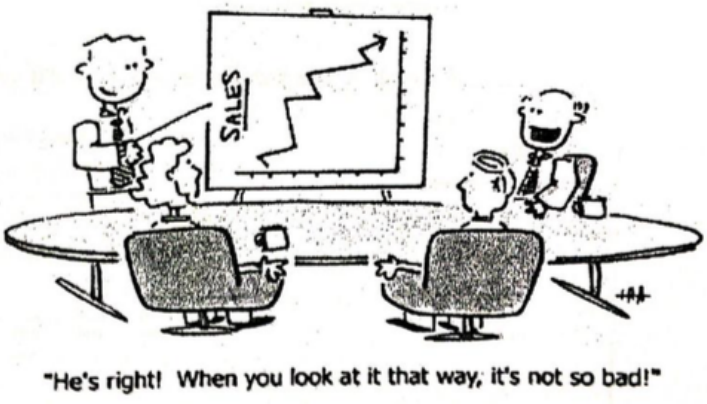
AP Biology - Graphing and Data Processing Pre-Test.

Below	Approaching	Meeting	Exceeding

NAME: _____

Instructions: Read each scenario so you know understand how the experimental data was generated. Using the data, plot an appropriate graph that clearly and succinctly demonstrate the trends in the data.



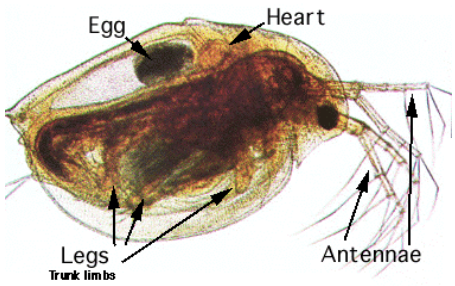
"He's right! When you look at it that way, it's not so bad!"

1) A plant was placed at various depths of water in an aquarium and light shone on it from above to allow for it to photosynthesize. When aquatic plants undergo photosynthesis, they produce oxygen which will be released as bubbles by the plant. The number of bubbles that the plant produced in a minute was recorded at each depth in the table to the right.

Depth in meters	Bubble released in a minute
2	29
5	41
10	45
16	35
25	20
30	10

Process and plot the data below in an appropriate graph.

2) *Daphnia* are small water fleas that are relatively transparent and thus their heart beat can be monitored under a microscope. In a series of experiments, 3 different *Daphnia* fleas were exposed to either water (control) or dilute solutions of different drugs (shown in the table below). After a brief period of equilibration after exposure to the drug, the heartbeat of the flea was counted for 1 minute and recorded in the table below:



	Control	Adrenaline	Nicotine	Alcohol	Caffeine
Flea 1	50	80	30	27	38
Flea 2	28	74	35	28	24
Flea 3	55	64	34	27	50

Process and plot the data below in an appropriate graph.

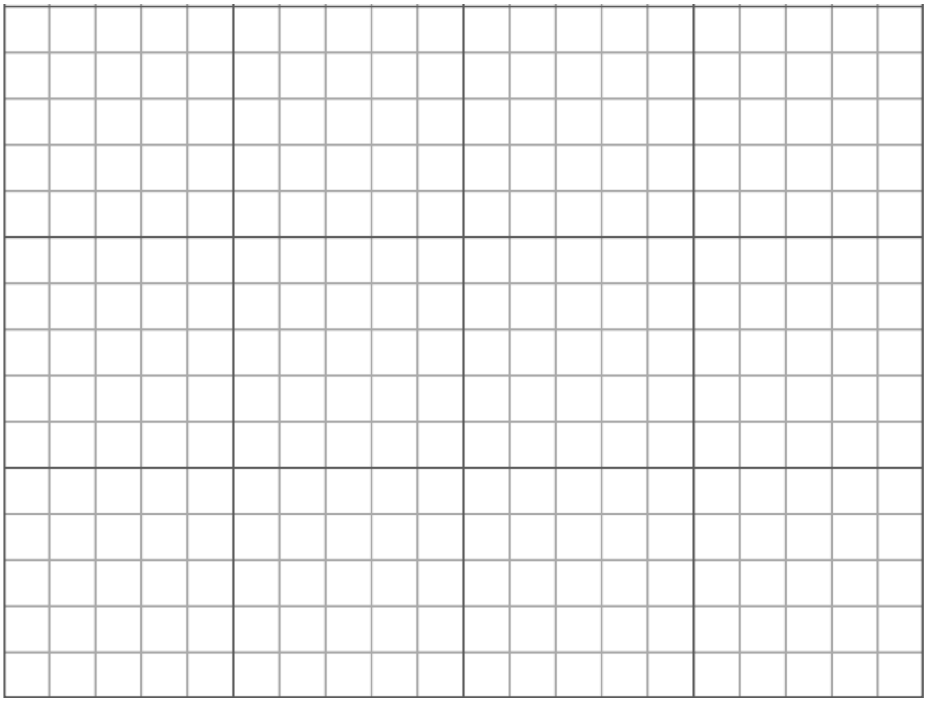
3) Catalase is an enzyme that that breaks down hydrogen peroxide into water and oxygen gas:

$$2H_2O_2 \xrightarrow{\text{catalase}} 2H_2O + O_2$$

In an effort to determine how differing pH affects the function of catalase, an experiment was set up where a catalase enzyme solution was placed in a fixed percentage of H_2O_2 mixed with different pH buffers. The researcher recorded both the volume of oxygen gas that was produced by the reaction and the length of time of the reaction. The data is recorded to the right.

pH	oxygen collected in mls	time in seconds
2	15	53
2	25	130
4	53	21
4	42	22
7	42	9
7	30	5
9	50	7
9	42	5
13	32	25
13	34	16

Process and plot the data below in an appropriate graph.



Below	Approaching	Meeting	Exceeding
The student is not able to choose the correct type of graph when given basic data to plot. Titles, axis labels, units, axis scales, data plotting, and trend lines (if applicable) on graphs are often missing or incorrect.	The student is able to choose the correct type of graph when given basic data to plot but has trouble processing and simplifying data to plot. Titles, axis labels, units, axis scales, data plotting, and trend lines (if applicable) on graphs are mostly correct.	The student is able to process and simplify basic experimental data. The correct data is plotted on an appropriate graph to enhance data interpretation and analysis. Titles, axis labels, units, axis scales, data plotting, and trend lines (if applicable) on graphs are correct. Evidence of statistical analysis (if applicable) is not present or incorrect.	The student is able to process and simplify complex experimental data. The correct data is plotted on an appropriate graph to enhance data interpretation and analysis. Titles, axis labels, units, axis scales, data plotting, and trend lines (if applicable) on graphs are correct. Evidence of statistical analysis (if applicable) is present and correct.