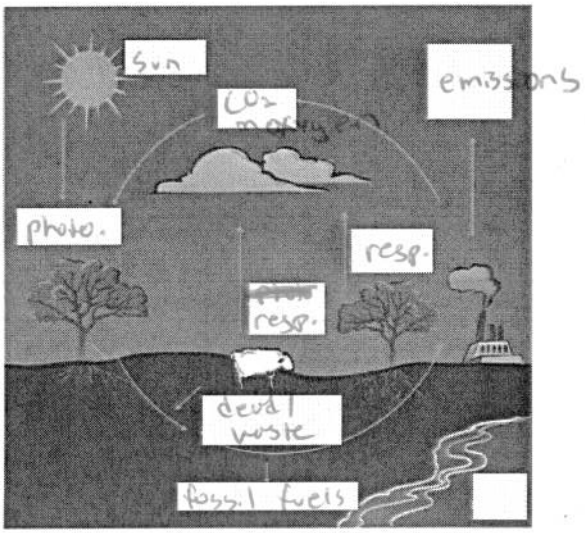
Ecology Study Guide Name: KEY Block: _____

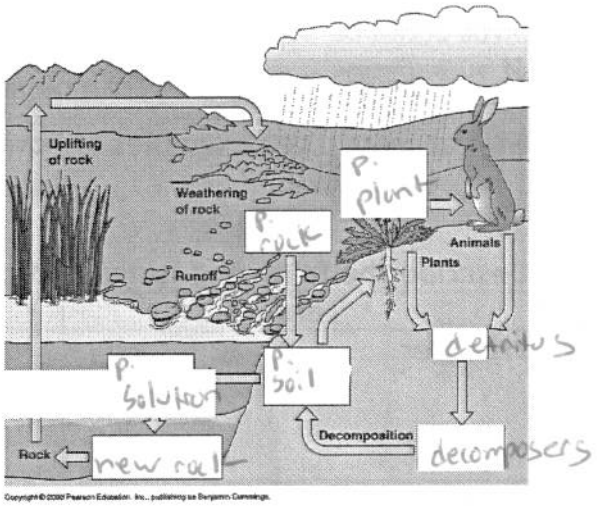
Describe how energy and chemicals (nitrogen, carbon, water, & phosphorous) pass through different levels of an ecosystem).

Insert vocabulary for the following cycles (**You may be asked to draw a cycle given vocabulary terms).**

CARBON: Photosynthesis, plant respiration, animal respiration, emissions, dead organisms/waste, fossil fuels, CO2 in oxygen, sunlight, carbon cycle

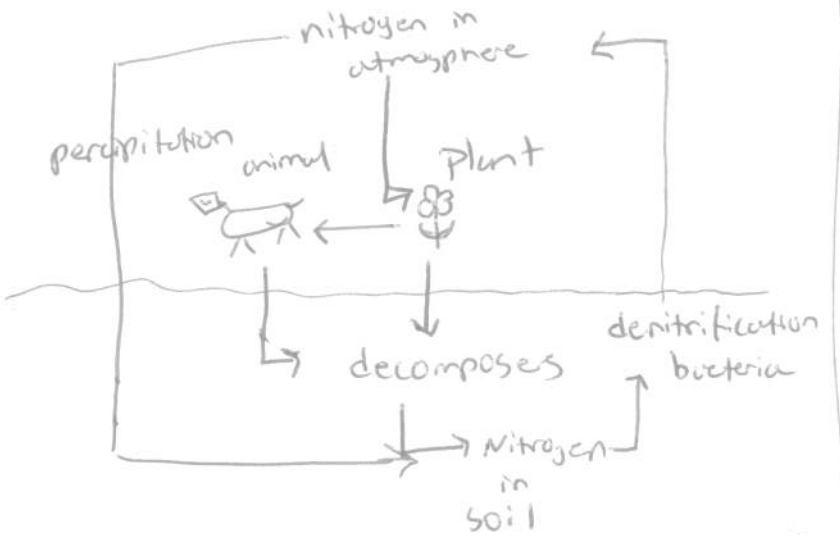


PHOSPOROUS: Phosphate in soil, phosphate in rock, phosphate in plants, phosphate in solution, new rocks, decomposers, detritus

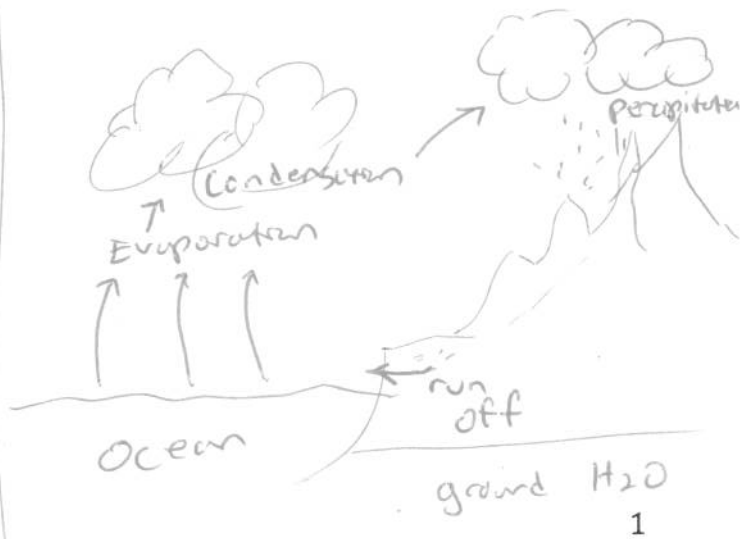


Create drawings to represent the water and nitrogen cycle using the following word banks:

NITROGEN: animals, plants, nitrogen in soil, nitrogen in atmosphere, decomposers, denitrification bacteria,



WATER: Condensation, evaporation, precipitation, run-off, ocean, ground water



At each energy level of a food pyramid 90% energy is lost moving up each level.

