**Test #2 – Ecology and Cycles Study Guide                Name: \_\_2017 Key\_\_\_**

What is ecology? Study of living things and their interactions with their environment

State the levels of organization from smallest to largest and define.

|  |  |
| --- | --- |
| Level | Definition |
| Species | A single living organism (individual) |
| Population | A group of individuals that belong to the same species and live in the same area at the same time |
| Community | All living things in an area |
| Ecosystem | All the living and nonliving things in an area. |
| Biome | A group of ecosystems that have the same climate and dominant communities. |
| Biosphere | All of Earth that can maintain life |

Which one is the first to include biotic (Living organisms like trees, bacteria, animals) and abiotic (Nonliving like the sun, temperature, and water) factors? Ecosystem

What is the difference between a food chain and food web? Food chain shows only one feeding relationships, a food web shows multiple feeding relationships and is more realistic

The original source of energy for all living organisms is the \_SUN!!!!\_.

Each step in a food web is called a \_\_Trophic Level\_\_.

How much energy is transferred from one energy level to the next? \_10%\_\_ The remaining energy is lost in the form of \_Heat (After it is used for functions like respiration, digestion, reproduction)\_\_.

Define the following terms and provide an example of each:

Producer – Creates its own energy (Photosynthesis, Chemosynthesis) Ex. Plants, Some Protists, and Some

 Bacteria

Consumer – Must obtain its energy from another living organism (eating) Ex. Animals

Heterotroph – Another name for a consumer Ex. Animals

Autotroph – Another name for a producer Ex. Plants, Some Protists, and Some

 Bacteria

Herbivore – Eats only plants (producers) found on the second trophic level Ex. Deer, Rabbit

Carnivore – Eats only meat Ex. Hawk, Tiger

Omnivore – Eats both plants and animals, found on the third trophic level Ex. Bird

Detritivore (Decomposer) - Feeds on dead/decaying (Detritus) matter Ex. Bacteria and Fungi

Fill in the following chart with the correct level numbers

|  |  |  |
| --- | --- | --- |
|  | Trophic Level | Consumer Level |
| Producer | 1 | N/A |
| Herbivore | 2 | Primary Consumers |
| Omnivore | 3 or higher | Secondary Consumers or Higher |
| Top Carnivore | 3 or higher | Tertiary consumer or higher |

If a frog eats a caterpillar which ate some grass which terms from above apply to this frog?

 Grass 🡪 Caterpillar 🡪 Frog

a. \_\_Secondary Consumer\_\_ b. \_\_Carnivore (Heterotroph)\_\_\_\_

What are the three types of ecological pyramids and what does each tell you?

#1\_\_\_\_Biomass Pyramid – Tells you amount of living tissue at each trophic level (Grams/Kilograms)\_\_\_

#2\_\_\_\_Pyramid of Numbers – Tells you the number of individuals at each trophic level that is required to maintain the top level consumer (Only Pictures) \_\_\_\_

#3\_\_\_Energy Pyramid – Shows the transfer of energy from Trophic Level to Trophic Level (10% transfer and heat lost/ Might also show in kcals)\_\_\_

Fill in the following energy pyramid using the organisms below and their correct energy available: Tomato plant, aphid, ladybug, bird

0.1% Energy Available

Bird

Ladybug

1% Energy Available

\_10%\_\_ Energy Available

Aphid

Tomato Plant

\_100%\_ Energy Available

Energy flows in one direction, but \_\_\_\_Matter (nutrients) cycles\_\_\_\_\_

What is the First law Thermodynamics? Energy is not destroyed

What is the Second law of thermodynamics? When energy is changed, we end up with a less amount

What is the process called when water is lost by

plants and returned to the atmosphere?

Transpiration (#2)

When water accumulates in the atmosphere it is

called \_\_\_Condensation (#3)\_\_\_.

When water falls down to earth it is called

\_\_\_\_\_Precipitation (#4)\_\_\_\_\_.

Water flowing over land is called

\_\_\_\_\_Run off (#5)\_\_\_.

How is carbon taken out of the atmosphere? Photosynthesis

What processes increase the amount of carbon in the atmosphere? Respiration, Burning of Wood and Fossil Fuels, Decomposition

Where does carbon accumulate? In the atmosphere and oceans

What organisms have to be present to pull nitrogen out of the atmosphere? Bacteria

What is the process of taking nitrogen out of the atmosphere called? Nitrogen Fixation

 Converts \_N2 (Nitrogen Gas)\_ to NH3 (ammonia)\_\_

Nitrogen is returned to the atmosphere through the process of \_\_denitrification\_\_. This process converts \_\_\_\_\_

Nitrates (NO2 and NO3)\_\_\_ into \_\_\_ N2 Gas \_\_.

Plants take in nitrogen through the process of \_\_\_assimilation\_\_\_.

What is the only nutrient that is not found in the atmosphere? Phosphorus

How do nutrients transfer from one organism to another? Food Chain or Food Web

What is one organism that every energy cycle must have to break down materials? Decomposers

What is symbiosis? Relationship between two organisms in which one benefits

What is commensalism? Example?

1 benefits, 1 unaffected Whale and barnacle

What is mutualism? Example?

Both benefit Bee and Flower

What is parasitism? Example?

1 benefits, 1 is harmed Deer and Tick

What is predation? How is it different from parasitism?

Involves 2 organisms in which one hunts and kills the other for food. Involves the predator and prey. In predation 1 is killed, in parasitism both are living.

What is competition?

Organisms fight for resources

What is interspecific competition? What is intraspecific competition?

Interspecific- competition between different species

Intraspecific- competition between organisms of the same species

What is the difference between native and nonnative species?

Native species were originally in the area and nonnative are introduced. Nonnative usually over take the area due to the fact they have no natural predators in the new area.