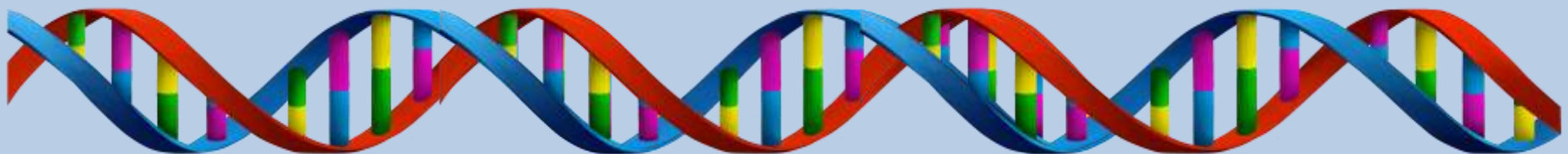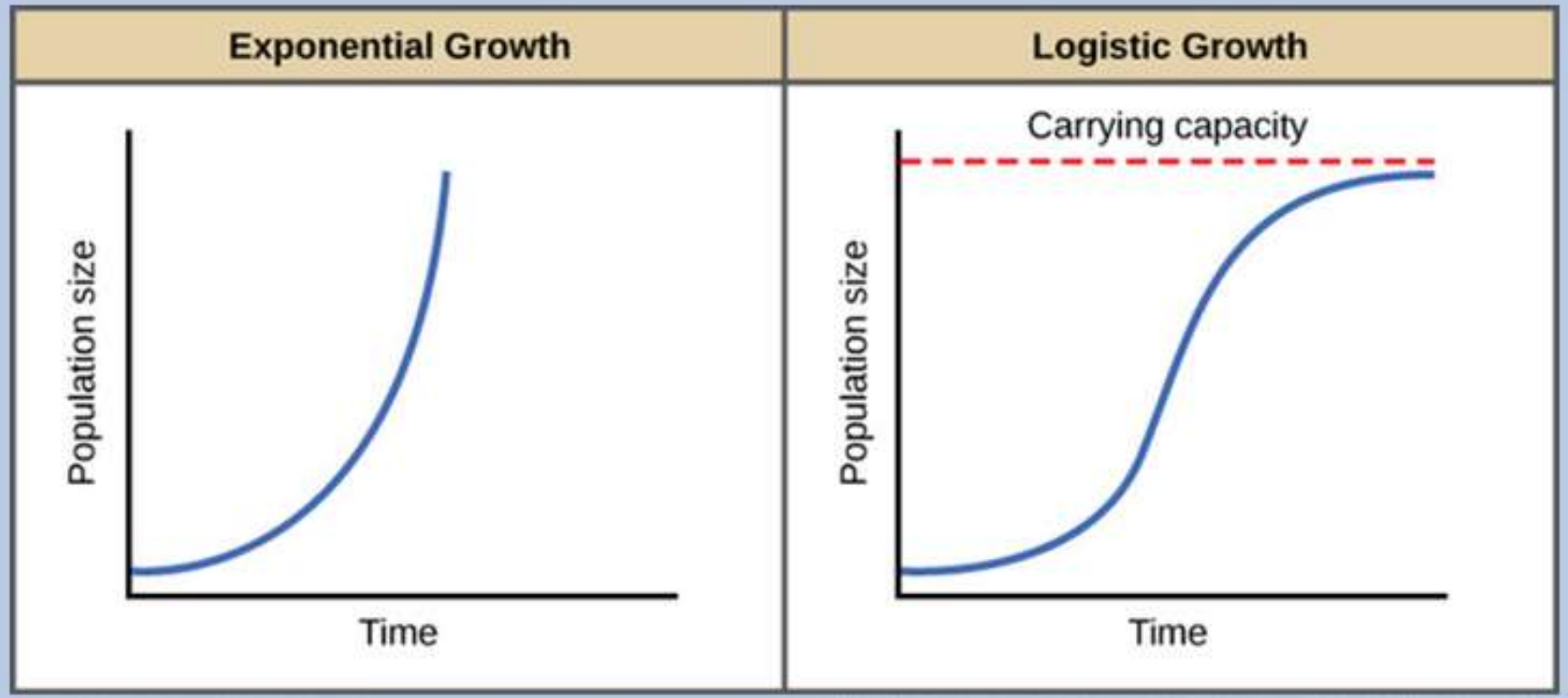1. What is a limiting factor?

