Name: _____ Period (circle): 1 4 5 6 7

# SIMPLY SYMBIOSIS!

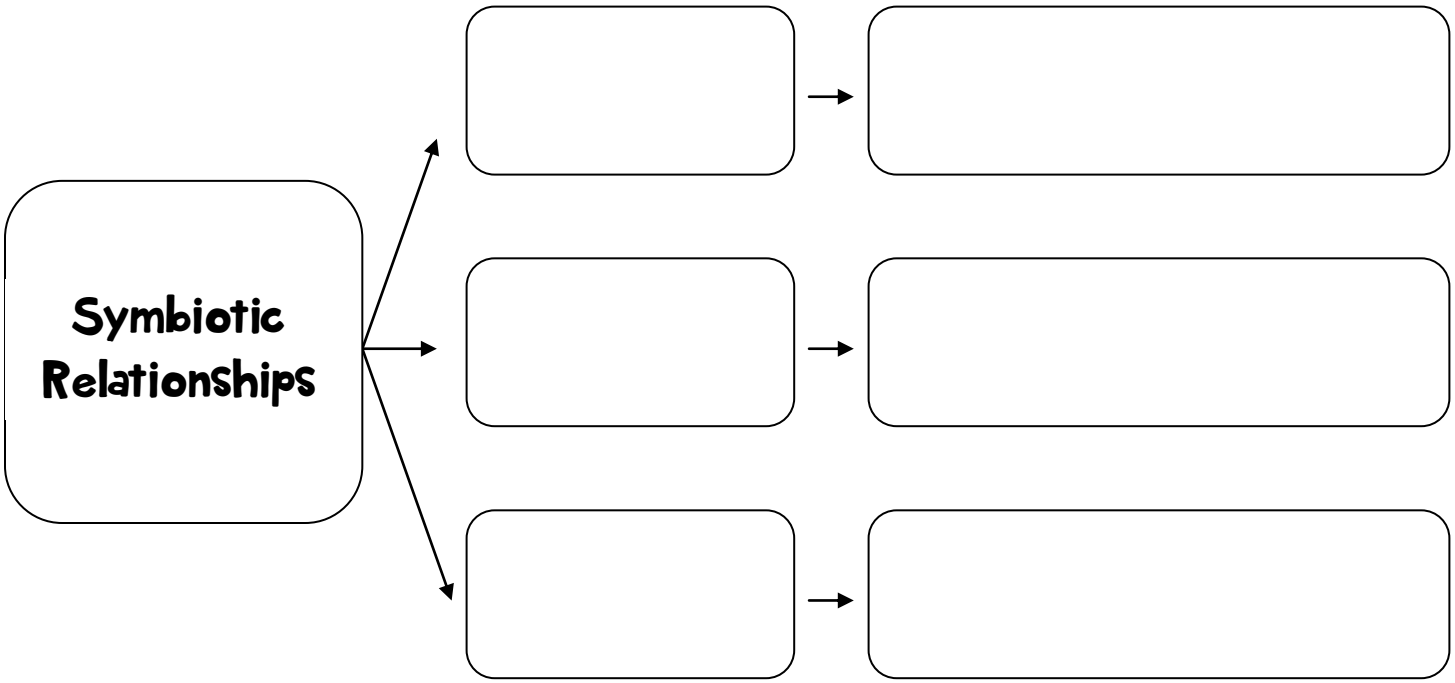
## Background

The word symbiosis was first defined as "unlike organisms living together". The relationship between these two unlike organisms can be positive, negative or neutral. There are three types of symbiotic relationships- mutualism, commensalism and parasitism. Mutualism is when both organisms benefit from each other like the African crocodile and the blackbird plover- the bird gets nutrients from left over food material in the mouth of the crocodile and the crocodile has cleaner teeth because of the bird. Commensalism is when one organism benefits from the relationship, while the other one is neither helped nor harmed. An example of commensalism is a barnacle on a whale. The barnacle gets protection and transportation to different food sources while the whale is neither helped nor harmed by the presence of the barnacle. The last example of symbiosis is parasitism. This is when one organism benefits but while doing so it is harming the other member in the relationship. A common example of this is a flea on a dog. The flea obtains nutrients and protection from the dog but the dog has an uncomfortable skin reaction because of the flea.

## Pre Lab Assignment

*Complete the concept map about symbiotic relationships using the word bank below.*

| | | |
|---|---|---|
| One benefits/One is harmed | Both benefit | Parasitism |
| One benefits/One not helped nor harmed | Mutualism | Commensalism |



## Lab Assignment

*Read and complete each step of the lab below.*

1. **Purpose:**
   The purpose of this lab is to determine the type of symbiotic relationships between two unlike organisms found in nature.

2. **Materials:**
   10 Symbiotic Relationship Cards (at each table).

3. **Procedure & Data Collection:**
   a) At each station read the description provided on the Symbiotic Relationship Cards.

   b) In **Table** I write down the name of both organisms, which one benefits, which one is neutral and which one is harmed. **Do not leave a column blank- for example, if neither organism is harmed you could write "none" or "neither".**

   c) Determine if the relationship is mutualism, commensalism or parasitism and record in **Table 1.**

   d) In **Table 2,** write a **COMPLETE SENTENCE** describing how the relationship was mutualism, commensalism or parasitism.

