

Characteristics of Life

NAME _____
CLASS _____ DATE _____

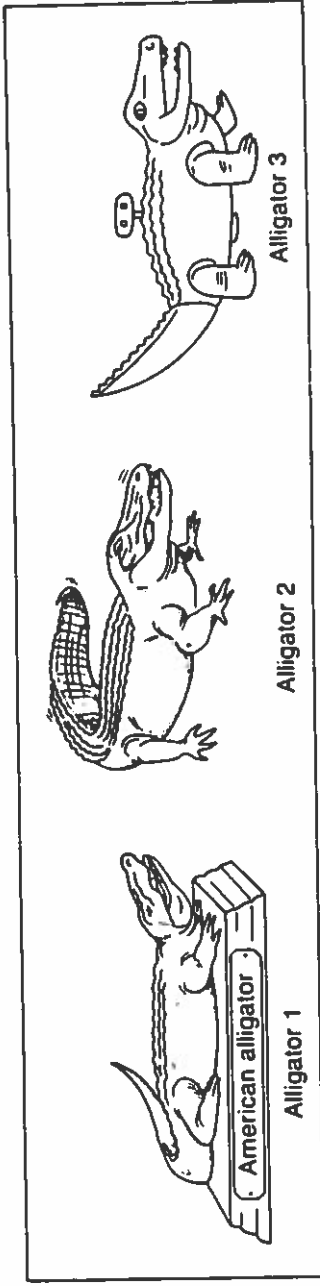
A. SYNTHESIS: REQUIREMENTS OF MICROORGANISMS

Like other living things, microorganisms have certain needs. Understanding these needs is useful to those who must control microorganisms in their environment—either to prevent their growth or to encourage it. People who wish to prevent food from spoiling must prevent the growth of microorganisms in food. People who work in food processing may want to encourage the growth of these microorganisms to produce foods such as cheeses, pickles, and sauerkraut. People who work in food processing must provide conditions favorable to the growth of the microorganisms. Each statement below describes a process involved in food handling. The process either prevents or encourages the growth of microorganisms. Complete the chart by filling in whether the process prevents or encourages growth and what requirement(s) is met or not met in order to accomplish this control.

Food Handling	Requirements of the Microorganisms
1. Milk must be refrigerated.	
2. During canning, food is raised to high temperatures.	
3. During canning, food is sealed in airtight cans.	
4. Meats are frozen.	
5. Beans, peas, and rice are dried.	
6. Coffee is freeze-dried.	
7. Vinegar is used to pickle cucumbers.	
8. Bacteria are added to cheese to give cheese flavor.	
9. Yeast is added to bread to make it rise.	
10. During pasteurization, milk is raised to 72 °C for 15 seconds and quickly cooled.	
11. Beef, pork, and fish are cured in a salt solution.	

B. LIVING AND NONLIVING THINGS

After a brief examination of an object, people can usually state whether it is alive. Living things have certain characteristics that are recognized by most people. As a biology student you are learning about additional characteristics that clearly separate living from nonliving things. Study the pictures of the three alligators. Consider the characteristics of life in the chart below, one by one, and determine whether each of the alligators depicted in the pictures would have that characteristic and under what circumstances.



Characteristic of Life	Alligator 1	Alligator 2	Alligator 3
Moves			
Responds to stimuli			
Uses energy			
Excretes energy and wastes			
Is made of cells			
Metabolizes			
Grows and develops			
Requires water			
Produces organic chemicals			
Came from other living things like itself			
Adapts to its environment			

1. Which alligator has all the characteristics of life? _____
2. How do you explain the fact that the other two alligators appear to have one or more characteristics of life, even though they are not alive? _____