2. What happens when a carrying capacity becomes zero?

3. Write a math equation to model a stable population.

(B= birth, I-immigration, D-death E=emigration)

Population Growth

Exponential Growth	Logistic Growth

Carrying capacity

Picture Quiz

- **Density DEPENDENT or INDEPENDENT limiting factor??**

Deforestation

Density Independent Limiting Factor

Competition

Density Dependent Limiting Factor

Predators

Density Dependent Limiting Factor

Drought

Density Independent Limiting Factor

Disease

Density Dependent Limiting Factor

Forest Fire

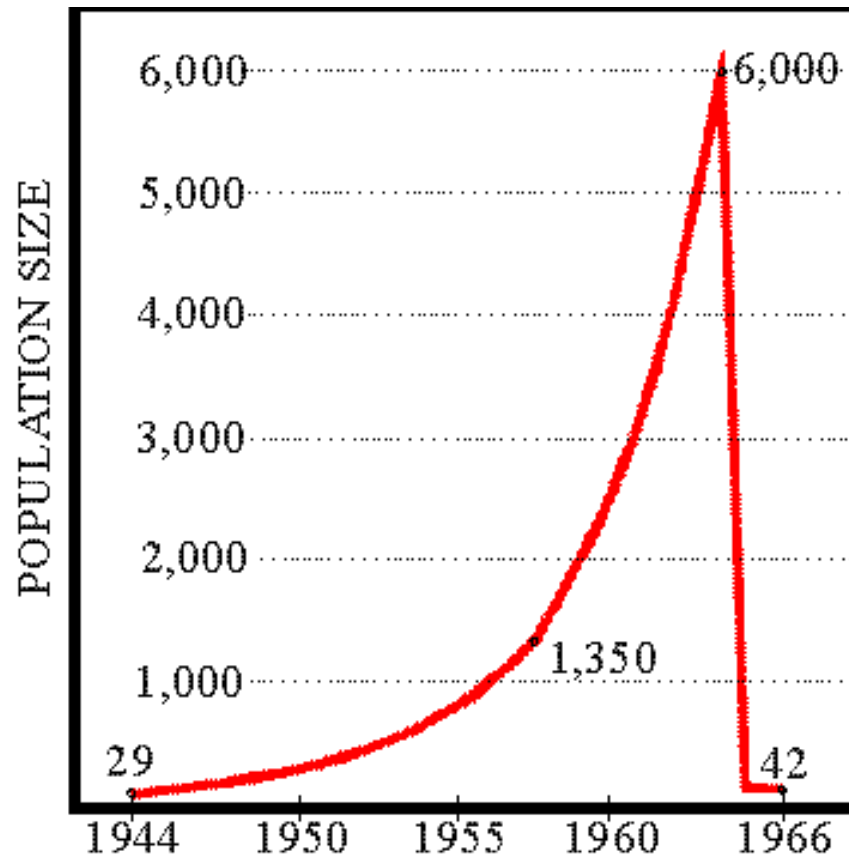# Density Independent Limiting Factor

Population Growth

Populations

- **What will happen when a population exceeds the available resources?**
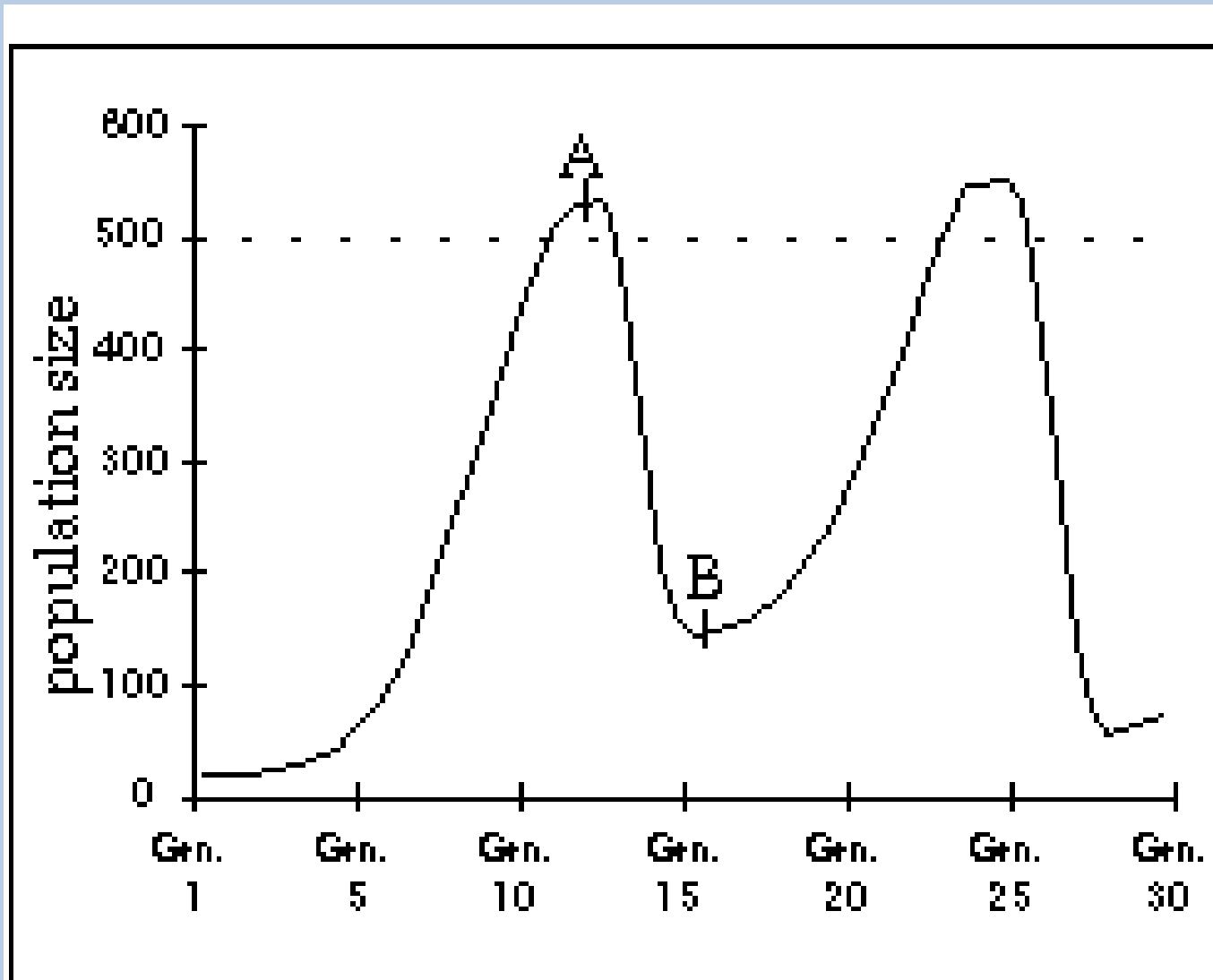
Population Crash

Population Crash

Assumed population of the St. Matthew Island reindeer Herd. Actual counts are indicated on the population curve.

Population Crash

Species Interactions

- **If you want to take notes: page 22**

Species Interactions

Species Interactions

- **Symbiosis: close relationship between two species**

Species Interactions

- **Mutualism: relationship where both species benefit.**

Species Interactions

- **Commensalism: relationship where one organism benefits and the other is neither helped nor harmed.**

Species Interactions

- **Parasitism: relationship in which one organism lives inside or on another and harms it.**

Species Interactions

- ## Draw this table on page 23!

