



Complete the sentences with a word derived from the words in bold (adverbs)  
**(IN BLOCK CAPITALS!)**

Organisms and their environment **(1)** \_\_\_\_\_ interact, and both are changed by this interaction. Like all other living creatures, humans have **(2)** \_\_\_\_\_ changed their environment, but they have done so **(3)** \_\_\_\_\_ on a grander scale than have all other species. Some of these human-induced changes — such as the destruction of the world's tropical rain forests to create farms or grazing land for cattle — have led to altered climate patterns.

In turn, altered climate patterns have changed the way animals and plants are distributed in different ecosystems. In 1840 German chemist Justus von Liebig first proposed that populations cannot grow **(4)** \_\_\_\_\_, a basic principle now known as the Law of the Minimum. Biotic and abiotic factors, singly or in combination, **(5)** \_\_\_\_\_ limit the size that any population may attain. This size limit, known as a population's carrying capacity, occurs when needed resources, such as food, breeding sites, and water, are in short supply.

Population size and distribution may also be affected, either **(6)** \_\_\_\_\_ or **(7)** \_\_\_\_\_, by the way species in an ecosystem interact with one another. In an experiment performed in the late 1960s in the rocky tidal zone along the Pacific Coast of the United States, American ecologist Robert Paine studied an area that contained 15 species of invertebrates, including starfish, mussels, limpets, barnacles, and chitons. Paine found that in this ecosystem one species of starfish preyed **(8)** \_\_\_\_\_ on a species of mussel, preventing that mussel population from multiplying and monopolizing space in the tidal zone. When Paine removed the starfish from the area, he found that the mussel population **(9)** \_\_\_\_\_ increased in size, crowding out most other organisms from rock surfaces. The number of invertebrate species in the ecosystem soon dropped to eight species. Paine concluded that the loss of just one species, the starfish, **(10)** \_\_\_\_\_ led to the loss of an additional six species and a transformation of the ecosystem.

**CONSTANT**

**CLEAR  
GENERAL**

**INDEFINITE**

**ULTIMATE**

**DIRECT (6)  
INDIRECT (7)**

**HEAVY**

**QUICK**

**EVENTUAL**

