

Distinguish between commensalism, parasitism, and mutualism.

## Symbiosis

### Read This:

There are three types of symbiotic relationships. They are commensalism, parasitism, and mutualism. Symbiotic relationships always involve at least two different organisms.

Commensalism – a relationship in which one species benefits ☺, and the other species is neither helped nor harmed ☹. An example of commensalism is when a clown fish lives inside a sea anemone. The clown fish receives shelter, but the sea anemone neither helped nor harmed. It does not care that the fish are there.

Parasitism – a relationship in which one species benefits ☺, and the other organism is harmed ☹. An example of parasitism is when a tick attaches itself to a dog. The tick gets all the nutrients, which is good, and the dog loses its nutrients, which is bad. The tick is called the parasite, and the dog is the host.

Mutualism – a relationship in which both species benefit ☺☺. An example of mutualism is when *Escherichia coli* help break down food within a human's stomach. Both the human and the bacteria (*e. coli*) benefit, because they both receive nutrients from the digested food.

### Answer These:

1. A remora fish attaches itself to the underside of a shark without harming the shark, and eats leftover bits of food from the shark's meals. What type of symbiotic relationship is this?  
 A. commensalism  
 B. competition  
 C. mutualism  
 D. parasitism
2. A tick attaches itself to a dog, and lives off the nutrients inside its blood. What kind of symbiotic relationship is this?  
 A. commensalism  
 B. competition  
 C. mutualism  
 D. parasitism
3. Bacteria living in cows' stomachs help them break down the cellulose in grass helping to provide nutrients to the cow. What type of symbiotic relationship is this?  
 A. commensalism  
 B. competition  
 C. mutualism  
 D. parasitism

Distinguish between commensalism, parasitism, and mutualism.

4. The oxpecker, a small African bird, periodically cleans ticks and other pests off the skin of the impala. The impala, in turn, protects the oxpecker from larger predatory birds and provides it with a constant supply of food. This relationship is an example of
  - A. commensalism.
  - B. competition.
  - C. mutualism.
  - D. parasitism.
  
5. Protozoans living in the intestine of a termite secrete enzymes that digest cellulose, providing digestive end products of value to both organisms. This is an example of
  - A. commensalism.
  - B. competition.
  - C. mutualism.
  - D. parasitism.
  
6. The roots of a mistletoe plant absorb nutrients from living oak trees, causing some damage to the tissue of the trees. This is an example of
  - A. commensalism.
  - B. competition.
  - C. mutualism.
  - D. parasitism.
  
7. Some mites live between the legs of a millipede. The millipede is not helped or hurt. This is an example of
  - A. commensalism.
  - B. competition.
  - C. mutualism.
  - D. parasitism.
  
8. Define the following:
  - A. commensalism –
  - B. mutualism –
  - C. parasitism –