

1. What is a biome?
Big areas/regions where abiotic & biotic elements are similar
2. A biotic factor is...
A part of an ecosystem that is living: animals, plants, microorganism etc
3. An abiotic factor is...
A part of an ecosystem that is non-living: temperature, light from sun, water etc
4. How does temperature influence the distribution of biomes?
- Influences length of growing season
- Sun rays are directly overhead at the equator, @ a greater angle near the poles
5. How does precipitation influence the distribution of biomes?
- more precipitation @ equator where water evaporates and falls rapidly
6. How does latitude influence the distribution of biomes?
- more precipitation near equator where there is more direct sunlight: more evaporation. Hotter @ equator
- colder & less precipitation @ poles
7. How does altitude influence the distribution of biomes?
- colder @ higher altitudes
- less precipitation @ higher altitudes
8. How do ocean currents influence the distribution of biomes?
- warmer climates & wetter climates near coasts
9. What is « climate »?
The average weather conditions (temp & precip) in a region
10. Explain what an « adaptation » is.
Characteristics that let an organism have a better chance to survive & reproduce
11. Complete the table and explain the different types of adaptations.

	Structural Adaptation	Physiological Adaptation	Behavioural Adaptation
Description	Physical aspect that helps an organism survive or reproduce	Something that happens inside an organism that helps it survive or reproduce	Something that an organism does to survive in its environmental conditions
Example	Fat on a whale lets it survive in cold water	Humans produce melanin (tanning) in presence of sunlight that protects	migration or hibernation of animals in winter

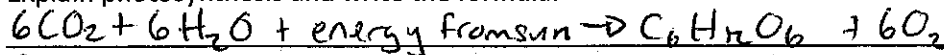
12. What is an ecosystem?

A region where abiotic & biotic factors interact

13. Describe an ecological hierarchy of biotic components of an ecosystem.

organism → population → community → ecosystem

14. Explain photosynthesis and write the formula.



Plants use carbon dioxide & energy from sun to produce glucose & oxygen.

15. What is symbiosis?

The relationship or interaction between two species

16. Complete the table to explain symbiotic relationships.

for good
least one
of the
organisms

	Description	Example
Commensalism	A relationship that is good for 1 organism but doesn't do anything for the other	Moss on a tree → benefits the moss but doesn't harm the tree
Mutualism	The relationship is good for both organisms	bacteria on the roots of a tree help assimilate nitrogen for the tree and the bacteria are given shelter & access to water
Parasitism	A relationship that benefits one organism but harms the other	A leech drinks the blood of vertebrates

17. What is lichen?

A mutualism relationship between a fungus & an algae

- The fungus provides CO_2
- The algae provides O_2 + sugar

18. What is an ecological niche?

The role of an organism in its environment

19. What is the niche of an eagle?

- make nests in trees
- eat fish & smaller birds and other small organisms

Bad for both

→ 20. Explain « competition » and give an example.

When 2 organisms need the same resource → food or habitat
ex. 2 plants compete for space & water

21. Explain « predation » and give an example.

One organism eats another
- A bear eats a fish

22. What is « biodiversity »?

the variety of organisms

23. How can human affect biodiversity?

ex. (ways may be different) - destroying habitats → may influence species
 - deforestation - contamination by pesticides

24. What is biomass?

the masse of all the organisms in a given area

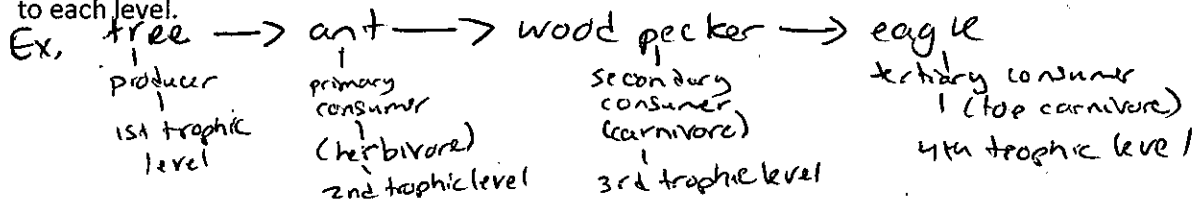
25. Explain the role of the following organisms :

Producers	- plants: produce energy for the ecosystem
Consumers	- eat other organisms
Decomposers	- produce substances that break down dead organisms → usually bacteria & fungi.
Herbivores	- eat producers
Carnivores	- eat other consumers
Detritivores	- eat dead organisms

