you observe (What data are you gathering?)
2. Describe experimental treatment.
   1. How are you manipulating the independent variable?
   2. Use various intervals (ex: 0, 5, 10, 15, 20, 25, 30 degrees Celcius)
3. Identify a control treatment.
   1. Independent variable at a normal or standard value
   2. Used for comparison with results of experimental treatment
4. Use only ONE independent variable!
5. Random sample of subjects
   1. Use more than one subject! (at least 3, take average data)
   2. Choose subjects randomly
6. Describe the procedure
   1. How will you set up the experiment?
   2. Explain what equipment/chemicals you’re using AND WHY.
   3. Can use (and explain) a labeled drawing
7. Describe expected results (can graph).
8. Explain expected results. (What biological principles led you to this prediction?)

Open Response Questions: Graphing Data (adapted from Cliffs AP)

1. Label each axis (don’t forget units of measurement).
   1. X-axis = independent variable (or progress of an event, ex: time)
   2. Y-axis = dependent variable
2. Provide values along each axis at regular intervals.
3. Connect the plotted points.
   1. Use different shapes of points or different types of lines (dotted, dashed) for control/experimental.
   2. Dotted/dashed lines can also be used for predictions beyond graphed data.
   3. Identify different points/lines using a legend.
4. Provide a title for the graph (brief but descriptive).