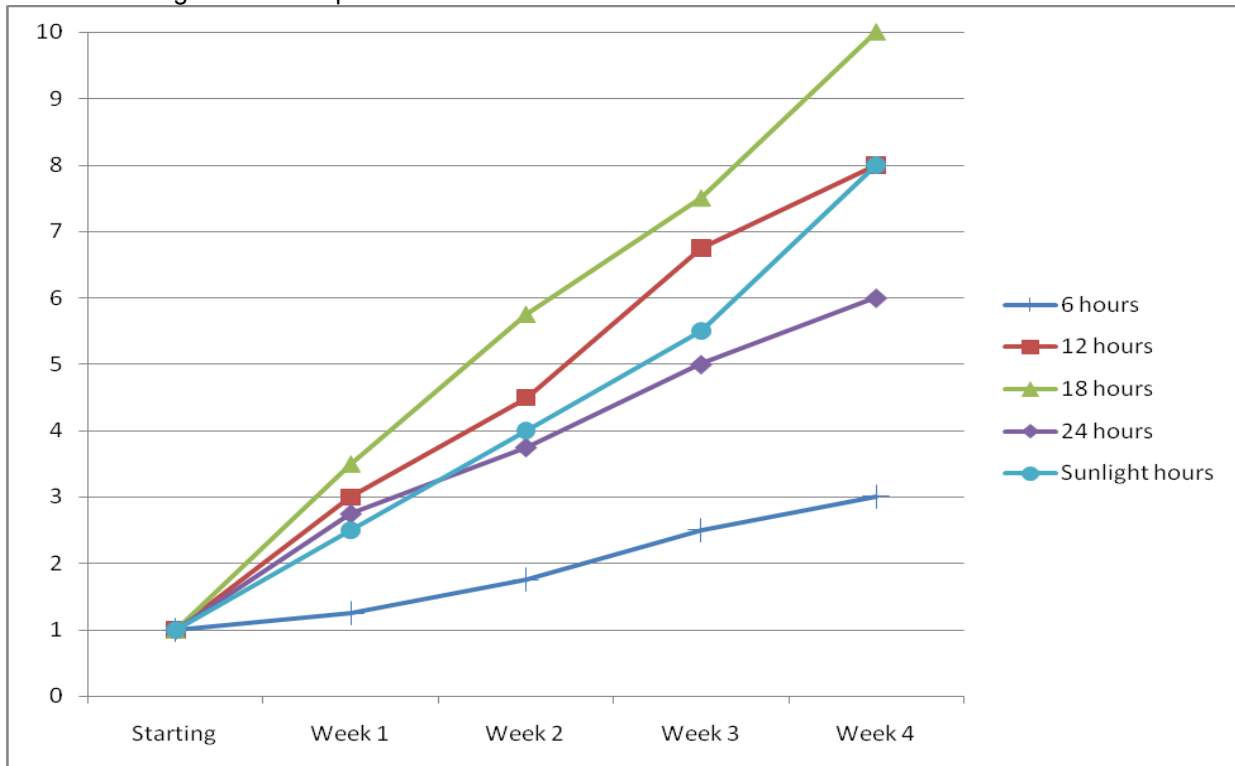


Biology Quarter 1 Final Review Sheet 16-17

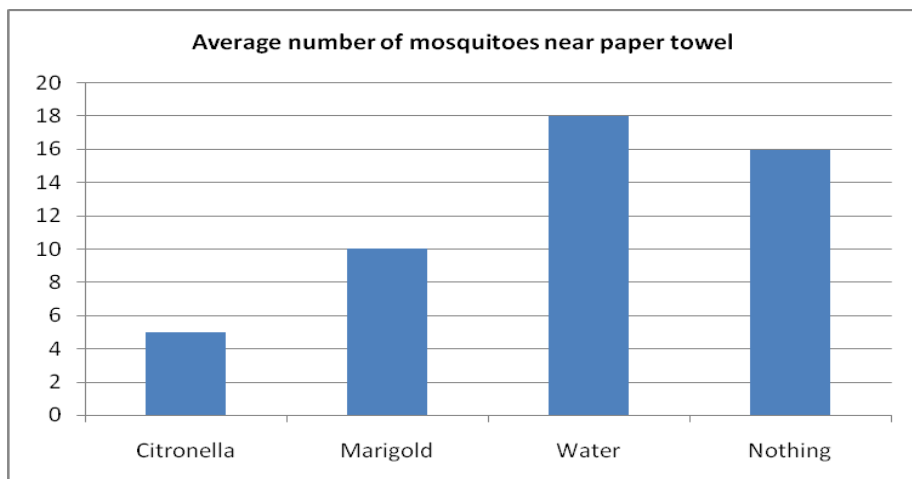
Scientific Method

Every morning, a kid turns on the lamp to his aquarium so the plants can receive light. He does not turn off the light at the same time every night, so sometimes the plants receive very little light while at other times they receive a lot of light. The plants are not doing very well and the kid wants to know if it is because of too much light or not enough light. The kid buys 4 identical plants, cuts them to 1 cm in height, and puts them in 4 different 10 gallon aquariums located in each of the corners of a room. Each tank has 2 comets that are all feed about the same amount of food at the same times during the day. The kid has the same type of lamp on each of the aquariums and turns them on the same time every morning. Each tank receives a different amount of light. The first tank receives 6 hours of light, the second 12 hours, the third 18 hours, and the fourth is never turned off. He also places a tank outside his room, where it will receive normal sunlight during the day. Every morning, the kid measures the growth of the plants and makes observations of their health. His data is shown below.



1. List some possible inferences that lead to this experiment?
2. What is a possible hypothesis for the kid's experiment?
3. What is the independent variable?
4. What is the dependent variable?
5. What are the constant variables?
6. What are some potential difficulties in the experiment?
7. Based on the data, what claim can you make?
8. What evidence supports your claim?
9. What is a potential reason that explains why your claim could be correct?
10. What is the purpose of test plant E?

A kid is irritated at all the mosquitoes around his house, and wants to find some non-chemical way of repelling them from the doors to his house. He remembers his grandma's house also has lots of mosquitoes near her fruit trees, but not too many around her house where there is a lot of citronella and marigolds planted. He decides to see if these plants have mosquito-repelling properties. He takes the leaves from the citronella plant, grinds them up with water, and filters the solids out. He soaks a paper towel with the citronella extract, and places it in a corner of an enclosed tank with mosquitoes in it. He monitors how many mosquitoes are near the corner of the tank with the extract every 15 minutes for one hour. He does the exact same thing in a second tank using marigold extract, and in a third tank he places a paper towel soaked in water. The data is on the next page.



