Ontario Grade 9 Destreamed Science (SNC1W1) 2025 Practice Exam (Sample)

Study Guide

BY EXAMZIFY

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Questions

1. What phenomenon describes the apparent shift in position of an object due to the movement of the observer?

A. Orbit

B. Parallax

C. Eclipse

D. Rotation

2. What is matter?

A. Anything that has mass and takes up space

B. Anything that has energy

C. Only solid objects

D. Only visible substances

3. What is the role of decomposers in an ecosystem?

A. To produce energy through photosynthesis

B. To break down dead organic material and recycle nutrients

C. To compete with plants for sunlight

D. To consume living organisms for energy

4. Which of the following describes an effect of microgravity on astronauts?

A. Increased muscle mass

B. Astronaut bone loss

C. Enhanced vision

D. Heightened senses

5. Which of the following best describes an independent variable in an experiment?

A. The factor that is changed or manipulated by the researcher

B. The factor that remains constant throughout the experiment

C. The outcome measured in the experiment

D. The variable that affects the dependent variable

6. What type of organism can break down dead organic matter?

- **A. Carnivore**
- **B. Producer**
- **C. Herbivore**
- **D. Decomposer**

7. How is energy transferred in a food chain?

- **A. By photosynthesis**
- **B. Through consumption, from one organism to another**
- **C. Through respiration**
- **D. By decomposition**

8. Which of these elements would most likely be a metalloid?

- **A. Sodium**
- **B. Silicon**
- **C. Chlorine**
- **D. Copper**

9. How can the scientific method be best described?

- **A. A systematic process for experimentation that is used to explore observations and answer questions**
- **B. A method for making random guesses in scientific studies**
- **C. A series of steps that can only be followed in order**
- **D. A simple way to memorize scientific facts**

10. What is a group of the same species living in an area called?

- **A. Community**
- **B. Population**
- **C. Ecosystem**
- **D. Biome**

Answers

1. B
2. A
3. B
4. B
5. A
6. D
7. B
8. B
9. A
10. B

Explanations

1. What phenomenon describes the apparent shift in position of an object due to the movement of the observer?

A. Orbit

B. Parallax

C. Eclipse

D. Rotation

The phenomenon that describes the apparent shift in position of an object due to the movement of the observer is parallax. Parallax occurs when an observer moves and perceives an object from different angles, causing it to appear to shift position against a background. This effect is commonly used in astronomy to measure distances to nearby stars; as the Earth orbits the Sun, the apparent position of a star relative to more distant stars changes. The other options represent different concepts: orbit refers to the gravitational path one object takes around another, an eclipse involves the obscuring of one celestial body by another, and rotation refers to the spinning motion of an object around its own axis. These concepts do not pertain to the observer's perception of an object's position in relation to their movement.

2. What is matter?

A. Anything that has mass and takes up space

B. Anything that has energy

C. Only solid objects

D. Only visible substances

Matter is defined as anything that has mass and occupies space. This includes all physical substances around us, regardless of their state (solid, liquid, or gas). Everything that we can touch or perceive in our environment is considered matter because it is made up of particles that possess mass and volume. This foundational concept in science helps to differentiate matter from energy and other entities. The other concepts provided don't fully encapsulate the definition of matter. For instance, while energy is a crucial aspect of physical processes, it is not classified as matter because it does not have mass or occupy space in the way that matter does. Furthermore, the idea that only solid objects constitute matter is too restrictive, as liquids and gases also qualify as matter. Lastly, defining matter strictly as visible substances excludes many forms of matter, such as gases or microscopic particles, which, although invisible to the naked eye, still possess mass and occupy space.

3. What is the role of decomposers in an ecosystem?

A. To produce energy through photosynthesis

B. To break down dead organic material and recycle nutrients

C. To compete with plants for sunlight

D. To consume living organisms for energy

Decomposers play a crucial role in an ecosystem by breaking down dead organic material and recycling nutrients. They include organisms such as bacteria, fungi, and detritivores, which aid in decomposing the remains of dead plants and animals. As these decomposers break down this organic matter, they convert it into simpler substances, releasing essential nutrients back into the soil. This process not only enriches the soil, promoting healthy plant growth, but also helps maintain the balance of the ecosystem by ensuring that matter is not wasted and that energy can flow through the food web. Through their activities, decomposers help sustain the cycle of life, creating a more fertile environment for producers and ultimately supporting all living organisms in the ecosystem.

