Biology Summer Assignment 2018
Dr. Zinman

Name_____

Welcome to biology. This summer, you will hone your scientific skills by completing some graphical analysis. This assignment is due the first day of class in September.

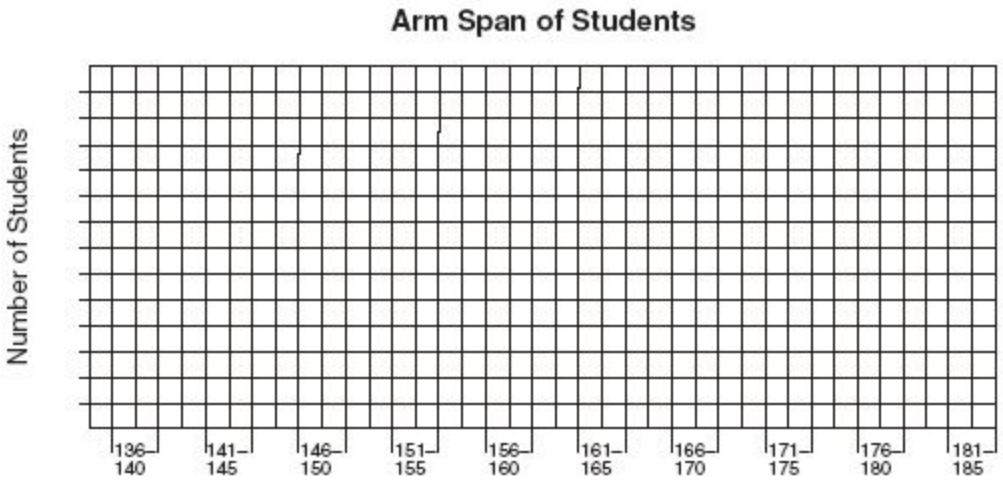
Directions: Using the directions included below to complete the graph and the related questions. Base your answers to questions 1 through 3 on the information below and on your knowledge of biology.

A science class was studying various human physical characteristics in an investigation for a report on human genetics. As part of the investigation, the students measured the arm span of the class members. The data table below summarizes the class results.

Arm Span of the Students	
Student Arm Span (cm)	**Number of Students**
136–140	1
141–145	2
146–150	0
151–155	4
156–160	5
161–165	8
166–170	5
171–175	5
176–180	3
181–185	1

Directions (1–3): Using the information in the data table, construct a bar graph on the grid provided below, Follow the directions below.

1. Mark an appropriate scale on the axis labeled "Number of Students."
2. Construct vertical bars to represent the data. Shade in each bar.



3. What should be done to provide additional support for the statement that human arm span is a characteristic that falls within a range of lengths, with most lengths falling in the middle ranges? How can you make sure your data is accurate?

Directions: Using the directions included below to complete the graph and the related questions.
Base your answers to questions 1 through 5 on the information below and on your knowledge of biology.

An investigation was carried out to measure the rate of activity of catalase, an enzyme that breaks down hydrogen peroxide. Five 40-mL solutions of the enzyme at concentrations of 20%, 40%, 60%, 80%, and 100% were prepared. A filter paper disk was placed in each enzyme solution. Each soaked disk from the different enzyme concentrations was then added to different cups containing 30 mL of 1% hydrogen peroxide. The rate of catalase activity was inferred from measurements of how fast the disks rose from the bottom to the top of each cup. The following data were obtained: 40%–12.1 seconds, 80%–5.8 seconds, 100%–4.1 seconds, 20%–15.8 seconds, and 60%–9.9 seconds.

Directions (1–2): Organize the data by completing the data table, according to the directions below.

1. Label the second column of the data table with an appropriate heading and record that label on the *y*-axis of the graph. [Be sure to include units.]

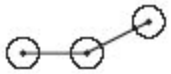
2. Complete the data table so that the percent enzyme *increases* from the top to the bottom of the table.

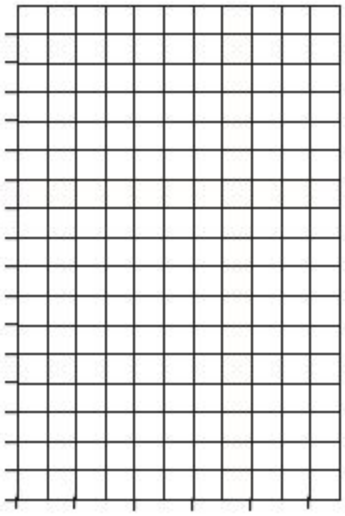
Enzyme Concentration (percent)	

Directions (3–4): Using the information in the data table, construct a line graph on the grid provided, following the directions below.

3. Mark an appropriate scale on each axis.

4. Plot the data from your data table. Surround each point with a small circle and connect the points.

Example: 



Percentage of Catalase

5. State *one* valid conclusion that relates enzyme concentration to reaction rate.

General Questions:

A. What made a bar chart the appropriate choice for the first data set? Could you have used a line graph? What about a pie chart? Why or why not?

B. What made a line graph the appropriate choice for the first data set? Could you have used a bar chart? What about a pie chart? Why or why not?

C. Find another data set. Create an appropriate graph and explain why it is the correct graph to use. Generate at least one question that requires you to draw a scientific conclusion from the data set.