

Rules of Jeopardy!

Work in groups of 2- 4, and write down the answer on your white board. Listen for when to present the answers. Only one person writes.

Cycles in
Nature

Ecosystem
Ecology

Biomes

Evolution of
Biodiversity

Community
Ecology

Do the Math

100

100

100

100

100

100

200

200

200

200

200

200

300

300

300

300

300

300

400

400

400

400

400

400

500

500

500

500

500

500

Explain the Nitrogen cycle.





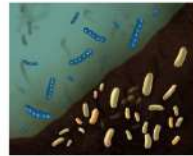
1 Nitrogen Fixation	2 Assimilation	3 Ammonification	4 Nitrification	5 Denitrification
Nitrogen fixation converts N_2 from the atmosphere. Biotic processes convert N_2 to ammonia (NH_3), whereas abiotic processes convert N_2 to nitrate (NO_3^-).	Producers take up either ammonium (NH_4^+) or nitrate (NO_3^-). Consumers assimilate nitrogen by eating producers.	Decomposers in soil and water break down biological nitrogen compounds into ammonium (NH_4^+).	Nitrifying bacteria convert ammonium (NH_4^+) into nitrite (NO_2^-) and then into nitrate (NO_3^-).	In a series of steps, denitrifying bacteria in oxygen-poor soil and stagnant water convert nitrate (NO_3^-) into nitrous oxide (N_2O) and eventually nitrogen gas (N_2).
				

Figure 3.12 part 2
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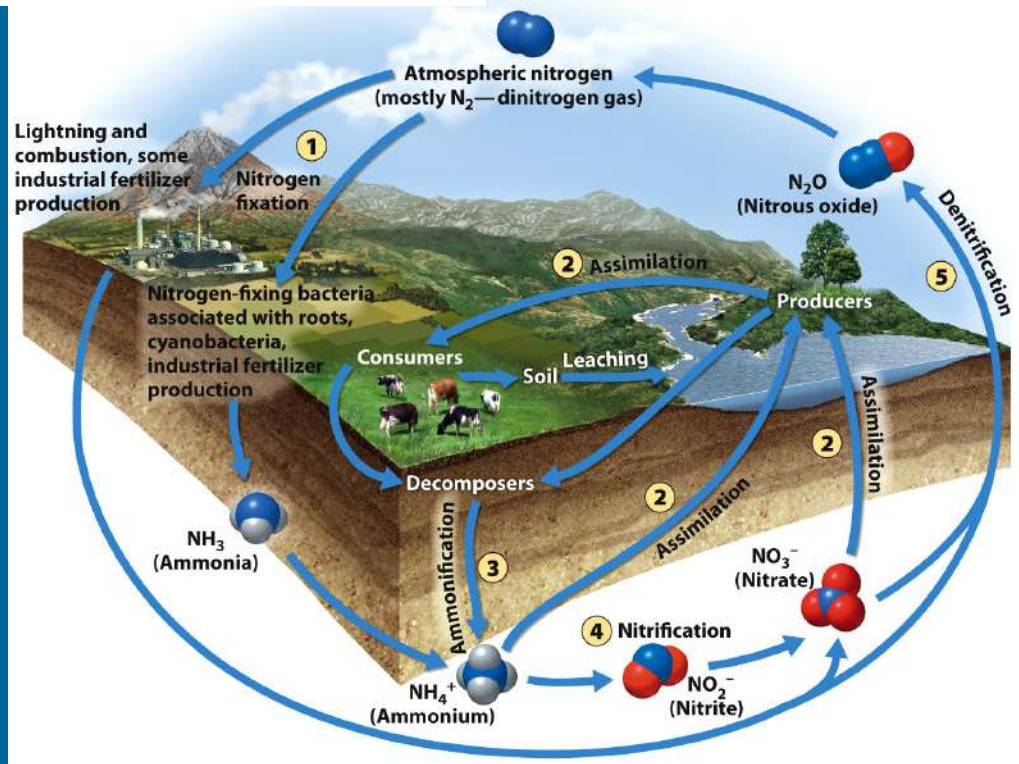
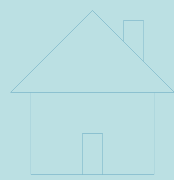


Figure 3.12 part 1
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Explain the Carbon cycle

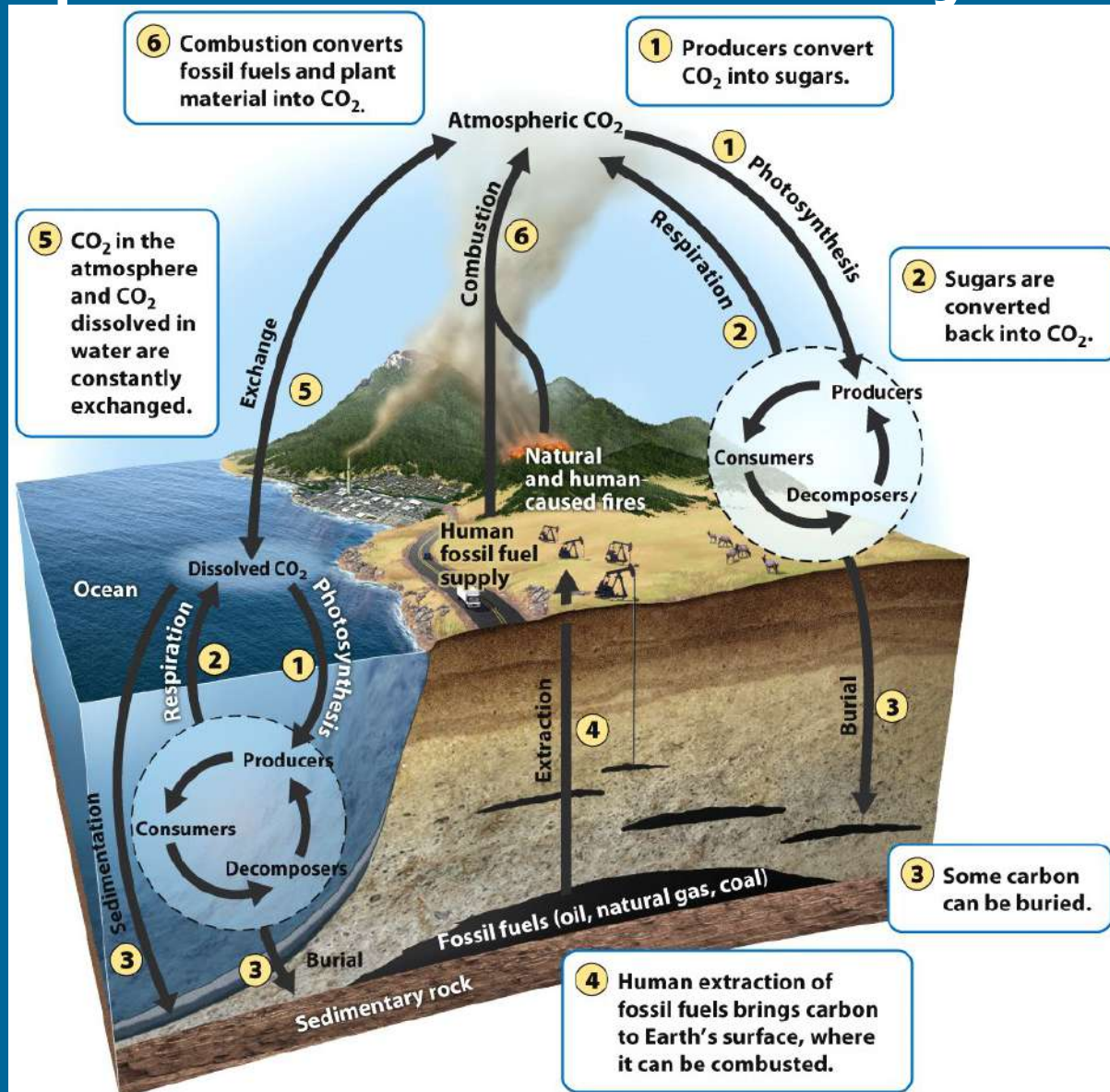
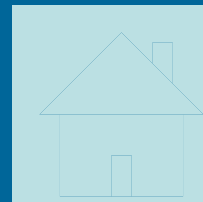


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Ocean Acidification.

