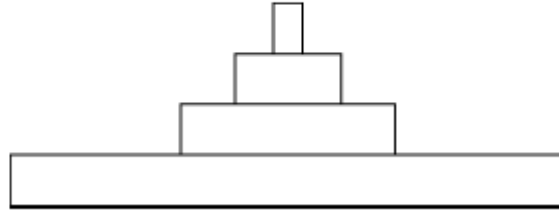


AP Biology—Critical Thinking Question Set 1

Answer the questions below in *essay* format. Diagrams may be drawn, but will not be considered an answer without written work.

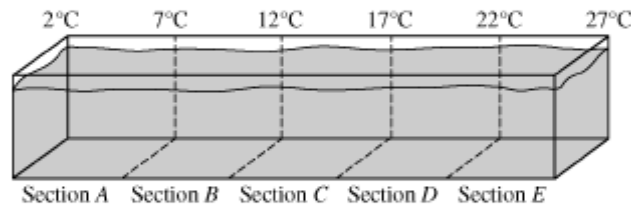
- (d) An energy pyramid for a marine ecosystem is shown below. Label each trophic level of the pyramid and provide an example of a marine organism found at each level of this pyramid. Explain why the energy available at the top layer of the pyramid is a small percentage of the energy present at the bottom of the pyramid.



1. An experiment on a species of small freshwater fish recorded their behavioral responses to different temperatures. Ten fish were each tested once, one at a time.

To begin the experiment, a fish was removed from a stock tank (maintained at 22°C) and placed in the temperature-gradient tank drawn below. After the fish had spent 30 minutes in the temperature-gradient tank, the section where the fish was located was recorded. Additional observations were recorded every 5 minutes, for a total of 7 observations per fish. A summary of the combined data for all 10 fish appears below.

- (a) On the axes provided, construct the appropriate type of labeled graph showing the relationship between water temperature and fish distribution. Summarize the outcome of the experiment.
- (b) Identify TWO variables that were not specifically controlled in the experimental design, and describe how these variables might have affected the outcome of the experiment.
- (c) Discuss TWO ways that water temperature could affect the physiology of the fish in this experiment.



Section	Fish/Section
A	9
B	11
C	34
D	12
E	4