VICTORIA THANG LONG SCHOOL **Name:** _____

School year: 2021-2022/ Class: **Subject: Science**

THE STUDY GUIDE FOR THE 1ST MID-TERM TEST

PART I. SCIENCE VOCABULARY & KNOWLEDGE REVIEW

Topic	Science vocabulary	Science knowledge
Characteristics of Animals	*symmetry, radial, bilateral, exoskeleton, endoskeleton, nerve cod, chordate, exotherm, endotherm.*	❖ **All** animals are **multicellular** and most have several different types of tissue. Complex animals have organs and organ systems. ❖ The organization of cells, tissues, organs, and organ systems describes an animal's body structure. ❖ Most organisms have a balance of body parts called **symmetry.** • Animals have different types of symmetry: **radial and bilateral symmetry.** • Animals with no symmetry are called **asymmetrical**. ❖ All animals are classified based on whether or not they have a **backbone.** ❖ Animals without a backbone are classified as **invertebrates.** 1. **Sponges** are made of specialized cells, adults are attached, and they take food into their bodies to get energy. 2. **Cnidarians** have stinging cells and take food into a central body cavity. 3. **Worms** are simple animals but have a brain and digestive system. 4. **Mollusks** have one or two hard shells to protect internal organs. 5. **Arthropods** have an exoskeleton, a tough waterproof outer covering that protects, supports, and helps prevent evaporation of water from the body. 6. **Echinoderms** have an endoskeleton, a structural support system within the body, and have a system of tubes to move and obtain food and oxygen. ❖ **Vertebrates** are animals **with a backbone** that protects the nerve cord. => **All vertebrates are chordate**s. ❖ Vertebrates must maintain their body temperature. • **Ectotherms** produce little internal body heat. Their body temperature changes with the environment. (cold-blooded animals) • **Endotherms** control their internal heat and regulate their own temperature. (warm-blooded animals) ❖ **Vertebrate groups:** 1. **Fish** live in water, have scales, and use gills to collect dissolved oxygen. 2. **Amphibians** have permeable skin, live their early life in

		water and adult life on land. 3. **Reptiles** have scales, thick skin and lay their eggs on land. 4. **Birds** have wings, lightweight bones and a 4-chambered heart. 5. **Mammals** have milk glands to feed their young. **- Monotremes** are the only egg-laying mammals. **- Marsupials** carry their young in a pouch. **- Placentals** have live births. The embryo develops inside the mother.
Living Things and Energy	*autotroph, heterotroph, autotrophic organism, heterotrophic organism, to obtain, to synthesis, phenomenon (phenomena), directly, indirectly.*	❖ **Every living thing needs energy.** All the cells in every organism need energy to carry out their functions. ❖ **Nearly all living things** obtain energy **directly or indirectly** from the sun's energy. This energy is captured from the sunlight during photosynthesis. • **Autotrophs** obtains energy directly from sunlight and use sunlight to **make their own food** during photosynthesis. • **Heterotrophs cannot make their own food** and get the sun's energy indirectly by obtaining or absorbing food from other organisms. ❖ **Photosynthesis** is the **process** that autotrophic organisms capture and use light energy to **make food** from carbon dioxide and water.
Photosynthesis	*chemical reaction, chemical equation, reactant, product, yield, glucose, cellulose*	❖ **Photosynthesis is a chemical reaction** in plants that takes place mostly in chloroplasts. The availability of **sunlight, water, and carbon dioxide** are all **factors** required for **photosynthesis.** ❖ Photosynthesis equation: **Light energy + $6CO_2$ + $6H_2O$ → $C_6H_{12}O_6$ + O_2** • (The compound on the left of the arrow are raw materials, or reactants. • The compound on the right of the arrow is the **product.** • The arrow, which means **"yields",** points from the **raw materials to the products**.) ❖ Photosynthesis occurs in **2 stages** ➢ **Stage 1: Trapping the Sun's Energy** • During the first stage of photosynthesis, **chlorophyll**, green pigment found in the chloroplasts, **absorbs sunlight**. • Sunlight splits water molecules in the chloroplasts into **hydrogen and oxygen**. • **Other reactant**, **carbon dioxide** enters the plant from the air is also **splitted** in the chloroplasts **into carbon and oxygen**. ➢ **Stage 2: Making Food** • In stage 2 of photosynthesis, **plant cells produce sugar**

		which is **food** of the plant. • **Glucose** is used for **storing chemical energy** and **cellulose** is used for **building larger molecules**. • **Oxygen** is released into the environment as **a waste product.** ❖ The plant cells **break down sugar** molecules in a process called **cellular respiration**, which **occur** when there is **no light.**
Ecosystem Organization		❖ A **species** is a group of organisms that **can mate with each other and produce offspring** that can also mate and reproduce. ❖ Many **organisms** live together in **populations and communities** that interact with **abiotic factors** in their ecosystems. • An **individual** is a **single organism** living in an ecosystem. • A **population** is **all the individuals** of a species that live in an area. • A **community** is made up of **all the different populations** that live and interact in an area. • The **community of organisms** that lives in a particular area, **along with the nonliving** environment, make up an **ecosystem.**
Factors that Limit Population Growth		❖ An environmental factor that causes a population to stop growing or to decrease in size is called **limiting factor**. • **Food and water** can be limiting factors for virtually any population. • Changes in **climate and weather** can limit population growth immediately or in long terms. • Competition for suitable **shelter and space** also can limit the growth of a population.
Energy Roles in Ecosystem		❖ Every organism has a role in the movement of energy through its ecosystem. ❖ An organism that can make its own food is a **producer**. Producers become the source of food for other organisms in an ecosystem. • *Energy* enters most ecosystems as sunlight. Plants and some types of bacteria capture the energy of sunlight to reproduce their own food. • Deep in the ocean, some bacteria convert chemical *energy* into food from hydrothermal vents in the ocean floor. ❖ A **consumer** obtains *energy* by feeding on other organisms. Scientists classify consumers according to what they eat. • Consumers that **eat only animals** are **carnivores**. Some carnivores are **scavengers** that feed on the bodies of **dead organisms**. • **Herbivores** are consumers that **eat only plants** and other **photosynthetic** organisms.