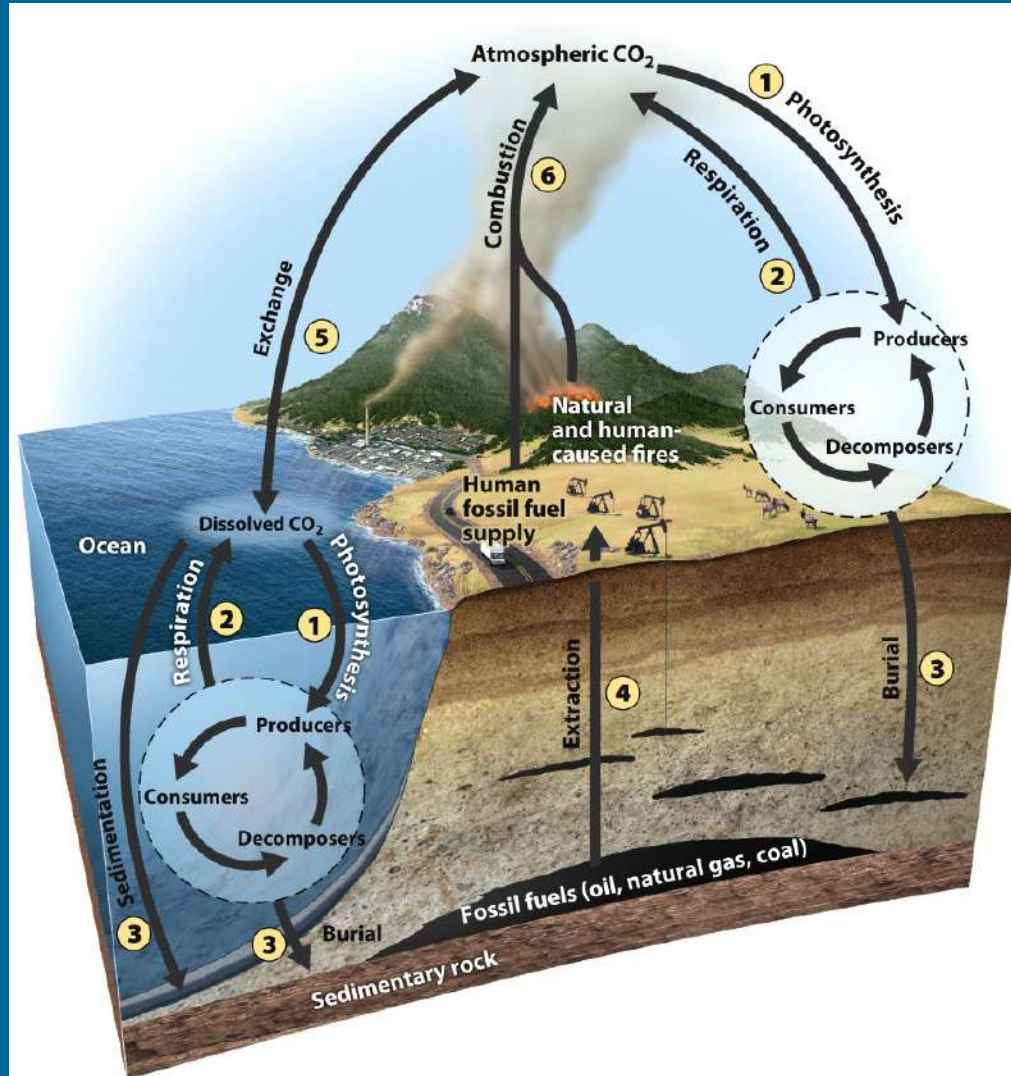


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Water Cycle.

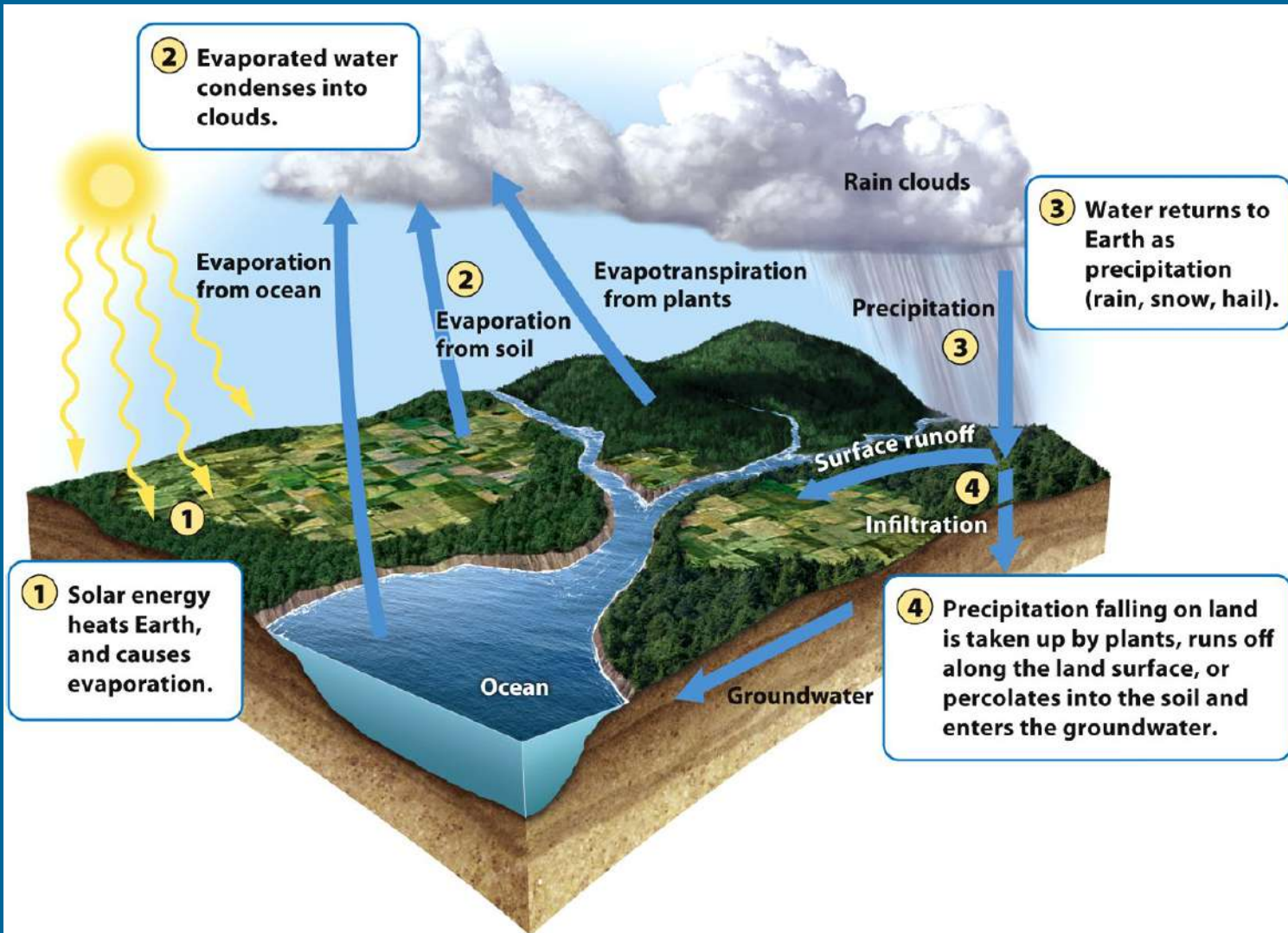


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Phosphorus Cycle.

