1. Define the following terms. Give an example where appropriate:
   a. Ecosystem

   b. Habitat

   c. Niche

   d. Autotroph

   e. Heterotroph

   f. Herbivore

   g. Omnivore

   h. Carnivore

2. Draw a simple food web using the following species. Label the producer, primary consumer, secondary consumer, tertiary consumer and decomposer.
   Wheat, bear, mouse, badger, bacteria, squirrel

3. Give an example of each of the following from your food web in #2:
   a. Herbivore

   b. Omnivore

   c. Carnivore

4. Draw an example of one food chain from your food web in #2.

5. Explain the following ecological pyramids:
   a. Pyramid of energy

   b. Pyramid of biomass

6. Define and give 2 examples of the following:
   a. Abiotic Factors

   b. Biotic Factors

7. Explain how carbon dioxide and oxygen are cycled through an ecosystem. Be sure to include the following terms: Photosynthesis, cellular respiration, decomposition.

8. Explain how nitrogen is cycled through an ecosystem. Be sure to include the following terms: nitrogen fixation, denitrification, bacteria, decomposition, ammonia, nitrates.

9. Describe 2 ways that humans disrupt the carbon cycle. What are the effects of these disruptions?

    a.

    b.

    Effects:

10. Describe 2 ways that humans disrupt the Nitrogen cycle. What are the effects of these disruptions?

    a.

    b.

    Effects:

11. Describe bioaccumulation using and example, and explain its impact on consumers.

12. Define and give examples of the following:
    a. Biodegradable

    b. Non-Biodegradable

13. Sketch a:

    a. Exponential population growth curve

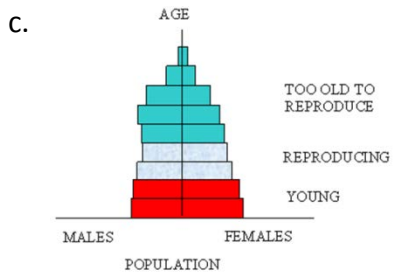   b. Logistic population growth curve
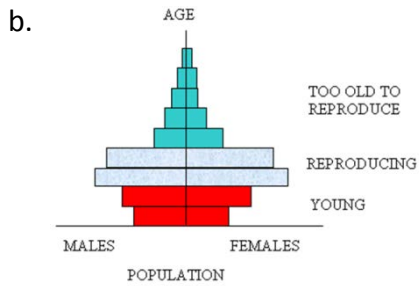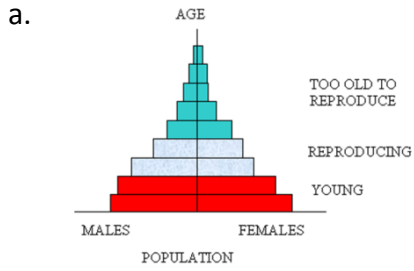
    c. Carrying capacity curve

14. Describe the carrying capacity of an ecosystem. Give four factors that will keep a population at (or around) its carrying capacity.

15. Define and give an example of the following:

    a. Density dependant factors

    b. Density-independent factors

16. Given the following histograms, state whether the population will increase, decrease or stay constant. Explain your choice.

a.

AGE

TOO OLD TO
REPRODUCE

REPRODUCING

YOUNG

MALES   FEMALES

POPULATION

b.

AGE

TOO OLD TO
REPRODUCE

REPRODUCING

YOUNG

MALES   FEMALES

POPULATION

c.

AGE

TOO OLD TO
REPRODUCE

REPRODUCING

YOUNG

MALES   FEMALES

POPULATION

17. Given the following predator-prey graph, explain the pattern and how the two population sizes are related.

Population
(in millions)

time (in years)
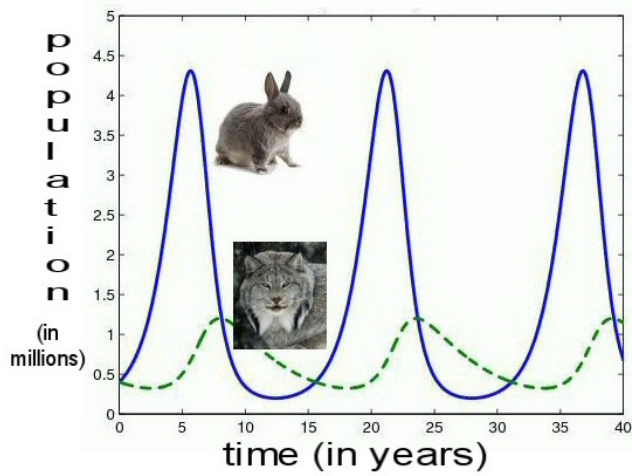
18. Define biodiversity. Explain how the biodiversity of an ecosystem contributes to its sustainability.

19. The population of walleye in a small lake was determined to be 5,000. Over the course of the year, 525 walleye are born, and 700 are caught or eaten. 130 immigrate from the next lake, and 150 leave to go downstream.
    a. Determine the population growth.

    b. What would be the new population?

20. Define the following terms:
    a. Extinct

    b. Endangered

    c. Threatened

    d. Extirpated

21. What is an invasive species, and why can they be bad for an ecosystem?