

Life Science (Grades 9–12)

Subtest 2 Sample Items

1. One characteristic that distinguishes living from nonliving things is that living things incorporate substances from their environment to grow. Which of the following examples best illustrates why this characteristic is insufficient to distinguish between the two?

- A. An iron shovel left out in the rain becomes rusty.
- B. Two solutions are mixed in a test tube and a precipitate forms.
- C. Stalactites form on the roof of a limestone cave.
- D. A beaker of water turns to ice as it is cooled.

2. The table below shows four steps in the inflammatory response.

W	X	Y	Z
Phagocytic cells consume pathogens and cell debris.	Tissue cells release histamine and prostaglandin.	Fluid and clotting elements move to the site and clotting begins.	Capillaries dilate and become more permeable.

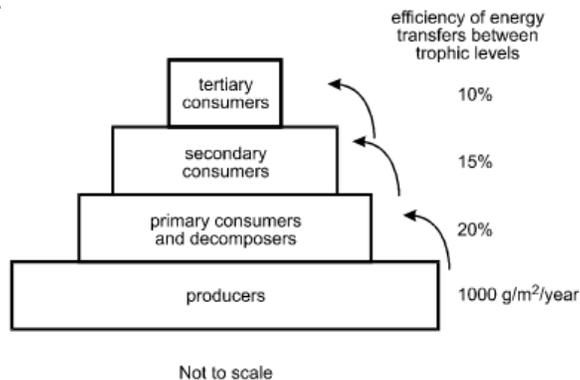
Which of the following sequences lists the steps of the inflammatory response in the correct order?

- A. X, Z, Y, W
- B. Z, X, Y, W
- C. X, W, Y, Z
- D. Z, W, X, Y

3. Periodical cicada of the genus *Magicalicada* have an extremely long life cycle. These insects spend 13–17 years underground as nymphs. All the cicadas in an area emerge within a few days of each other and immediately molt and become adults. This behavior most likely represents an adaptation for:

- A. ensuring that each member of the population is able to find a partner and mate.
- B. taking advantage of regularly occurring and locally abundant food supplies.
- C. delaying maturation to allow slow growth in a nutrient-poor environment.
- D. increasing the chances of survival from predation.

4.



The primary producers in the productivity pyramid above generate 1000 g/m²/year of biomass. If the efficiency of energy transfers between trophic levels are as shown, what will be the production of biomass by tertiary consumers?

- A. 3 g/m²/year
- B. 90 g/m²/year
- C. 450 g/m²/year
- D. 612 g/m²/year

5. A scientist is planning a research study to observe the behavior of a primate species in the wild. Which of the following steps will be most important to take to ensure that the data

collected provide an accurate view of this species' natural behavior?

- A. conducting the observations in a way that the scientist's presence does not disturb the animals
- B. making regular observations of the animals' behavior over a period of at least a full year
- C. focusing the study on the behavior of an isolated, small population of the animals
- D. marking individual animals with colored tags so that they can be identified during observation

Answer Key

Item Number	Correct Response	Subarea	Objective
1	C	I. Structural and Functional Relationships	0011
2	A	I. Structural and Functional Relationships	0013
3	D	II. Diversity and Biological Evolution	0014
4	A	III. Interdependence and Behavior of Organisms	0019
5	A	III. Interdependence and Behavior of Organisms	0020

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