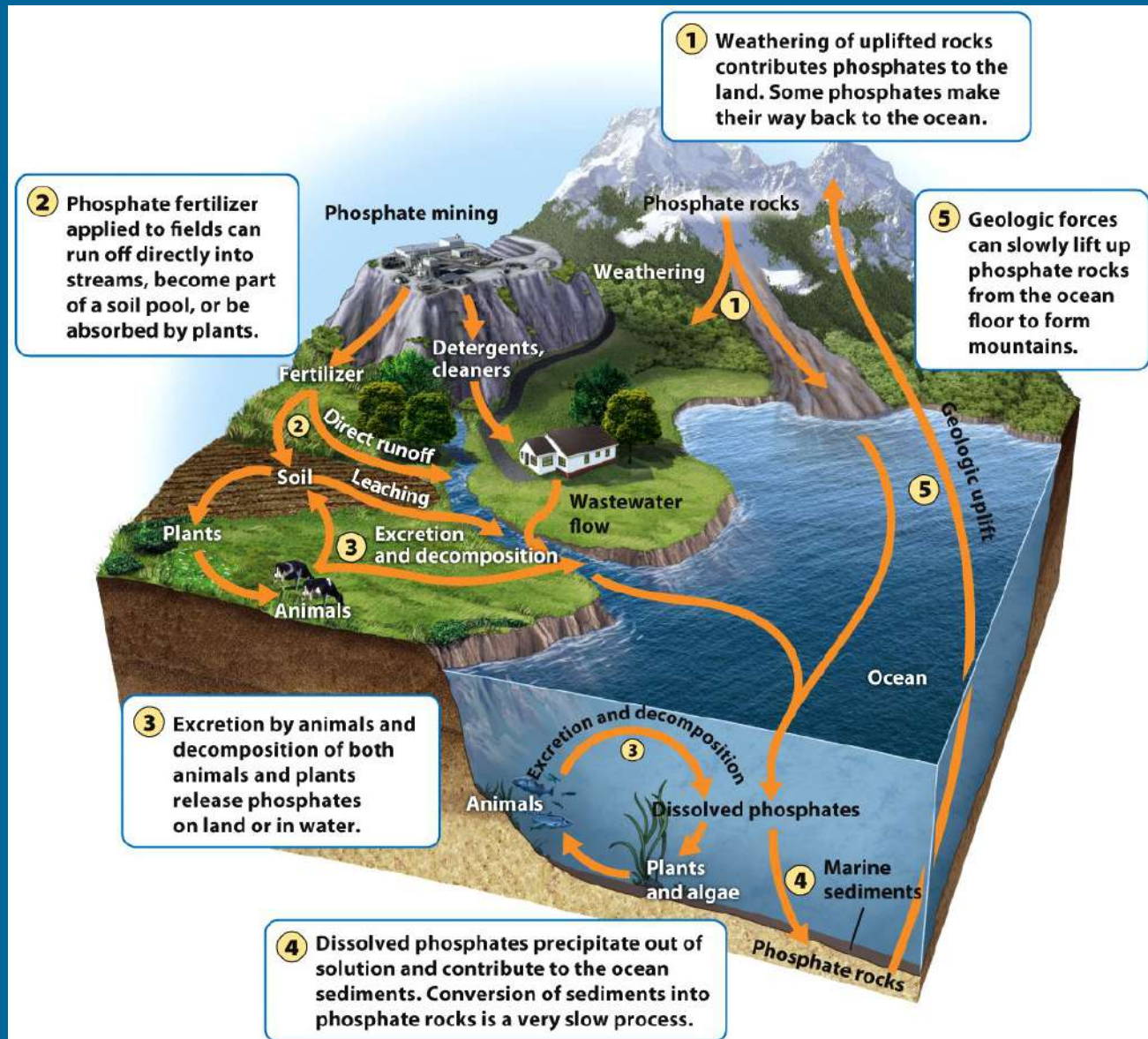
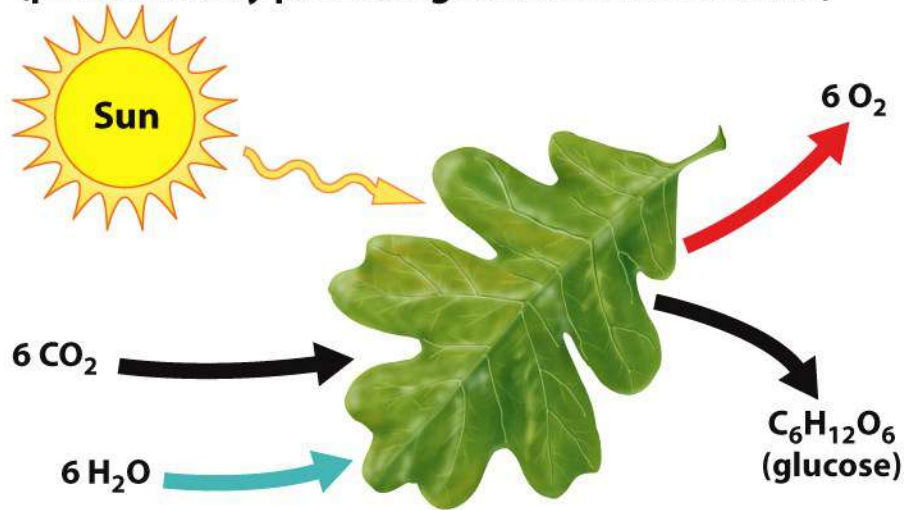


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Photosynthesis

(performed by plants, algae, and some bacteria)



Respiration

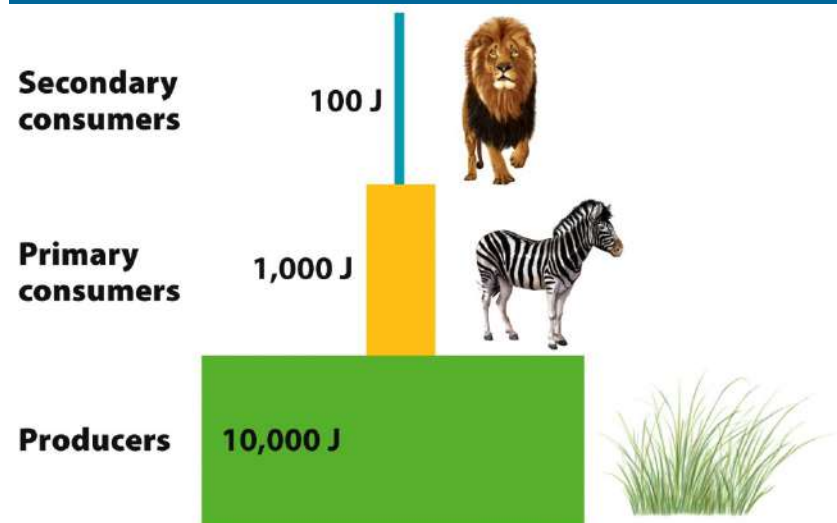
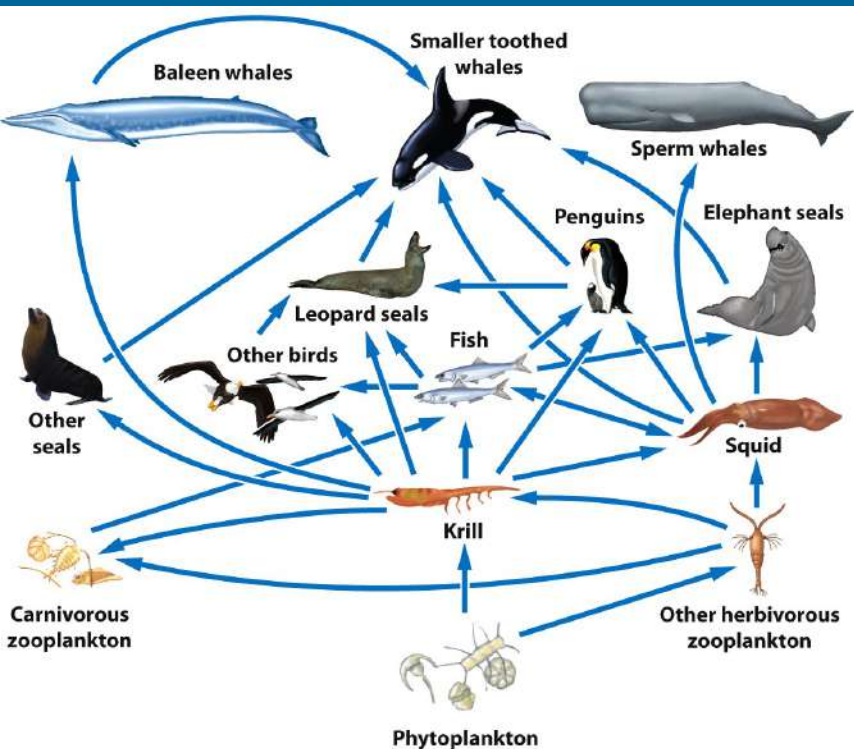
(performed by all organisms)



Explain the difference between Photosynthesis and Cellular Respiration.