11. List some possible inferences that lead to this experiment?
12. What is a possible hypothesis for the kids experiment?
13. What is the independent variable?
14. What is the dependent variable?
15. What are the constant variables?
16. What are some potential difficulties in the experiment?
17. Based on the data, what claim can you make
18. What evidence supports your claim
19. What is a potential reason that explains why your claim could be correct?
20. What is the purpose of the paper towel with water?
21. What is the purpose of the paper towel with nothing on it?

Atoms and Chemistry

Complete the following chart using the information given and your periodic table

Element Name	Chemical Symbol	Atomic Number	Protons	Electrons	Valence Electrons
22. Hydrogen					
23. Oxygen					
24. (hint: this is an ion)			12	10	
25. (hint: this is an ion)		17		18	

26. Draw a diagram of the atom represented in #22 above
27. Draw a diagram of the atom represented in #24 above
28. Draw a diagram of the atom represented in #25 above

Macromolecules

29. Why are carbohydrates an important part of the human diet?
30. What are monosaccharides? What are some of their functions?
31. What are disaccharides?
32. What are polysaccharides?
33. Describe the source and function of the following polysaccharides: starch, glycogen, cellulose, chitin.
34. What is a "good carbohydrate" diet and a "bad carbohydrate"? Why? Explain briefly but completely.
35. What are the functions of fats?
36. What is the difference in structure of a saturated fats and unsaturated fats?
37. What is the function of a triglyceride?
38. What are phospholipids? How do phospholipids behave in water?
39. Why is a diet high in fats considered unhealthy? Should all fats be totally removed from a diet? Explain briefly but completely.
40. What are low density lipoproteins (LDL) and high density lipoproteins (HDL)? Why is it unhealthy to have a high level of LDLs in your blood? Why is it considered healthy to have a higher level of HDLs in your blood?