Identify the amount of energy passed to each trophic level in the following trophic pyramid:

Blue whales are the largest animals on the Earth today. An adult blue whale requires 1,010,000 kCal of krill a day in order to survive. How many pounds of krill is this? (Hint: one pound of krill supplies 460 kCal)

Blue whale ← krill 2,195 lbs

1,010,000 kCal / 460 lbs =

In an ecosystem, all energy is provided by Sunlight. At each increasing energy level, 90 % of energy is lost. For example, if small birds eat only seeds how many pounds of birds could be supported by 50,000 seeds: 5,000 lbs. How many pounds of predator birds could be supported that eat only the small birds: 500 lbs.

A energy pyramid can be used to show the amount of living material at each level.

Give at least three examples of how energy can be lost in an ecosystem:

- heat, waste, respiration

Describe the following terms and/or give an example:

Term	Definition	Example
Producer	Produces energy	plant/tree, bacteria, algae
Consumer (1st, 2nd, 3rd)	consumes energy (eats) from ~~eats~~ produces	deer, bird, human, shark
Autotroph	produces own energy	plant/tree, bacteria, algae.
Heterotroph	does not consume own energy	Any consumer

Draw an example of a food chain below:

Sunlight → algae → flagfish → boss → Aligator

How is a food web different than a food web?

feb web shows entire ecosystem feeding relationships

A living influence on organisms is called a biotic factor; a non-living factor of an ecosystem is called an abiotic factor.

Three examples of biotic factors include:
Humans, mice, birds

Three examples of abiotic factors include:
water/precipitation, sunlight, soil nutrients, temperature,

An autotroph is an organism that produces its own energy; a heterotroph is an organism that can not produce its own energy and must acquire it from another source. This type of organism makes its own energy producer. Three examples include plant, algae, bacteria. A consumer is an organism that must acquire its energy from another organism. Two types of these include herbivore (don't eat meat) and carnivore (eat meat).

Describe, explain, and **analyze** the relationships between biotic and abiotic parts in an ecosystem.

List the six levels of organization and explain what is included in each level:

0. individual: single organism
1. population: group of same species in same area
2. community: multiple populations in same area
3. ecosystem: biotic & abiotic factors in same area
4. ~~bio sphere~~ biome: similar ecosystems
5. biosphere: all biomes on planet

A symbiotic relationship describes the relationship between two living organisms. Types of this relationship includes the following: 1.) A mutualism relationship results in both organisms benefiting. 2.) A commensalism relationships results in one organism benefiting and another not benefiting or being harmed. 3.) A parasitism relationship results in one organism benefiting and one organism being harmed. 4.) A predator prey relationship describes how population size can change due to dependence of the species on one another.

Relationship:	Mutualism	Parasitism	commensalism	predator - prey
Example?	bees & flowers	leech, tape worm	barnacle & whale	wolf & deer

A habitat is where an organism lives and a niche is the organisms role in the ecosystem.

Describe how an organisms' habitat is different from its niche.

Habitat is where it lives, niche is what it does to live in its habitat

Give an example of an organism's habitat and its niche.

Predict the outcomes of a change in resource (shelter, food, and matter) or human disturbance has on an ecosystem

Type of Succession	What happens	Example
Primary	all life / nutrients removed from ecosystem or new ecosystem	new island, volcanic eruption in specific area (area with no life)
Secondary	disturbance removes most life from ecosystem	forest fire

A pioneer species is "the first on the scene" and helps to re-establish an ecosystem.

Scenario Analysis: Describe what affect the event would have on the ecosystem.

In an ecosystem gardener snakes are the primary source of food for a bird species but they will also eat small insects. Gardener snakes eat mostly small grasshoppers but can also eat small birds and rodents if present. Grasshoppers and other insects in the area begin to destroy a local crop so the farmer uses pesticide to poison the insects. The poison remains in the insect after their death. Describe how the introduction of this pesticide could affect this ecosystem?

- Poison gets into snakes through insects
- Snakes die from pesticide
- Snakes (carnivores) removed ; allow grasshoppers population to increase

What effect does loss of biodiversity have on an ecosystem?

Extinction, removal/decrease or increase of other connected species, destruction of food web

What effect can humans have on accelerating climate change?

- increase amount of CO_2 in atmosphere

Describe what an invasive species is and give at least one example.

Species that is not normally found in local habitat; blackberries, English Ivy, European Starling

Describe and **explain** factors causing population patterns and change.

The resources available in an ecosystem that limit growth are called limiting factors. Some examples of these include: food, shelter, space, water, nutrients, mates

Populations grow exponentially when resources are abundant or the population is new. This unlimited growth shows a J-curve when graphed. Draw a graph below to show what this looks like below.

Populations grow logistically when resources are limited. This growth is shown as an S-curve when graphed. Draw a graph below to show what this looks like.

The maximum size of a population given its limiting factors is called a carrying capacity.

Populations reaching their carrying capacity crash and rebound. Draw a graph below to show this.

The distribution (separation) of individuals in a population depends on:

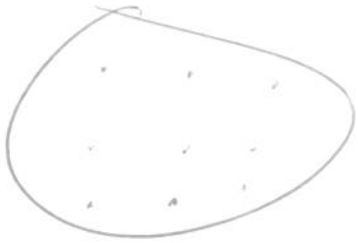
- resources
- interactions with others

Three types of population distributions:

- even
- clumped
- random

Draw a simple sketch to represent each type of distribution below

Even



Clumped

Random