Explain the Trophic Levels, Food Chains and Food Webs through making an energy Pyramid:



Explain what a watershed is.



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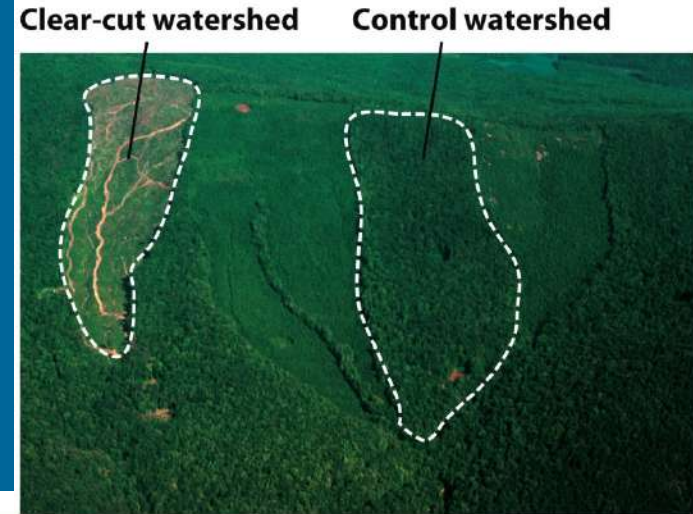
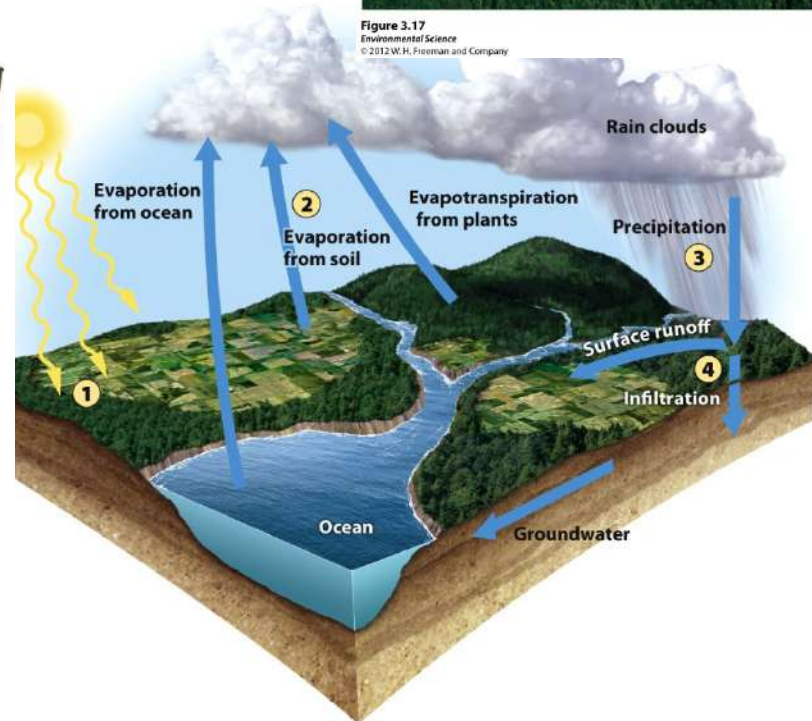


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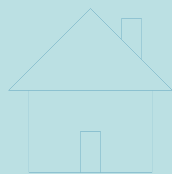
3.10 part 1
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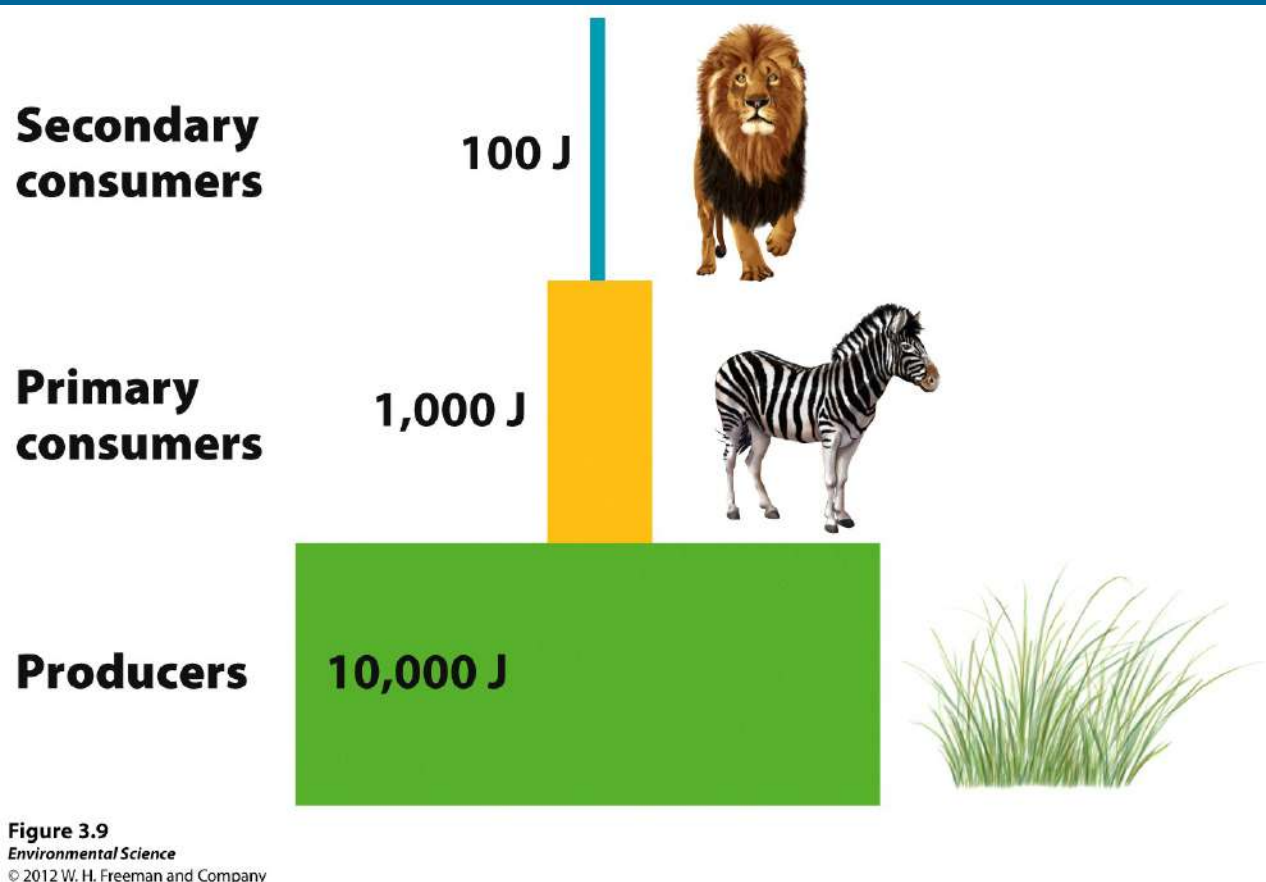
Explain the difference Resistance versus Resilience.

