

Date \_\_\_\_\_ Class \_\_\_\_\_ Name \_\_\_\_\_

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# 1- Let's Graph

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## **Introduction:**

Graphing is an important procedure used by scientists to display the data that is collected during a controlled experiment. Line graphs must be constructed correctly to accurately portray the data collected. Many times the wrong construction of a graph detracts from the acceptance of an individual's hypothesis.

A graph contains five major parts: The title, the independent variable, the dependent variable, the scales for each variable, and a legend.

The title: depicts what the graph is about. By reading the title, the reader should get an idea about the graph. It should be a concise statement placed above the graph.

The Independent Variable: is the variable that can be controlled by the experimenter. It usually includes time (dates, minutes, hours), depth (feet, meters), and temperature (Celsius). This variable is placed on the X- axis (horizontal axis).

The Dependent Variable: is the variable that is directly affected by the independent variable. It is the result of what happens because of the independent variable. Example: How many oxygen bubbles are produced by a plant located five meters below the surface of the water? The oxygen bubbles are dependent on the depth of the water. This variable is placed on the Y-axis or vertical axis.

The Scales for each Variable: In constructing a graph one needs to know where to plot the points representing the data. In order to do this a scale must be employed to include all the data points. This must also take up a conservative amount of space. It is not suggested to have a run on scale making the graph too hard to manage. The scales should start with 0 and climb based on intervals such as: multiples of 2, 5, 10, 20, 25, 50, or 100. The scale of numbers will be dictated by your data values.

The Legend: is a short descriptive narrative concerning the graph's data? It should be short and concise and placed under the graph.

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**Procedure:**

Using the following data, answer the questions below and then construct a line graph.

Depth in Meters	#of Oxygen Bubbles/minute Plant A	#of Oxygen Bubbles/minute Plant B
1	29	20
5	36	30
12	45	40
18	32	50
28	20	34
30	15	20
35	10	15

