Name _____ Date _____

Symbiosis: Mutualism, Commensalism and Parasitism

Directions: For the questions about the acacia trees, use the passage and the table. Answer the other questions using what you know about relationships between species.

Ants That Live in Thorns

Use the passage and the table to answer these questions.

A bullhorn acacia is a thorny tree that grows in Mexico and Central America. Its large, swollen thorns are shaped like the horns of a bull. Ants chew their way into the thorns and raise their young inside them. The tree also makes sweet nectar and tiny food packets on its leaves, which the ants eat.

When two different species live closely together for a long time, their relationship is called symbiosis. Most scientists sort these relationships into three main kinds. In mutualism, both species benefit. In commensalism, one species benefits and the other is neither helped nor harmed. In parasitism, one species, the parasite, benefits by living on or in another species, its host, and the host is harmed. Many parasites harm their hosts without killing them quickly, since a parasite usually needs its host to stay alive.

Do the ants do anything for the tree? Ecologists studied 10 young bullhorn acacias of about the same size, growing in the same area. They removed the ants from 5 of the trees and kept new ants from moving in. The other 5 trees kept their ants. After one year, the ecologists measured how much taller each tree had grown and what percent of its leaves had been chewed by insects.

Young bullhorn acacias after one year

Tree	Ants	Growth in height (cm)	Leaves chewed by insects (%)
1	Kept	52	8
2	Kept	60	6
3	Kept	48	10
4	Kept	56	7
5	Kept	54	9
6	Removed	18	38
7	Removed	12	45
8	Removed	20	40
9	Removed	15	36
10	Removed	10	41

1. Match each relationship term to what it means in the passage.

Write the letter of the matching answer on each line.

1. _____ Symbiosis
2. _____ Mutualism
3. _____ Commensalism
4. _____ Parasitism
5. _____ Host

Choices for question 1

A. A relationship in which one species benefits and the other is harmed
B. A relationship in which both species benefit
C. A relationship in which one animal hunts, kills and eats another
D. Any close, long-lasting relationship between two different species
E. The living thing that a parasite lives on or in
F. A relationship in which one species benefits and the other is neither helped nor harmed

2. According to the passage, how do the ants benefit from the bullhorn acacia?

A. The ants get water that the tree stores in its roots.
B. The ants get nothing from the tree.
C. The ants get a place to raise their young and food to eat.
D. The ants get thorns that sting the ants' enemies.

3. Which factor did the ecologists set up to differ between the two groups of trees?

A. The area where the trees grew
B. The percent of leaves chewed by insects
C. The size of the trees at the start
D. Whether ants lived on the tree

4. What was the mean growth in height of the 5 trees that kept their ants?

_____ cm

5. Which claim do the acacia measurements support?

A. All trees grow better when ants live on them.
B. For these 10 trees, the ones that kept their ants grew more and had a lower percentage of leaves chewed by insects than the ones whose ants were removed.
C. For these 10 trees, the ants chewed more leaves than the other insects did.
D. For these 10 trees, removing the ants made the trees grow taller.

6. Using the passage and the table, which kind of relationship do the bullhorn acacia and its ants most likely share?

A. Commensalism, because the ants benefit and the tree is not affected

B. No symbiosis at all, because the ants and the tree do not live closely together

C. Parasitism, because the ants harm the tree by living in its thorns

D. Mutualism, because the ants get a home and food, and the trees with ants grew more and had a lower percentage of leaves chewed by insects

7. A student says a parasite always kills its host right away. Which idea from the passage corrects the student?

A. Hosts always benefit from their parasites in the end.

B. In parasitism, both species benefit.

C. Many parasites harm their hosts without killing them quickly, because a parasite usually needs its host to stay alive.

D. Parasites never harm their hosts.

8. A bee drinks nectar from a flower and carries pollen to other flowers of the same kind, which helps the plants make seeds. Which kind of relationship is this?

A. Commensalism B. Mutualism C. Competition D. Parasitism

9. A robin builds its nest in the branches of a large oak tree. The nest gives the robin a safe place to raise its young, and the tree is neither helped nor harmed. Which kind of relationship is this?

A. Parasitism B. Competition C. Mutualism D. Commensalism

10. A tick attaches to a deer and feeds on its blood for several days. The deer loses blood and can catch diseases from the tick. Which term names the deer's role in this relationship?

A. The producer B. The parasite C. The host D. The predator