An ecosystem has high resistance when there may be a disturbance that influences populations and communities, but has no effect on the overall flow of energy & Matter.

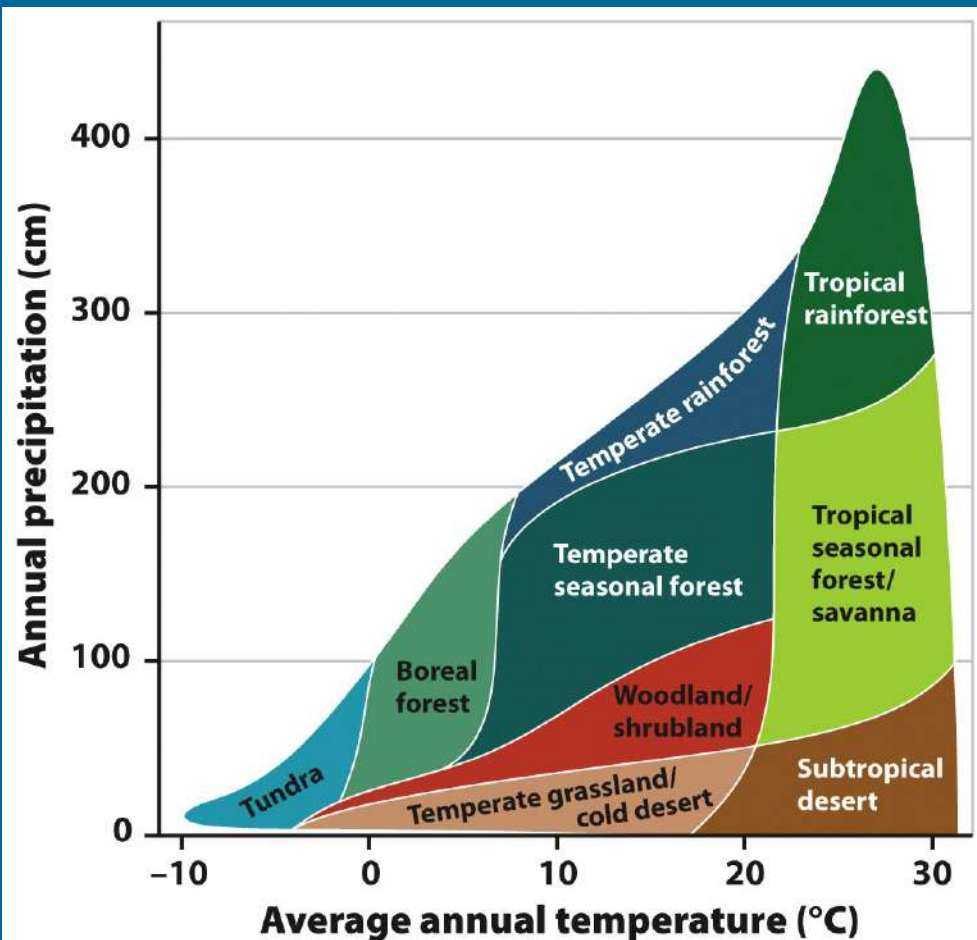
The rate at which an ecosystem returns to its original state after a disturbance is resilience ?



Explain and give an example of Ecological Efficiency of 10% in an Ecosystem.



Biomes are categorized by particular combinations of what two factors.



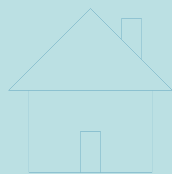
What is temperature and precipitation?



Give 10 Biotic factors, 5 Abiotic factors of a Temperate Forest.

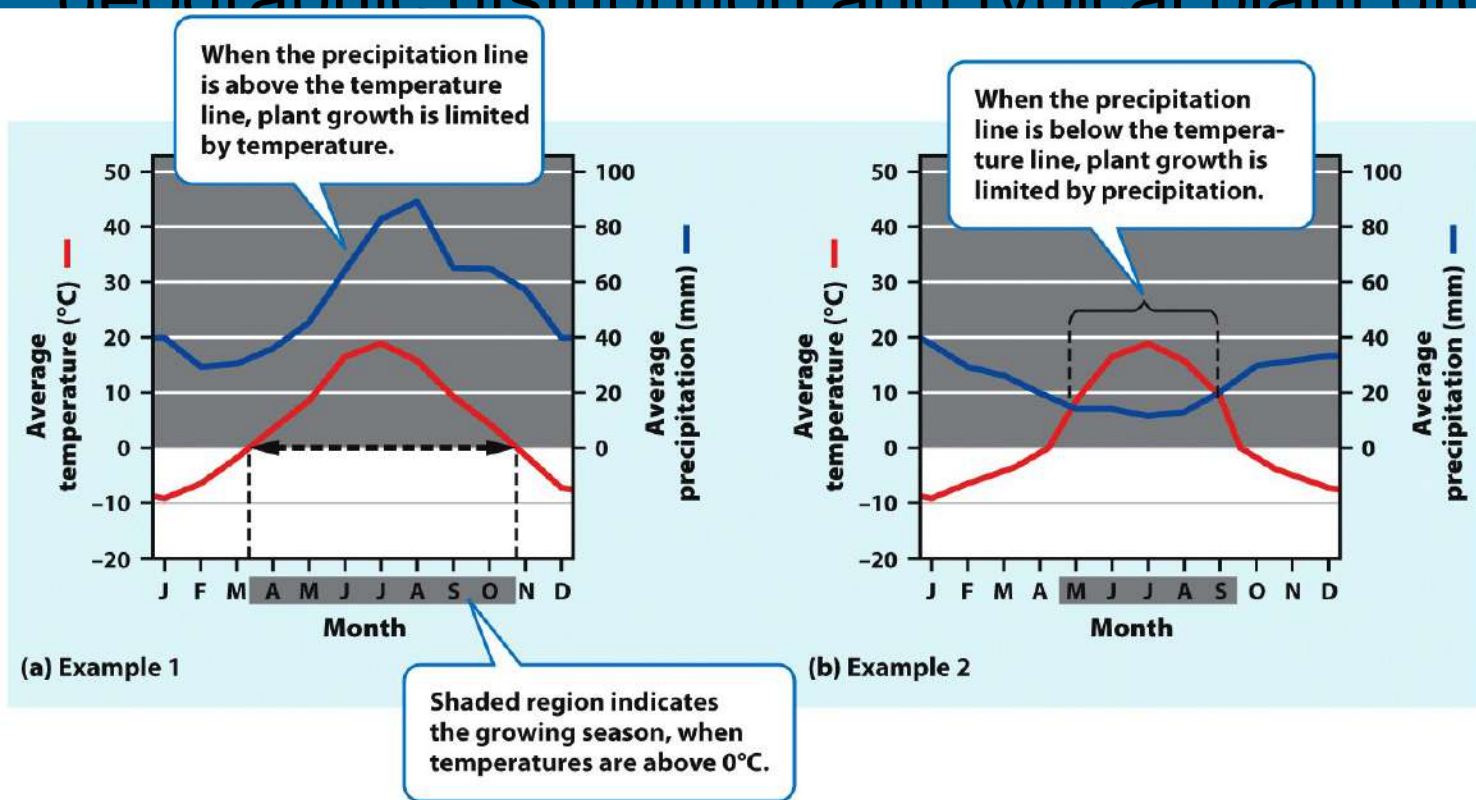
What is Abiotic Factors: 39 inches of rain/ year, fertile soil, sunlight, wind, clouds

Biotic: Beech, maple, oak, hickory & coniferous trees, birds, snakes, fish in lakes, hawks, rabbits, foxes?



What characteristics of a terrestrial biome determine its productivity.

What are its temperature, precipitation patterns, geographic distribution and typical plant growth forms?



What are the different zones of lakes and the open ocean & what defines them.

