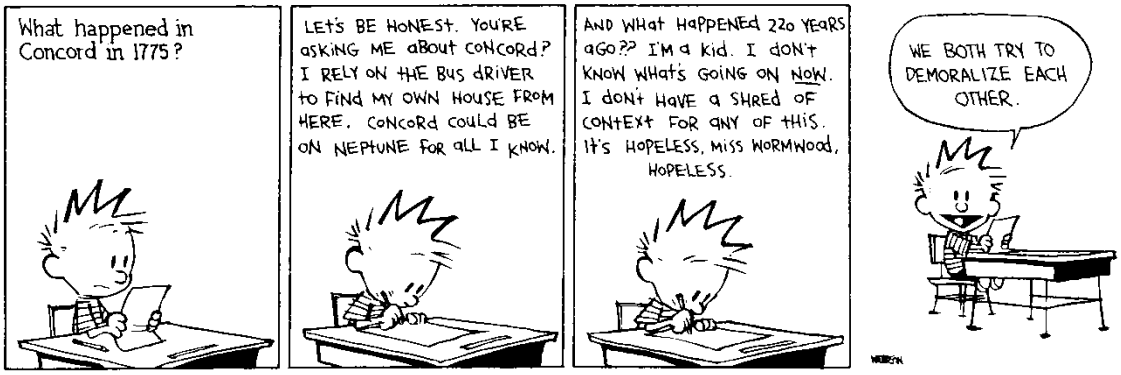
Name_____

BIOL 103, Fall 2007 - Exam 2



PLEASE WAIT TO BEGIN

1. (3 pts) The population of Canada is approximately 30 million. How does this compare proportionally to the population of the United States?

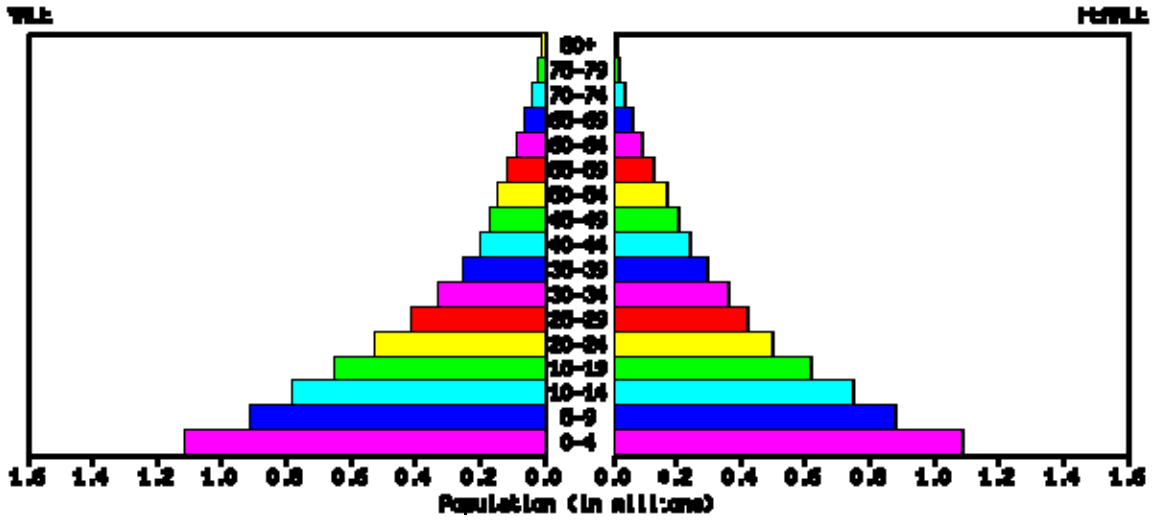
a) 5%
b) 10%
c) 20%
d) 50%
e) nearly the same

2. (3 pt) How many people live in China? _____

3. (3 pt) When did the last ice age end? _____

4. (3 pt) How old is the planet earth? _____

5. (3 pt) When is the first day of summer in Bozeman? _____



The figure above shows the age distribution for an unnamed country. Please use it to answer the following two questions

6. (5 pts) Is the number of people in this country increasing, decreasing, or remaining approximately stable? How can you tell?

7. (5 pts) If all women in this country had two children, starting immediately, how would this affect the number of people in the country?

8. (6 points) If a population of 50 rabbits grows by 10% per month, how long will it take for the population to reach a size of 200?

9. (16 pts) How can the evolutionary theory of speciation explain why it can be difficult to decide whether some two populations of birds belong to the same species?

10. (10 pts) In class, we discussed several possible explanations for why there are no trees on the top of tall mountains (e.g. Mount Baldy in the Bridger Mountains). One hypothesis was that the soil on top of Baldy was too poor for trees to grow.

i. Describe a simple experiment that you could perform to test this hypothesis. (By "simple," I mean that it doesn't require more knowledge of botany or soil science than a typical high school student would have.)

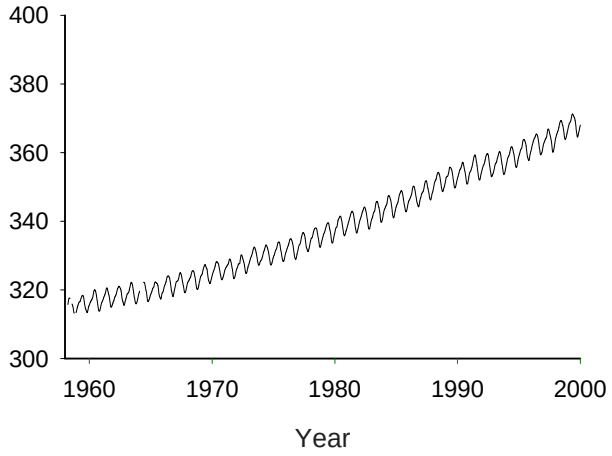
ii. Specify what the "poor soil" hypothesis predicts you would observe if you conducted the experiment.

iii. Indicate what you are likely to observe if you actually conducted your experiment.

11. (6 pts) The earth's axis is tilted 23 degrees with respect to its orbit around the sun. What would be different if this tilt was 10 degrees instead?

12. (8 pts) What is a "dead zone"? What causes them?

The following two questions refer to the figure below (which was discussed extensively in lecture).



13. (4 points) What does the vertical axis measure?

14. (4 points) Why is the line trending upwards?

15. (5 pts) Why do populations of invasive species such as rabbits in Australia or zebra mussels in the United States sometimes grow so fast?

16. (16 pts) It has been said that "if you take care of people, population will take care of itself" – meaning that population growth rates can be lowered by improving living standards. What evidence is available to support or refute this claim? And how does it relate to the concept of "demographic transition."