1. What is the dependent variable? \_\_\_\_\_.

2. Why? \_\_\_\_\_

\_\_\_\_\_

3. What is the independent variable? \_\_\_\_\_.

4. Why? \_\_\_\_\_

5. What title would you give the graph?

\_\_\_\_\_

6. What are the mean, median and mode of all 3 columns of data?

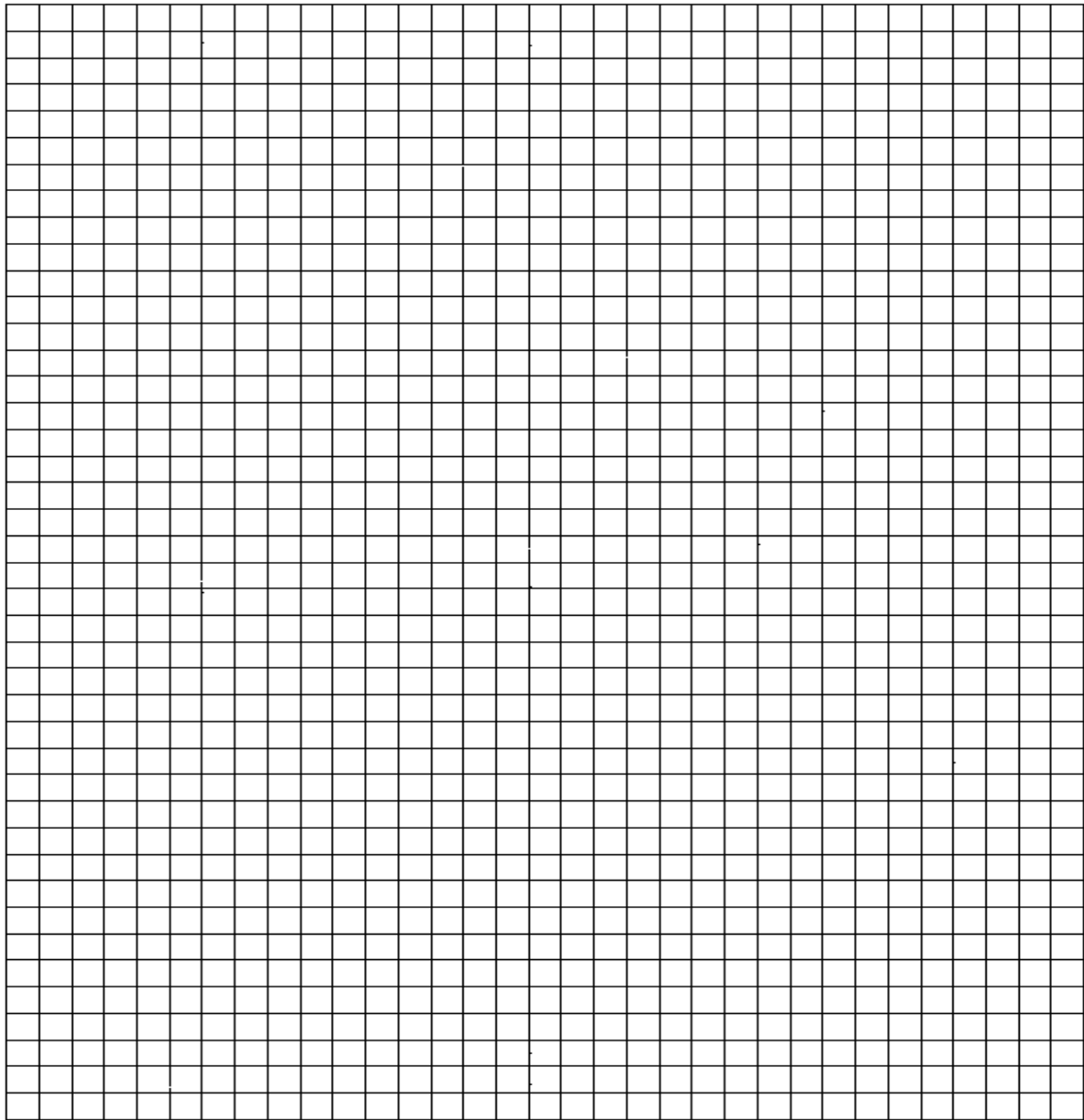
a). Depth: Mean \_\_\_\_\_ Median \_\_\_\_\_ Mode \_\_\_\_\_.

b). Bubble Plant A.: Mean \_\_\_\_\_ Median \_\_\_\_\_ Mode \_\_\_\_\_.

c). Bubbles Plant B.: Mean \_\_\_\_\_ Median \_\_\_\_\_ Mode \_\_\_\_\_.

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Title: \_\_\_\_\_



Legend: \_\_\_\_\_

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**Procedure 2:**

Diabetes is a disease affecting the insulin producing glands of the pancreas. If there is not enough insulin being produced by these glands, the amount of glucose in the blood will remain high. A blood glucose level above 140 for an extended period of time is not considered normal. This disease, if not brought under control, can lead to sever complications and even death.

Answer the following questions concerning the data below and then line graph it.

Time after Eating /hrs	Glucose ml/L of Blood Patient A	Glucose ml/L of Blood Patient B
0.5	160	180
1	150	210
1.5	125	235
2	115	245
2.5	110	230
3	90	220
3.5	90	200

1. What is the dependent variable? \_\_\_\_\_.

2. Why? \_\_\_\_\_  
\_\_\_\_\_

3. What is the independent variable? \_\_\_\_\_.

4. Why? \_\_\_\_\_  
\_\_\_\_\_

5. What title would you give the graph? \_\_\_\_\_  
\_\_\_\_\_.

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6. Which, if any, of the above individuals has diabetes? \_\_\_\_\_.

