

SC.912.L.17.20 Human Impact

Example One

Salt water is an abundant resource but unusable for irrigation and drinking. As demands on freshwater sources increase, the use of desalination processes to remove salt from ocean water is increasing. A concern of desalinating water is the large amounts of recovered salts that are returned to the ocean. Which of the following describes the most likely impact of desalination on the surrounding ocean environment?

- A. Methane gas would pollute the ocean environment as shoreline organisms begin to die and decay.
- B. Alteration in ocean salt levels would cause loss of species and unbalanced populations in marine food webs.
- C. Nonrenewable resources in the ocean environment would become depleted and upset the ecosystem's balance.
- D. Increased levels of salts and minerals in the ocean would result in overpopulation of marine bivalves due to strengthened shells.

Example Two

New fuels are being produced by converting corn and grasses into compounds containing alcohols that can be broken down for energy in various engines. The purpose of this research is to

- A. reduce the use of nonrenewable resources.
- B. increase the rate of air pollution.
- C. reduce the rate of homeostasis in organisms.
- D. cause a loss of biodiversity in the rain forests.

Example Three

The presence of wastes, such as plastic bags and motor oil, in lakes and streams miles away from developed areas suggests that

- A. ecosystems are interconnected and human action can alter ecosystem equilibrium.
- B. recycling programs have failed to conserve biotic resources.
- C. natural processes can alter ecosystem stability.
- D. direct harvesting practices have led to irreversible destruction of ecosystems.

Example Four

DDT and other pesticides used over 50 years ago are still affecting the environment today. Scientists have found these substances in recent glacier runoff. Glacier runoff occurs during the summer, when precipitation that has fallen on glaciers during the winter is released. Ice layers from existing glaciers have been analyzed. The results of this analysis show that the concentrations of DDT and other pesticides were highest about 10 years after the use of these substances was banned.

This information shows that

- A. DDT and other pesticides cause glacier runoff during the summer.
- B. it takes humans over 50 years to analyze a glacier.
- C. precipitation helps to break down pesticides.
- D. the decision of one human generation may have an impact on future generations.

Example Five

The northern elephant seal was almost hunted to extinction in the 1800s. By the late 1890s, approximately one hundred seals were left, reducing the gene pool of the population. What will be the consequence of this reduction?

- A. Competition within the population will increase.
- B. The surviving elephant seals will be better able to adapt.
- C. Inbreeding will be less frequent among the remaining population.
- D. The elephant seals will be more vulnerable to environmental change.

Example Six

A community is concerned about the water quality of a nearby lake. Increased sedimentation in the lake is endangering the native habitat. The increased sedimentation is most likely caused by which of the following?

- A. trees planted along the shore of the lake
- B. construction of homes along the lake
- C. the amount of sunlight on the lake
- D. the amount of fish in the lake

Example Seven

When fertilizers run off farmland into streams and ponds, the nitrogen content of the water increases. This can lead to rapid growth of algae in a process called eutrophication. How can this process affect other organisms in the water?

- A. Oxygen is used up as algae is decomposed, reducing the amount available to other organisms.**
- B. The water becomes better able to support aerobic organisms.**
- C. The algae provide food for fishes and other organisms, leading to decreased algae populations.**
- D. The extra nitrogen provides additional food for the other organisms, increasing their population.**

Example Eight

A strip mining company wants to lease some land that is currently part of a national park. They promise to reclaim the land should any minerals be mined from the area, and they are willing to pay top dollar for the rights. As an ecologist, what factors would you raise with the local government?

- A. the threat to local biodiversity**
- B. management of the land after the company leaves**
- C. the new jobs that would be created**
- D. the increased traffic in the area**

Example Nine

Whaling was a very profitable profession until whale populations crashed. The global community came together to enact a ban on whaling. However, Japan and Norway have not agreed to stop whaling. Which of the following is the most likely consequence of their decision?

- A. The whale populations are bouncing back very successfully and are unaffected by Japan and Norway continuing to whale.**
- B. The whale populations are not rebounding as quickly as they might if all of the countries agreed not to hunt whales.**
- C. The whale populations have mutated into new kinds of organisms.**
- D. The whales are getting better at avoiding capture.**