41. What is the function of steroids? Provide an example.
42. Why is it important for mammals to include protein in their diet?
43. What are amino acids? What is their structure?
44. What is the primary structure of a protein?
45. What is the secondary structure of a protein?
46. What is the tertiary structure of a protein?
47. What is the quaternary structure of a protein?
48. Enzymes are catalyst. What is the function of catalyst?
49. Why is shape important to enzymes?
50. What is a synthesis reaction?
51. What is a decomposition reaction?
52. How can the reaction rate of enzymes be changed? List things that can affect enzyme reaction rate and explain why?

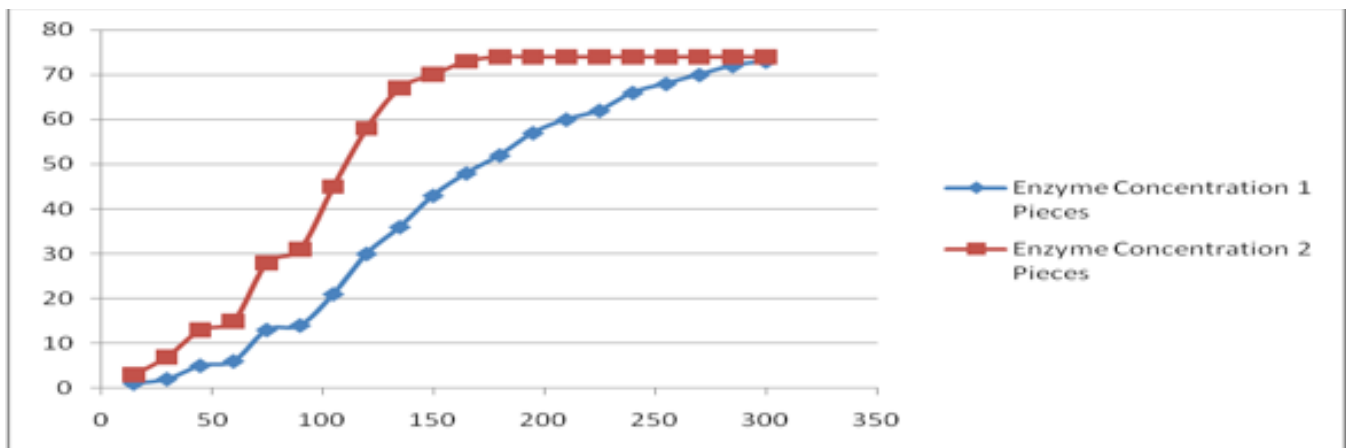
Draw the molecular structure of the following molecules

53. Glucose
54. Fructose
55. Saturated Fatty acid
56. Unsaturated Fatty acid
57. Triglyceride (typical fat molecule)
58. Amino Acid

Enzymes and Catalase Lab

59. Why is the shape of an enzyme important? (Think about the shape of the active site on the Enzyme and the substrate that binds to it.)
60. Are enzymes used up in the reactions they catalyze? How do you know this?
61. What temperatures does catalase work the most efficiently in?
62. Why does increasing temperature increase reaction rate of enzymes?
63. Why was there no reaction when catalase was boiled?
64. How does chilling food help keep the food from spoiling quickly?
65. Why does increasing enzyme concentration increase reaction rate of enzymes?
66. What pH does catalase work the most efficiently in?
67. Why are high fevers dangerous?

Catalase is an enzyme in liver. It breaks down Hydrogen Peroxide into Oxygen (O₂) and water. The X axis is time (in seconds), the Y axis is volume of Oxygen (in mL). Use the graph to answer the questions below.



68. Label each axis appropriately
69. Did 1 piece (of liver) or 2 pieces increase the reaction rate the fastest?
70. Why does the line for 2 pieces eventually become horizontal?