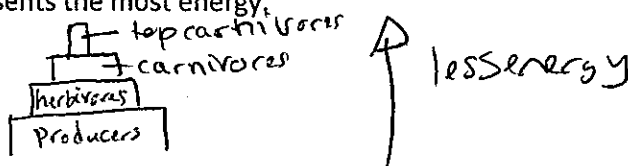
26. What is a food chain?

model that shows the transfer of energy between organisms

27. Draw a diagram of a food chain that shows trophic levels and which group of organisms belongs to each level.



28. Show your understanding of a food pyramid with an example and indicate which level represents the most energy.



29. What are « nutrients »?

chemical substances necessary for the survival of an organism

30. What is a « nutrient store »?

The build up of a nutrient

31. Why do we want nutrient cycles to be balanced?

so the same amount enters & leaves the stores

32. Give examples of how carbon is cycled in the carbon cycle.

- Sedimentation - soil particles build up in layers
- photosynthesis - $\text{energy} + \text{CO}_2 + \text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + \text{O}_2$
- cellular respiration - $\text{C}_6\text{H}_{12}\text{O}_6 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O} + \text{energy}$
- Volcanos eject CO_2
- ocean currents circulate carbon
- decomposition - bacteria & fungi decompose organic matter & produce CO_2

33. Give examples of how phosphorus is cycled in the phosphorus cycle.

- Geological uplift - pushes phosphate rocks to the surface.
- Weathering - frees phosphates from rocks & soil
- runoff & leaching - phosphate from fertilisers gets into soil & water
- plants - assimilate phosphate
- guano - phosphate enters water & soil on islands
- decomposers - break down nutrients & free phosphates

34. Give examples of how nitrogen is cycled in the nitrogen cycle.

- Nitrogen fixation by lightning $\text{N}_2 \rightarrow \text{NO}_3^-$
- Nitrogen fixation by bacteria $\text{N}_2 \rightarrow \text{NH}_4^+$
- Nitrification by bacteria $\text{NH}_4^+ \rightarrow \text{NO}_3^-$
- Denitrification by denitrifying bacteria $\text{NO}_3^- \rightarrow \text{NH}_4^+$
- weathering -> Frees nitrogen from rocks
- Run off Leaching -> NH_4^+ & NO_3^- enter water from chemical fertilizers

35. What is the difference between bioamplification and bioaccumulation?

bioaccumulation - build up of toxins in an organism over time
bioamplification - chemicals become more concentrated in higher trophic levels

36. What are pesticides and why can they be dangerous?

chemical products that eliminate "bad" organisms. They can be toxic to other organisms.

37. What are heavy metals and how can they be dangerous?

= metallic elements of high density.
- some don't break down & are toxic.

38. Explain natural selection.

- gradual process where members of a population that are "stronger" or better adapted survive

39. Explain adaptive radiation.

Adaptations that result in many (or a few) species that are descendants of a common ancestor.

40. Where does primary succession happen?

In environments where no life existed before
Ex: After a volcanic eruption of glaciers have retreated

41. What are the first organisms to arrive in primary succession?

Lichens & mosses - Pioneer species

42. What is a pioneer species?

The 1st organisms to be established after primary succession

43. How long does each step take in primary succession?

They are slow - they could take 100's of years

44. What is a climax community?

Stable environment: it continues to change with time but the characteristics are established
Ex: desert, forest boreal

45. Where does secondary succession occur?

In an environment that was disturbed
Ex. after a forest fire or flood or by man

46. Why is secondary succession faster than primary succession?

There is already soil that contains micro organisms, nutrients, seeds, roots
It takes 10s to 100s of years

47. What natural events could affect/damage an ecosystem?

Floods, tsunamis, droughts, insect infestations

48. What does «sustainability» mean?

The ability to maintain ecological processes

49. In which ways can humans damage the natural environment?

- urbanization
- change of land use (agriculture)
- introduction of invasive species
- pollutants
- use of resources
- logging
- soil compaction

50. How can we use traditional indigenous knowledge from aboriginal peoples to manage resources? (p. 133)

Experience acquired over centuries by having a close relationship with nature can tell us a lot about climate, natural resources and how biotic & abiotic factors work together. It is research by participation

51. What is the difference between a native species and an introduced species?

Native: found naturally in the region

Introduced: brought in on purpose or by accident from a different region into a region where they are not found naturally.

52. How can introduced species affect an ecosystem?

They can be invasive

- can result in a loss of biodiversity

- they can compete with native species

- they have less predators so their population can ↑

- they can be predators

- parasites/illness can be deadly

- they can harm the natural habitat