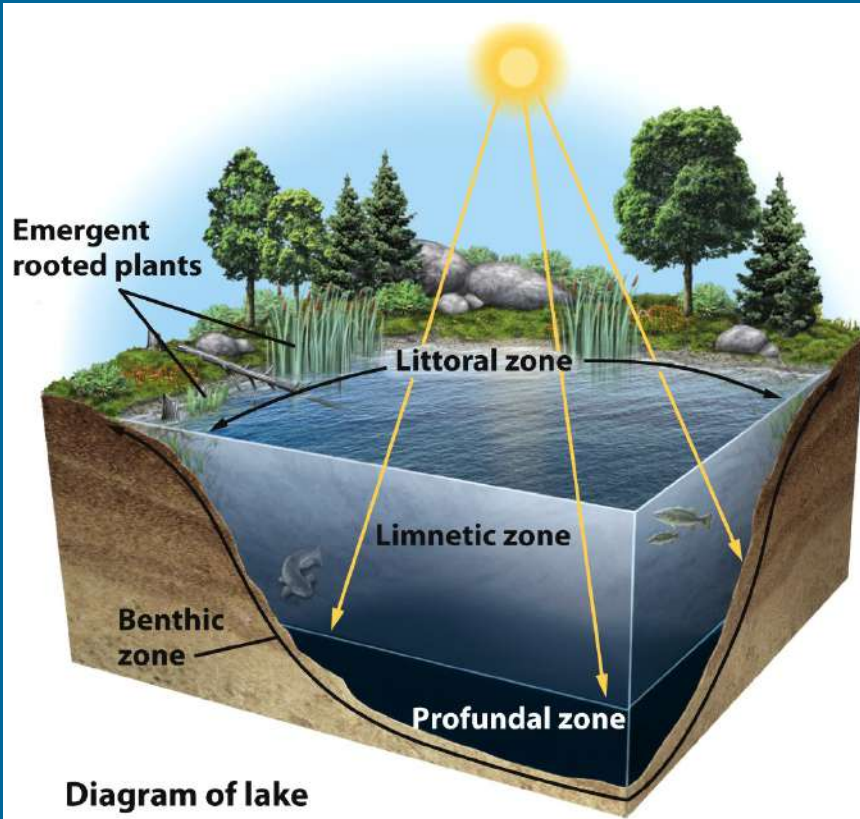


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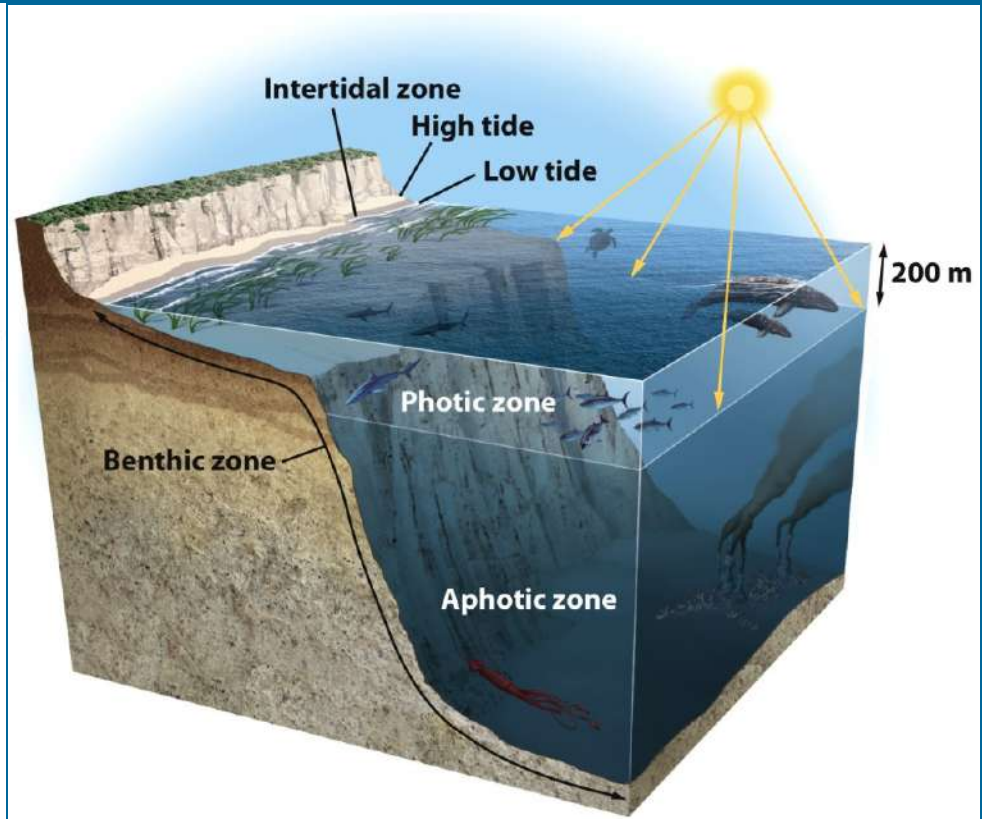
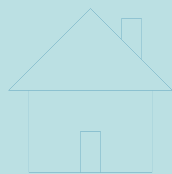
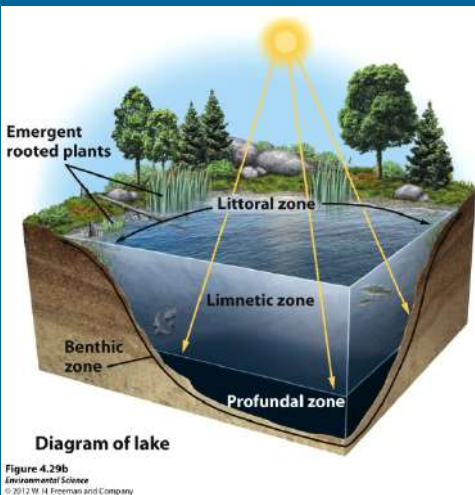


Figure 4.35
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How does water depth or flow influence the organisms that live in an aquatic biome.



The amount of light available in the water is determined by the depth of the water. Plants that photosynthesize need light and will be in the Photic zone. Opposite that is the Benthic zone where dead organisms are decomposed by bacteria and consume oxygen in the process. Depth, salinity, chemical Properties



Explain the how Species Biodiversity is determined.

What is species richness and species evenness?

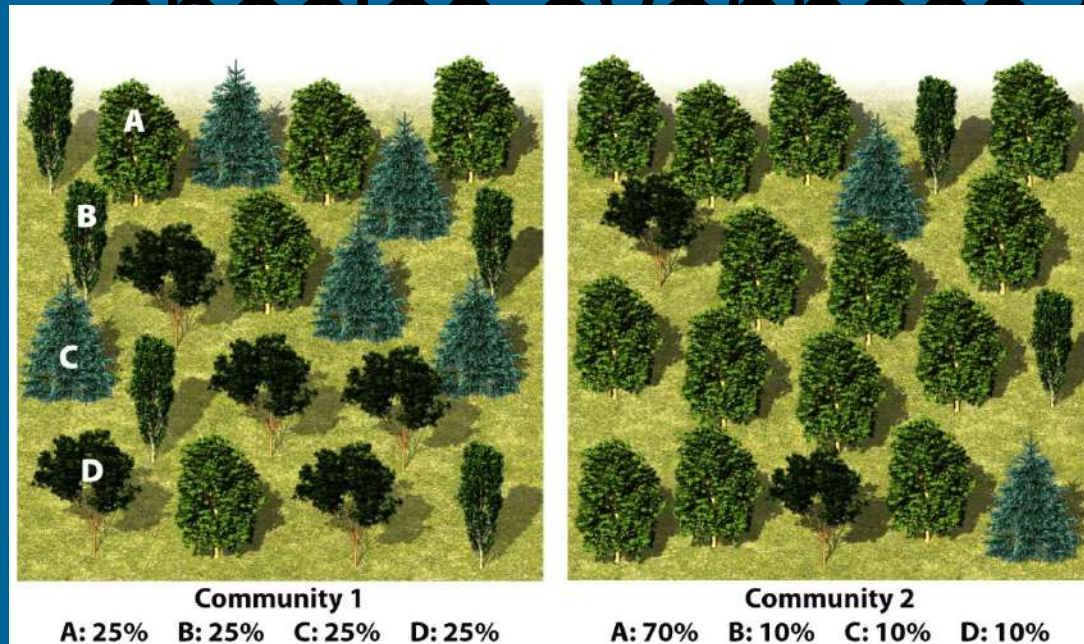


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Explain how genetic diversity happens.