Organism	Interaction	Partner Organism
	Mutualism	
	Commensalism	
	Parasitism	
	Predation	
	Interspecific Competition	
	Intraspecific Competition	

Species Interactions

- **Read your biography, decide who you are looking for**

- ***Move around the room to find that person***

- **Decide what relationship you have**

- **Fill in the whole table**

Species Interactions

1. Why did you choose the interaction you did for the organism you were assigned and your partner organism?

2. How might this relationship affect a population?

3. How might this relationship affect a community?

4. How might this relationship affect an ecosystem?

Species Interactions

- **When you finish:**

- **Review objectives 1-15, 19!**

- **Cross out objectives 16,17**

Foxes and Bunnies

- **In this lab we are studying the effect of limiting factors on populations and community interactions**

- **Focusing on predation**

- **What kind of limiting factor is predation?**

Foxes and Bunnies

- Get in groups of <u>4!</u>

- Your habitat is 40cm x 40cm

- Read the Important information before you begin!

IMPORTANT

After each hunt (fox toss), remove any dead bunnies. Also remove foxes, but keep track of surviving foxes.

After each turn (generation), double the number of surviving bunnies and foxes.

Remember, you cannot have less than 5 bunnies or 1 fox at the start of a generation.

(Immigration from neighboring habitats will occur, if necessary)

The maximum carrying capacity of the habitat is 100 bunnies.