		• Consumers that **eat both plants and animals** are **omnivores**. ❖ **Decomposers** get *energy* by breaking down biotic wastes and dead organisms. 1. Decomposers return the raw materials to the ecosystem. 2. Decomposers are nature's recyclers.
Energy and Matter Transfer		❖ A **food chain** is a series of events in which organisms transfer energy by eating and by being eaten. ❖ A **food web** consists of many overlapping food chains in an ecosystem. 1. **Producers** form the **base** of the food web. 2. **First-level, or primary, consumers** feed directly on the producers. **Second-level, or secondary, consumers** eat the first-level consumers. **Third-level, or tertiary, consumers** eat the second-level consumers. 3. **Apex predators** are organisms that have no natural predators and are at the top of a food chain or food web. ❖ **Energy pyramid** is a diagram that shows the amount of energy that moves from one feeding level to another in a food web. • Energy is **measured in kilocalories**, or kcal. • Organisms' activities **produce heat**, which is **released and lost** to the environment, **reducing the amount of energy** available to the next level. • **Each level has less energy** available than the level below. Only **about 10 percent** of the **energy is transferred** from level to level.

PART II. PRACTICE

Task 1: Choose the best answers.

1. **Which animal is not vertebrate?**
   A. Frog
   B. Squirrel
   C. Chameleon
   D. Starfish
2. **These vertebrates produce little internal body heat. They are known as cold-blooded animals.**
   A. Endotherms
   B. Ectotherms
   C. Amphibians
   D. Reptiles

3. These vertebrates control their internal body heat. They are known as warm-blooded animals.

A. Endotherms
B. Ectotherms
C. Amphibians
D. Reptiles

4. Which animals are not mammals?

A. Mammalia
B. Placentals
C. Marsupials
D. Monotremes

5. Which mammals have live births and the embryo develops inside the mother?

A. Mammalia
B. Placentals
C. Marsupials
D. Monotremes

6. Which animals are not invertebrates?

A. Echinoderms
B. Arthropods
C. Cnidarians
D. Amphibians

7. _____ provides energy for photosynthesis.

A. Glucose
B. Carbon Dioxide
C. Minerals
D. Sunlight

8. Which organism is NOT a heterotroph?

A. Fungus
B. Human
C. Apple Tree
D. Dog

9. Which part of a plant captures energy for photosynthesis?

A. Stomata
B. Chlorophyll
C. Chloroplast
D. Epidermis

10. Is a process that autotrophic organisms capture and use light energy to make food.

A. Photosynthesis
B. Respiration
C. Protein synthesis
D. Life cycle

Task 2: Read and circle True or False.

11. Photosynthesis is a chemical reaction in plants that takes place mostly in chlorophyll. **True/False**

12. The availability of sunlight, water, and carbon dioxide are all factors required for photosynthesis. **True/False**

13. Plant cells produce sugar in the form of glucose which is food for the plant. **True/False**

14. Cellular Reparation occurs when there is no light. **True/False**

15. Oxygen is the waste product of photosynthesis. **True/False**

Task 3: Match the DEFINITION to its Word

16. All the individuals of a species that live in an area.

17. An environmental factor that causes a population to stop growing or to decrease in size

18. Is a group of organisms that can mate with each other and produce offspring that can also mate and reproduce.

19. Refers to non-living things.

20. Are the limitations to population growth that vary with population density.

21. Refers to living things.

22. A single organism living in an ecosystem.

23. Are the limitations to population growth that are not dependent on population density.

24. The community of organisms that lives in a particular area, along with the nonliving environment.

25. Is made up of all the different populations that live and interact in an area.

A. Ecosystem

B. Community

C. Population

D. Individual

E. Abiotic

F. Biotic

G. Species

H. Limiting Factor

I. Density Dependent

J. Density Independent

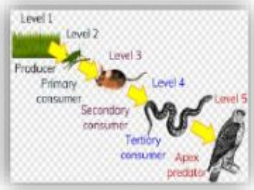
Task 4: Fill in the blanks with the correct words.

26. A _____ is a series of events in which organisms transfer energy by eating and by being eaten.

27. A _____ is consist of many overlapping food chains in an ecosystem.

28. A _____ is a diagram that shows the amount of energy that moves from one feeding level to another in a food web.

29. The _____ are organisms that have **no** natural predators and are at the top of a food chain or food web.



30. The _____ form the **base** of the food web.

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