4. **Analysis:**
   *Read the descriptions below and decide if the symbiotic relationship is mutualism, commensalism or parasitism.*

   a) A Boxer crab carries a pair of sea anemones in its claws. When predators approach the Boxer crab it waves the anemones, which present their stinging tentacles. The Boxer crab gets protection and the anemones get the partials of food that are dropped by the crab.

   b) Mycorrhizae is a fungus that lives on the roots of plants. The plant provides the fungi with carbohydrates such as glucose while the fungi provides the plant with phosphate.

   c) Cattle egrets (a type of bird) are typically found around cattle and horses as they graze in the field. The cattle stir up various insects in the fields that the egrets feed upon.

   *Read each statement below, and circle the correct answer.*

   d) True or False Parasites always kill their host.

   e) True or False Athlete's foot is an example of mutualism.

   f) True or False Predation is a form of symbiosis.

   *Answer the question below in 2-3 complete sentences.*

   How do organisms interact with each other and how can one organism be dependent upon other species?

# table 1

| Station # | Name of 1st Organism | Name of 2nd Organism | Which organism(s) benefits? | Which organism is neutral? | Which organism is harmed? | What type of symbiotic relationship is this? |
|---|---|---|---|---|---|---|
| 1 | | | | | | |
| 2 | | | | | | |
| 3 | | | | | | |
| 4 | | | | | | |
| 5 | | | | | | |
| 6 | | | | | | |
| 7 | | | | | | |
| 8 | | | | | | |
| 9 | | | | | | |
| 10 | | | | | | |

# table 2

| Station # | Type of Relationship | Description |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |
| 10 | | |

# Station 1

**LICHEN**: relationship between fungus and algae

- Fungus provides nutrients to algae

- Algae provides food to fungus

# Station 2

**TICKS & FLEAS**: relationship between parasites and animals

Tick on dog

Flea on cat

- Parasites get nourishment from dog.
- Dog is harmed…. may become sick from bites/diseases transmitted by parasite.

# Station 3

**CLOWN FISH & SEA ANEMONE**: relationship between the clown fish and the sea anemone

- Clown fish get protection from the anemone
- Sea anemone get cleaned of parasites from the clown fish

# Station 4

**GALLS ON OAK LEAVES:** relationship between insects that make the galls and the oak tree.

- Insects form a nursery called a gall on the leaf/branch of a tree. Insects have a safe place to develop.
- Tree is not helped or harmed by the presence of the galls.

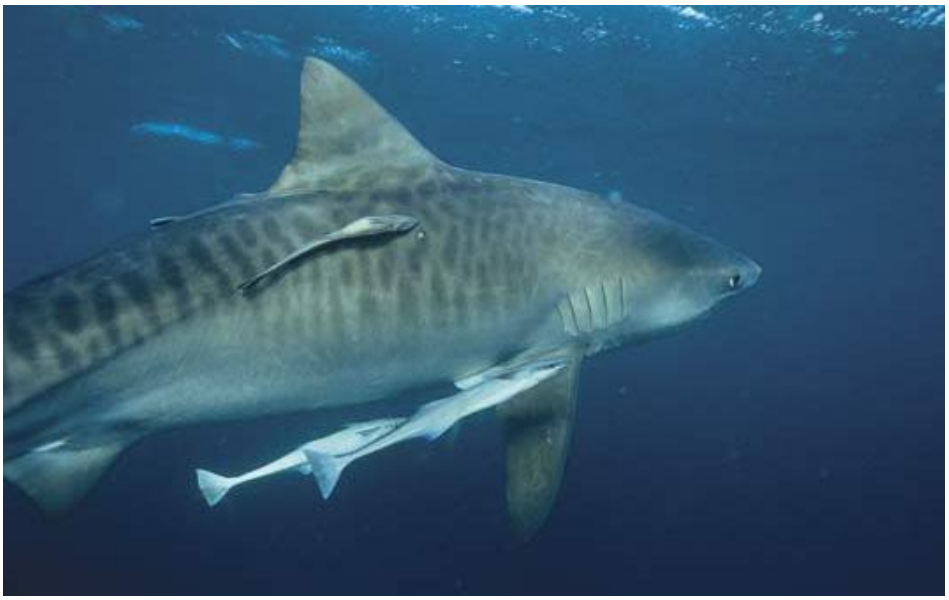
# Station 5

**MISTLETOE:** relationship between mistletoe & the tree that it is attached to.

- Mistletoe gets food and water from the tree.
- Tree loses food and water that it needs…. eventually will die.

# Station 6

**Shark & Remora Fish:** relationship between the shark & remora fish



- Remora fish get free food by hanging out with sharks.
- Sharks are not affected by presence of fish.

# Station 7

**Eagle & Fish:** relationship between the eagle & fish

- Birds of prey can spot fish swimming in a lake from high altitudes.
- They swoop down, and grab fish to feed their young back in the nest.

# Station 8

**Cow & Intestinal Bacteria:** relationship between the cow & the bacteria in its intestine.

- Bacteria live in the intestines of cows and other organisms.
- Bacteria help to digest food for the cow.
- The cow provides a warm, moist environment to live.

# Station 9

**Bighorn Sheep:** relationship between 2 male bighorn sheep.

- Male bighorn sheep, called rams, butt heads to see which one is dominant.
- The dominant male can mate with more females than the non-dominant male sheep.

# Station 10

**Athlete's Foot:** relationship between your toes and a fungus.

- Athlete's foot is a fungus growing between and around human toes.

- The fungus gets nutrients from the human skin.
- Athlete's foot causes dry, scaly skin, itching, inflammation and even blisters.