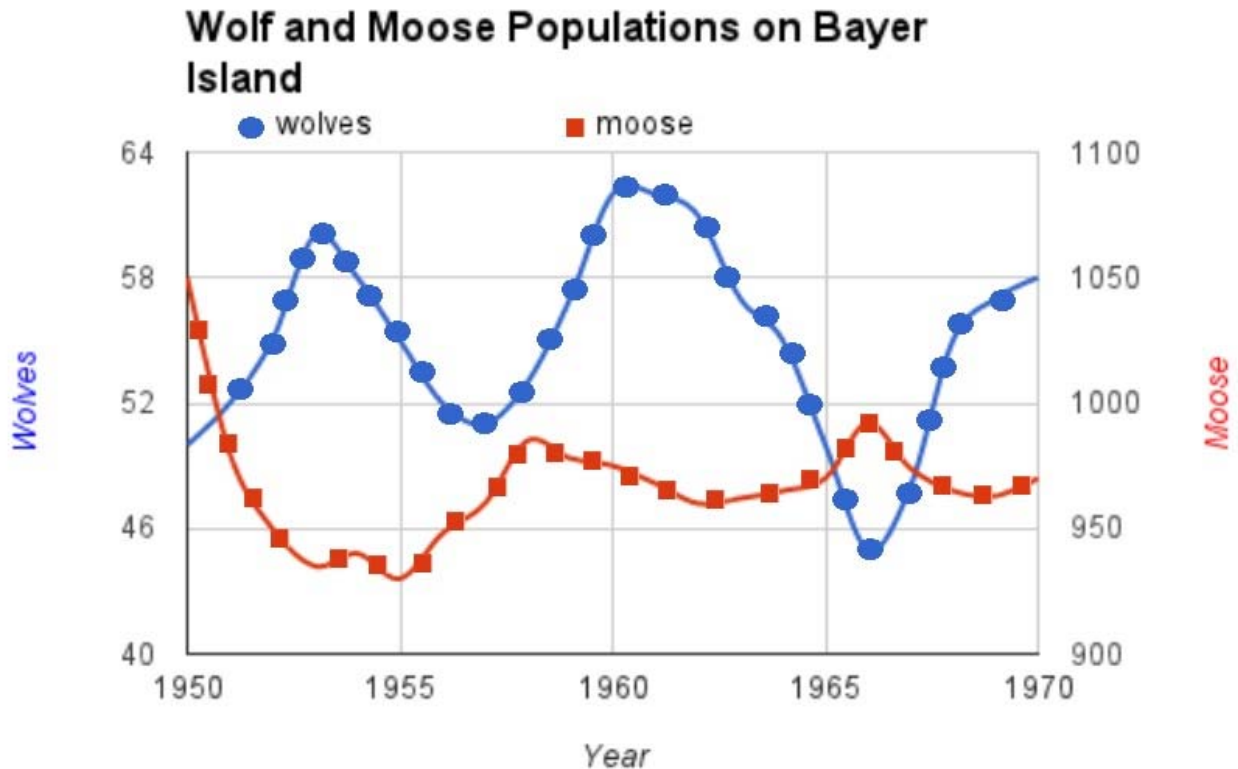


Symbiotic Relationships

Various types of relationships exist between organisms. These relationships affect the population of both organisms.

This graph shows one such type of relationship where the populations are graphed against the year.



1) Which axis shows the wolf population?

A) Left y-axis (blue)

B) Right y-axis (red)

C) X-axis (black)

2) What is the approximate moose population and wolf population in 1950?

Moose population: _____

Wolf population: _____

3) In the interval between 1950 and 1953:

- A) The wolf population increased, the moose population increased.
- B) The wolf population decreased, the moose population decreased.
- C) The wolf population increased, the moose population decreased.
- D) The wolf population decreased, the moose population increased.

4) In the interval between 1953 and 1955:

- A) The wolf population increased, the moose population increased.
- B) The wolf population decreased, the moose population decreased.
- C) The wolf population increased, the moose population decreased.
- D) The wolf population decreased, the moose population increased.

5) What is a general relationship between the wolf and moose population.

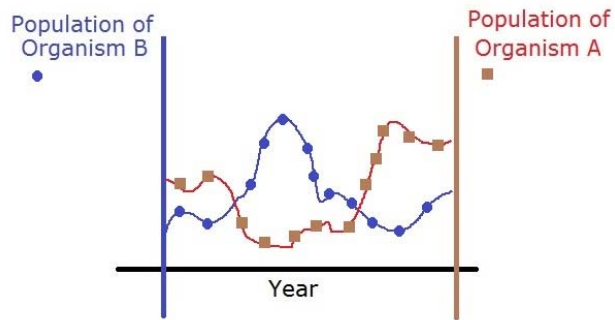
- A) The wolf population changes, but the moose population stays the same
- B) As the wolf population increases, the moose population increases.
- C) As the wolf population increases, the moose population decreases.
- D) A change in one population causes an opposite change in the other.