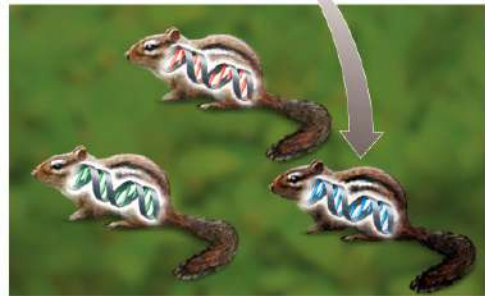
Random mutations in the DNA, Crossing over in Prophase I of Meiosis, Independent Assortment of Chromosomes, influence of the environment with Ecosystem diversity and species diversity.



(a) Ecosystem diversity



(b) Species diversity

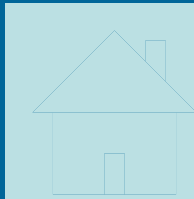


(c) Genetic diversity

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What is the difference between genotypes and phenotypes.

Genotypes are the letters that represent a trait (Bb), Phenotypes are the physical characteristic (Brown Hair).



Explain the 5 key ideas of Evolution and how it happens.

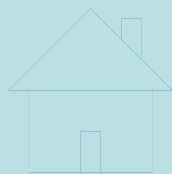
What are Individuals produce an excess of offspring,

Not all offspring can survive,

Individuals differ in their traits,

Differences in traits can be passed on from parents to offspring,

Differences in traits are associated with difference in the ability to survive and reproduce?



Explain 4 ways of how Evolution can happen by a random process.

Mutation, Genetic Drift, Bottleneck Effect, Founder Effect

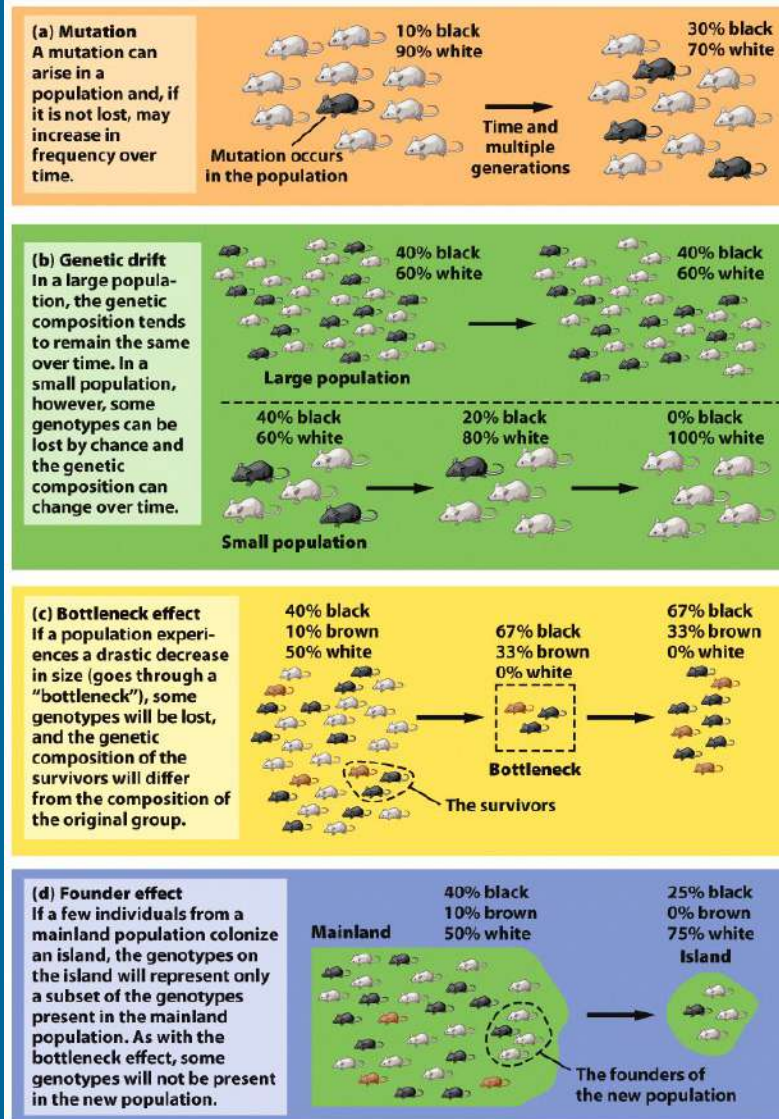


Figure 5.12

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Explain & describe 4 examples of Species interactions.

What is Competition, Predation, Mutualism, Commensalism?

TABLE 6.2 Interactions between species and their effects		
Type of interaction	Species 1	Species 2
Competition	-	-
Predation	+	-
Mutualism	+	+
Commensalism	+	0



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Table 6.2
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Draw & explain a keystone species.

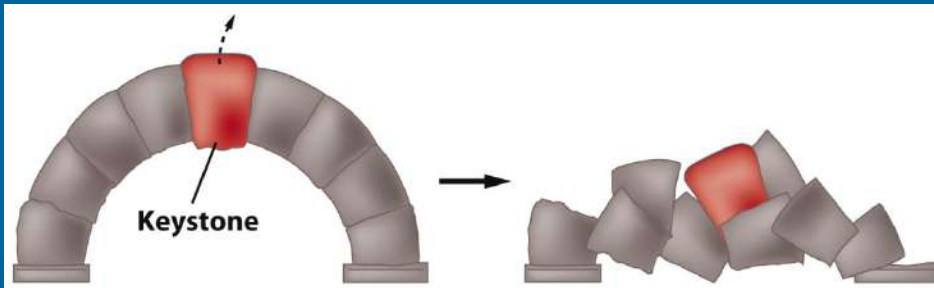
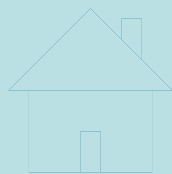


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What is Keystone species, the loss of this one species has a greater impact on the entire community, beavers?



Give an example and explain Primary and Secondary succession?

