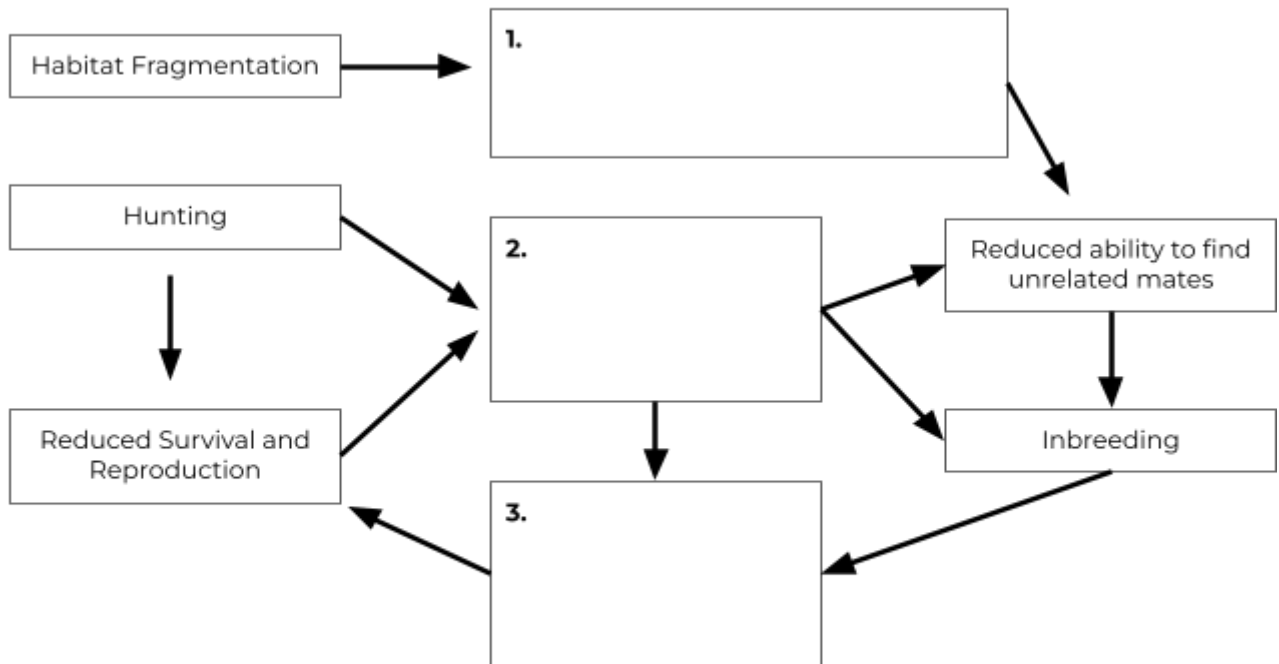**NAME: _____ DATE: _____ CLASS PERIOD: _____**

Q1-3: Study the Extinction Vortex concept map below carefully. Write in the 3 missing terms from the word bank in the correct places.

Extinction Vortex Concept Map

Habitat Fragmentation	→	1.
Hunting		2.
Reduced Survival and Reproduction		3.

Reduced ability to find unrelated mates

Inbreeding

Answer Bank
- Reduced genetic variation
- Reduced population size
- Reduced population connectivity

4. Do you think concept maps are helpful for understanding complex ideas?
   Explain why or why not.

_____

_____

_____

_____

GALACTIC POLYMATH

Q4-9: Fill in letters in the appropriate blanks to label the concept map that describes *genetic rescue*.

Genetic Rescue Concept Map
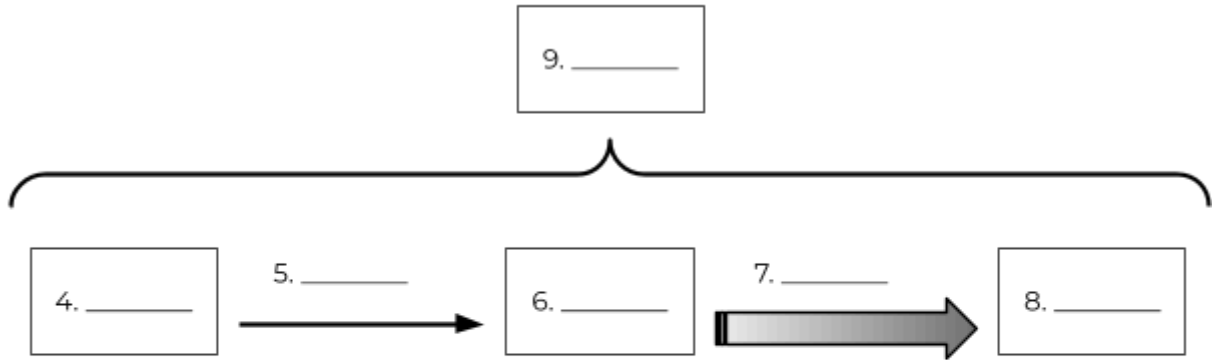
Answer Bank

A. (Non-target) source population with new genetic variation
B. Small, inbred, unhealthy (target) population
C. Larger, genetically diverse, healthy (target) population
D. Genetic Rescue
E. Several generations later
F. A few individuals introduced

10. Describe at least one way that genetic rescue could go wrong.

_____

_____

_____

_____

11. A model organism (AKA model system) is a species used to study a problem when it is difficult or impossible to study in a target organism. Give an example (besides humans and Florida panthers) of a target organism that is hard or unethical to study (*including why it is hard or unethical to study*).

_____

_____

_____

Q12-13: Let's say you want to answer the question: "Does the number of individuals introduced affect the success of genetic rescue attempts?" We don't want to study this in an endangered species, so we need a model organism that is easier to study. It should have the following characteristics:

1. **Must be a common species.**
2. **Must be cheap, easy, and ethical to study.**
3. **Must have fast development (a short time period between birth and reproduction).**

Refer to the table below to answer questions Q12-14.

Common Name	Scientific Name	Generation Time	Animal Care	Description
Fruit fly	*Drosophila melanogaster*	7-20 days	House in a small jar	A fruit fly sold and found naturally around the world
Trinidadian guppy	*Poecilia reticulata*	7-10 weeks	Keep in medium aquarium	A small fish native to the Caribbean and sold in shops around the world
Gopher tortoise	*Gopherus polyphemus*	9-21 years	House in medium-sized pen	A vulnerable (but not endangered) tortoise native to the southeastern USA
Nematode	*C. elegans*	3-4 days	House on a Petri dish	A widely available free-living, transparent, 1mm worm

12. **Which of the species in the previous table would make a poor model organism to study genetic rescue?** *Explain why.*

_____

_____

_____

13. **Which of these species would you choose to study genetic rescue? Explain your reasoning (how this organism meets the requirements) with data from the table.**

_____

_____

_____

_____