AP Biology Summer Homework 2021

Hi All! I'm so excited to welcome you to AP Biology!
In the fall we will begin using Mastering Biology as the homework program, along with the Campbell Biology for AP 12th Edition -- Pretty Purple Flower on the cover (You will be able to purchase the ebook along with Mastering access).
For now, I would suggest using the OpenStax AP Biology book (it's free!)
We will also be reading the book Genome by Matt Ridley, so pick up a copy this summer and read the introduction!

We are going to be starting the year with Chemistry, so familiarizing yourself with Chapters 1 & 2 would be great --much of it should be review, but if it's not, make note of the items that you need to study further! I would like to really be able to start with Chapter 3 (Macromolecules) when we return in the fall.

Graphing and presenting data is a critical part of this class, so the one thing I really would like you to practice over the summer (In late August is fine!)
Graphs on the AP Test are generally graded based on 5 criteria:
Title -- depicts what the graph is about. The title should give the reader an understanding of what the graph represents. It often includes both variables: The effect of _____ on _____.
X-axis scale & labels-- The X axis should include the independent variable (the one being changed by the experimenter)
Y-axis scale & labels-- The Y axis should represent the dependent variable (the one being measured)

*Your scale doesn't have to start at zero, but it should be consistent through the axis. Make sure your scale is labeled WITH UNITS! You also want your scale to be such that you use as much of the graph paper as possible.

Appropriate type of graph and legend (if applicable)-- You should know when to use a bar graph vs a line graph (connecting dots) vs a scatter plot. They all have different purposes to show different types of data. *Your line graphs shouldn't connect to (0,0) unless that is an actual data point!

Resources:
Bozeman Science Guide to Graphing
http://www.bozemanscience.com/beginners-guide-to-graphing-data

This is a collection of resources related to both graphing and statistical analysis
http://www.bozemanscience.com/statistics-graphing

Experiment 1—Use the following data to answer the questions and create a multiple line graph.

Time after Eating (hours)	Blood glucose of Person A (mg/dL)	Blood glucose of Person B (mg/dL)
0.5	170	180
1	155	195
1.5	140	230
2	135	245
2.5	140	235
3	135	225
4	130	200

1. What is the independent variable?

2. What is the dependent variable? How do you know?

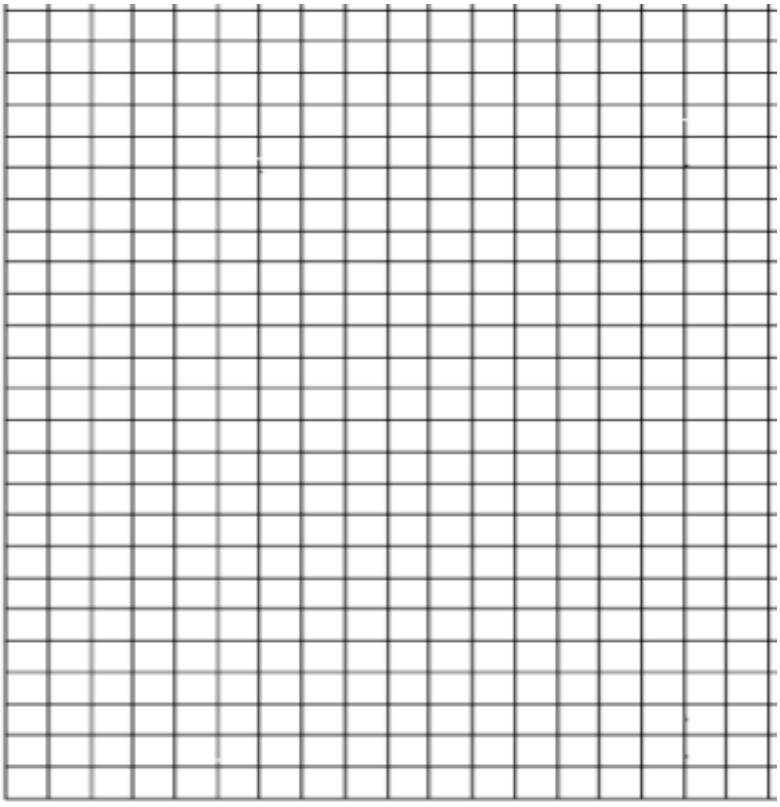
3. Whenever possible, it is best to title graphs as "The effect of IV on DV" where IV indicates the independent variable and DV indicates the dependent variable. Using this formula, what would you title your graph?

4. Why is a multiple lines type of graph best for this data? Explain based on the purpose of the graph.

5. Graph the data below. Be sure to include all of the required parts.

6. Why is a multiple lines type of graph best for this data? Explain based on the purpose of the graph.

7. Graph the data below. Be sure to include all of the required parts.

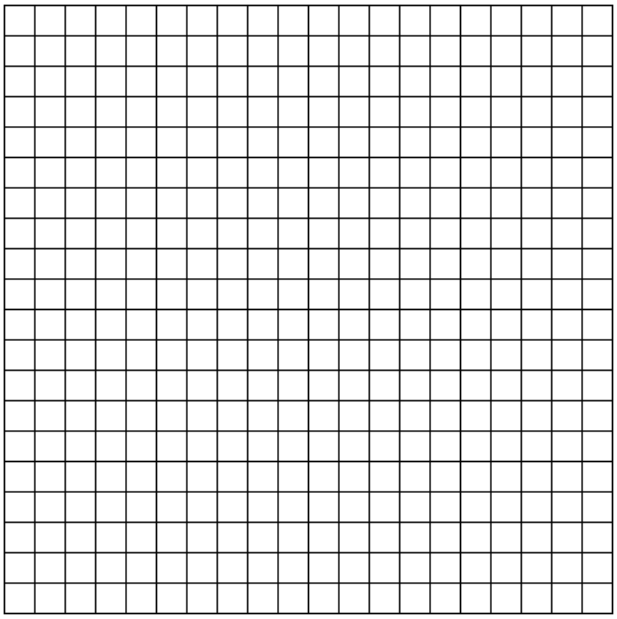


8. A common theme in Biology is homeostasis and feedback mechanisms. The human body uses many examples of **negative feedback** to maintain homeostasis, or a constant internal environment. For example, you use sugar as a source of energy. To maintain constant levels, you must continue to eat (duh), but your body also uses different enzymes to store or release glucose into your blood to be brought to cells for use. People who are **diabetic** are either unable to create insulin or are unable to use insulin. This means that their blood glucose levels are not regulated by these enzymes. Which individual shows symptoms of diabetes.

You must show ALL WORK. Make sure graphs have <u>Titles and are properly labeled WITH UNITS</u>:

Graph the following sample data set showing the number of leaf disks that rise in a solution over time as photosynthesis occurs.

Time (min)	Number of Disks Floating
1	0
2	0
3	0
4	0
5	0
6	0
7	1
8	1
9	1
10	2
11	5
12	8
13	10
14	14
15	14
16	15
17	20
18	20
19	20
20	18



A clam farmer has been keeping records concerning the water temperature and the number of clams developing from fertilized eggs. The data is recorded in the chart: Make a line graph of the data on graph paper. Connect these data points with a smooth line.

Water Temperature in °C	Number of developing clams
15	75
20	90
25	120
30	140
35	75
40	40
45	15
50	0

What is the dependent variable?

What is the independent variable?

According to the data, what is the optimum temperature for clam development? _____