6) Using the data from the graph for the year between 1965 and 1967, explain how many moose is needed to support one wolf.

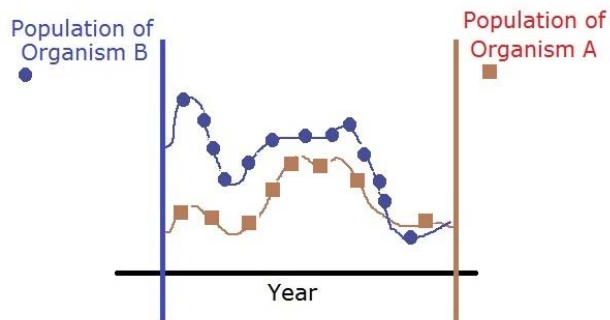
7) Many types of relationships exist between organisms. The Moose-Wolf relationship is a **predator-prey** relationship where one organism benefits (the predator) and the other is harmed or consumed (prey). Another relationship is **commensalism** where one organism benefits and the other is not affected

Explain which of the following 3 graphs best represent a commensalism relationship.

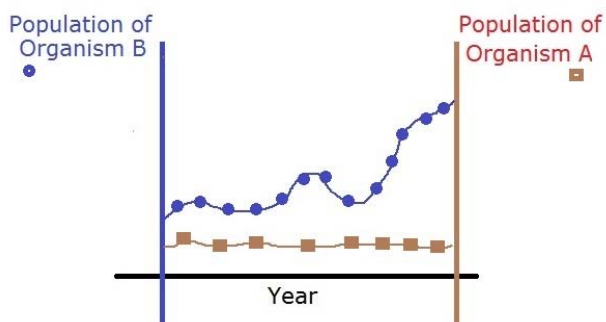
Graph A



Graph B

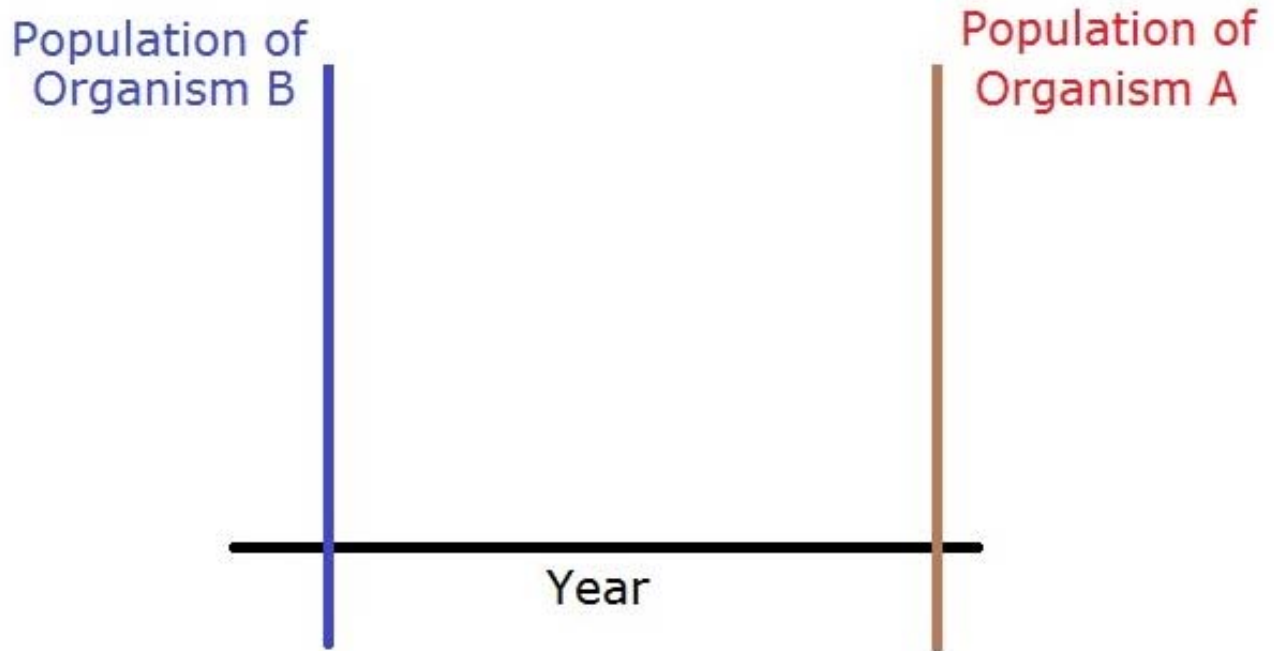


Graph C



8) Another type of organism-to-organism relationship is **mutualism**, where both organisms derive benefits from each other.

Use the following blank graph and draw what a mutualism graph would look like.



Explain and justify the shape of your graph.