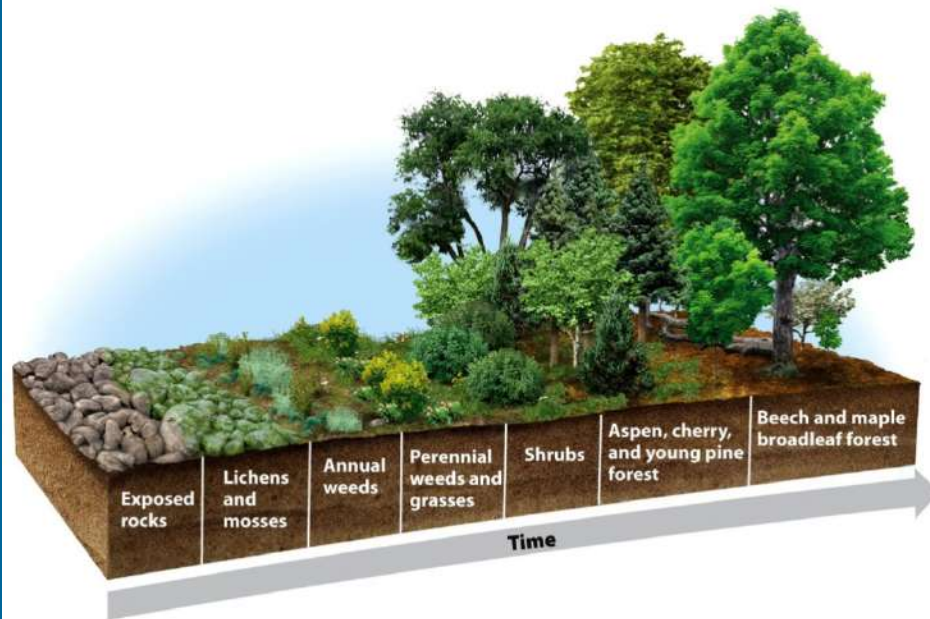


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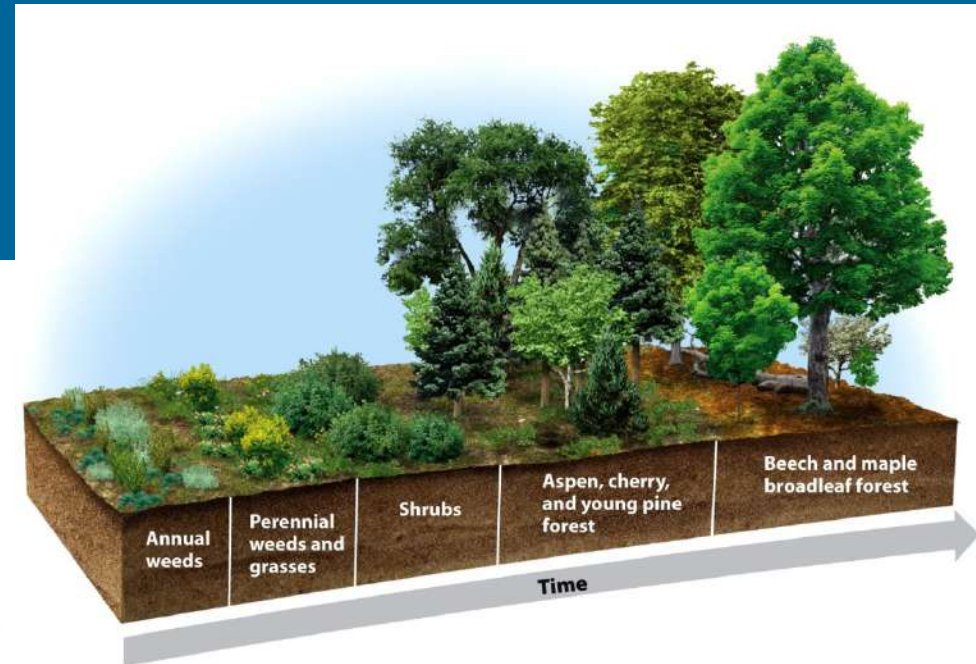
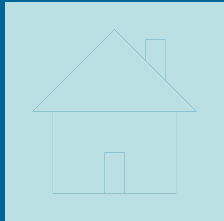
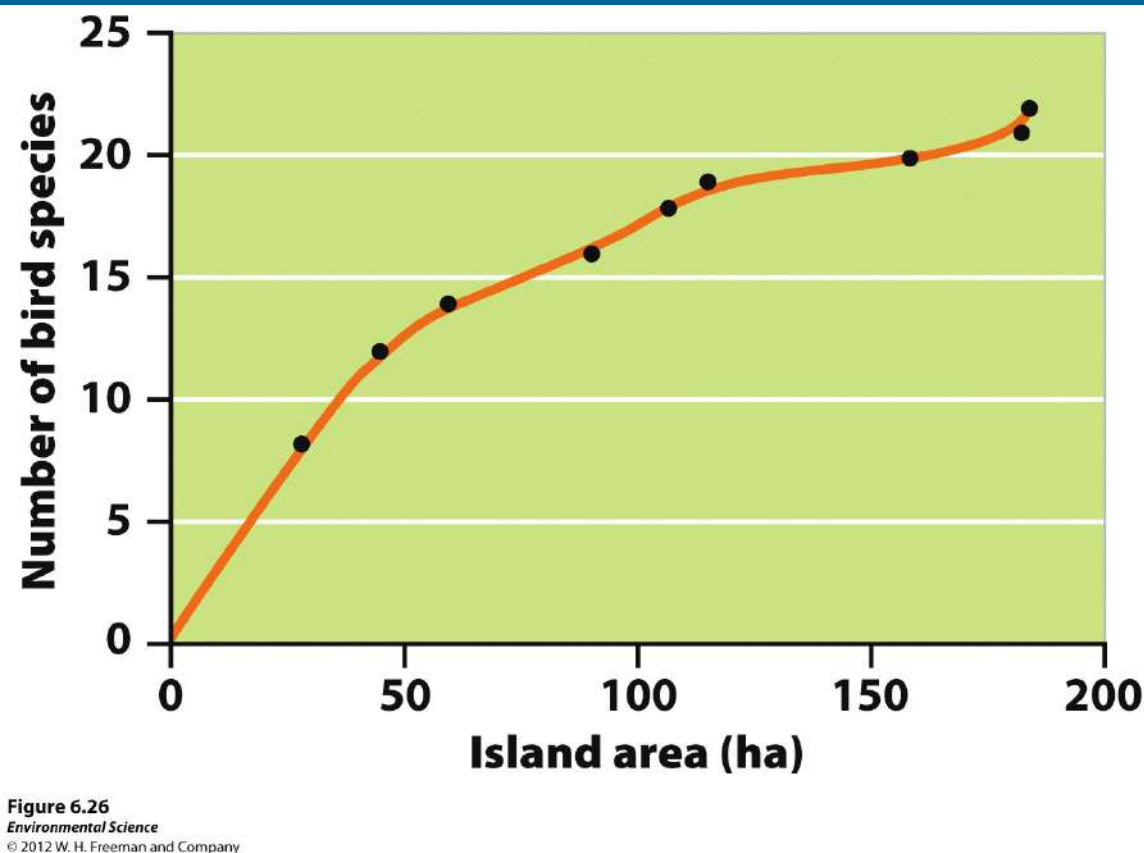


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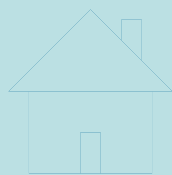


Explain the Theory of Island Biogeography.



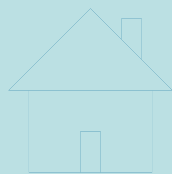
Explain how latitude, time, area, & distance affect species richness of a community.

What is: **latitude**, as you move away from the equator the number of species declines. **Time**, the longer that habitat exists and speciation. **Area**, the increased habitat size the wider range of environmental condition and more niches that support a larger number of species. **Distance**, islands closer to the mainland contain greater species diversity?



What is the Net Primary Productivity of an ecosystem if the Gross Primary Productivity $2.5 \text{ kg C/m}^2/\text{yr}$ and lose $1.5 \text{ C/m}^2/\text{yr}$ due to respiration.

What are $1.0 \text{ C/m}^2/\text{yr}$



In an Energy Pyramid the Producer to C1 have 18% ecological efficiency, C1 to C2 = 15%, C2 to C3 = 9% We the Producers start off with 1100 units of energy how much is left at the C3 level?.

What are C1 = 198 units, C2 = 29.7 units, C3 = 2.67 units?



The net primary productivity of an ecosystem is $1\text{ kg C/m}^2/\text{year}$ and the energy needed by the producers for their own respiration is $1.5\text{ kg C/m}^2/\text{year}$. The gross Primary Productivity would be?.

What is $1\text{ kg C/m}^2/\text{year} + 1.5\text{ kg C/m}^2/\text{year} = 2.5\text{ kg C/m}^2/\text{year}$?



What is the percent change in Biodiversity if an ecosystem started with an H factor of .7, then 3 years later after a drought has an H factor of .4?

What is .7 - .4 = .3 x 100%?

.7

42.8% change in biodiversity.



Some scientists estimate that the current global extinction rate is about 30,000 species per year. If there are currently 10,000,000 species on Earth, how long will it take to destroy all of Earth's Biodiversity?

330 – 500 years ?