7. What data do you have to support your hypothesis? \_\_\_\_\_

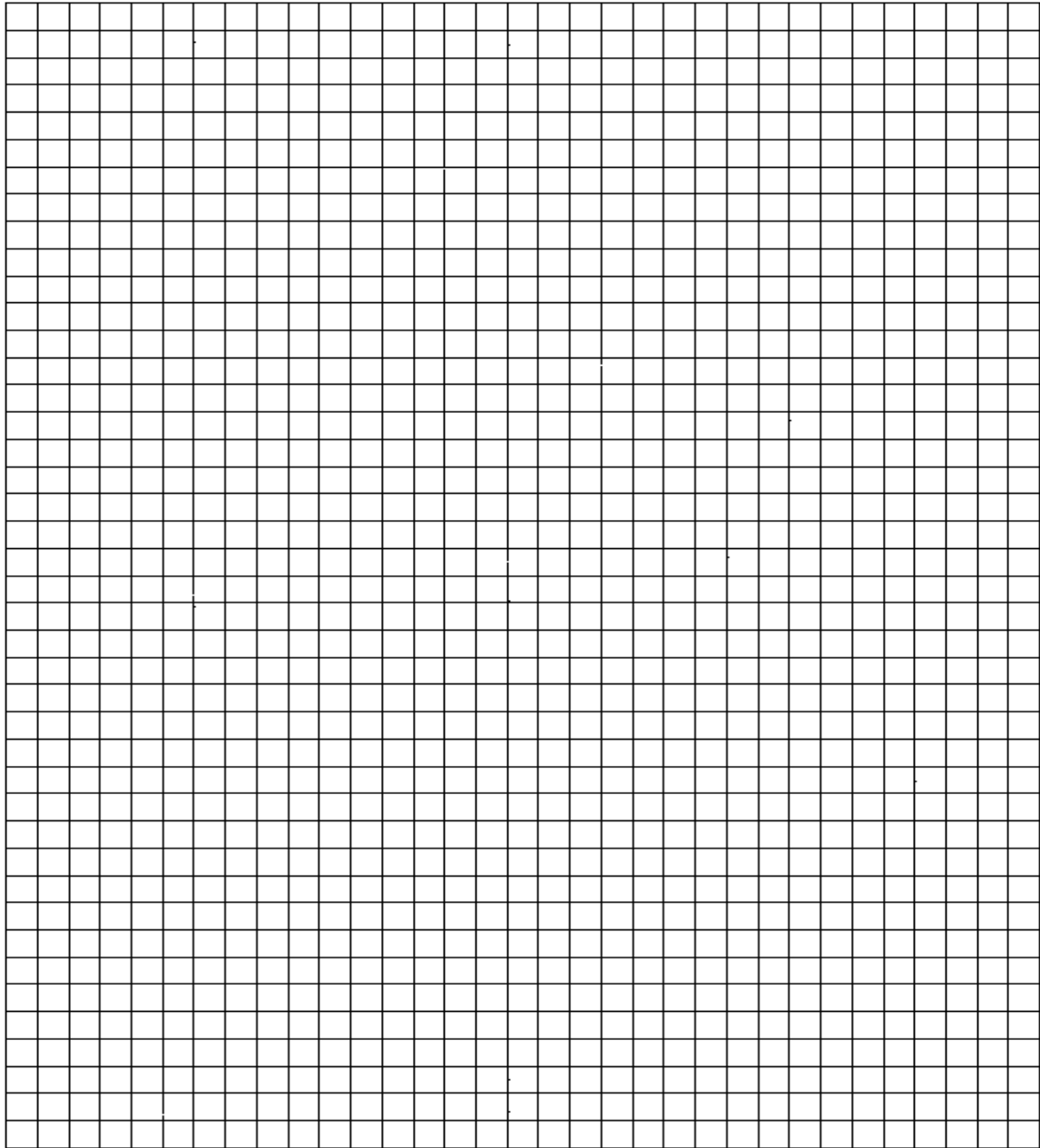
\_\_\_\_\_

\_\_\_\_\_

8. If the time period were extended to 4 hours, what would the expected blood glucose level for Person B? \_\_\_\_\_.

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Title: \_\_\_\_\_



Legend: \_\_\_\_\_

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**Summary:**

1. What conclusions can be determined from the data in graph 1?

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2. What conclusions can be determined from the data in graph 2?

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3. Can the data in each of these graphs be used to construct other types of graphs? \_\_\_\_\_

4. If so, what other graph types can be constructed?

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