4. Which of the following describes an effect of microgravity on astronauts?

A. Increased muscle mass

B. Astronaut bone loss

C. Enhanced vision

D. Heightened senses

Microgravity has significant impacts on the human body, particularly for astronauts who spend extended periods in space. One of the well-documented effects is bone loss. In the microgravity environment of space, the mechanical stress that normally stimulates bone maintenance and growth is greatly reduced. This results in a decrease in bone density, making bones weaker and more susceptible to fractures upon return to Earth. During their time in space, astronauts can experience a loss of up to 1-2% of bone mass per month, especially in weight-bearing bones such as the spine and pelvis. This phenomenon is a direct consequence of the lack of gravitational pull that we experience on Earth, which normally helps maintain bone health. To counteract this issue, astronauts engage in regular exercise using specialized equipment designed for functioning in a microgravity environment, aiming to mitigate bone loss during their missions.

5. Which of the following best describes an independent variable in an experiment?

A. The factor that is changed or manipulated by the researcher

B. The factor that remains constant throughout the experiment

C. The outcome measured in the experiment

D. The variable that affects the dependent variable

An independent variable is best described as the factor that is changed or manipulated by the researcher in an experiment. This is the variable that the researcher alters to observe how it impacts another variable, known as the dependent variable. For example, in a plant growth experiment, the amount of sunlight the plants receive could be the independent variable that you manipulate to see how it affects their growth. Understanding the role of the independent variable is crucial as it allows researchers to establish cause-and-effect relationships. By changing this variable, researchers can measure how these changes affect the dependent variable, thus gaining insights into the dynamics of the experiment. The other factors mentioned, such as the constant variables and the dependent variable, are important in the structure of an experiment, but they do not define what an independent variable is. Constant variables ensure that the experiment remains fair by not allowing other factors to influence the results, while the dependent variable is what the researcher measures to assess the impact of the independent variable.

6. What type of organism can break down dead organic matter?

A. Carnivore

B. Producer

C. Herbivore

D. Decomposer

Decomposers are organisms that play a critical role in the ecosystem by breaking down dead organic matter, such as fallen leaves, dead plants, and animal remains. This process recycles nutrients back into the soil, making them available for producers, such as plants, to use for growth. Decomposers include fungi, bacteria, and some detritivores, which feed on decaying materials. By decomposing organic matter, they help maintain the balance of ecosystems and support new life, highlighting their essential role in nutrient cycling and energy flow within ecosystems.

7. How is energy transferred in a food chain?

A. By photosynthesis

B. Through consumption, from one organism to another

C. Through respiration

D. By decomposition

Energy in a food chain is transferred through consumption, where one organism eats another to obtain energy. This process illustrates the flow of energy from producers, such as plants that convert sunlight into energy through photosynthesis, to primary consumers like herbivores, which eat the plants. Then, energy continues to transfer to secondary consumers, such as carnivores that eat herbivores, and can eventually reach tertiary consumers. In this way, each organism plays a role in the energy transfer, and this interconnectedness forms the structure of the food chain. The concept highlights how energy moves through ecosystems, starting from sunlight captured by producers and moving through various trophic levels as organisms consume one another. The other options describe important processes related to energy but do not directly capture the way energy transfer occurs specifically through food chains.

8. Which of these elements would most likely be a metalloid?

A. Sodium

B. Silicon

C. Chlorine

D. Copper

Silicon is classified as a metalloid because it exhibits properties that are characteristic of both metals and nonmetals. In the periodic table, metalloids are typically found between metals and nonmetals, and they often have intermediate properties. Silicon, for instance, is a good conductor of electricity at certain temperatures, making it useful in electronic devices, while also being brittle like nonmetals. This unique combination of properties exemplifies what defines metalloids. In contrast, sodium is a highly reactive metal, chlorine is a reactive nonmetal, and copper is a well-known metal with excellent conductivity. These elements do not share the intermediate characteristics that typify metalloids like silicon.

9. How can the scientific method be best described?

A. A systematic process for experimentation that is used to explore observations and answer questions

B. A method for making random guesses in scientific studies

C. A series of steps that can only be followed in order

D. A simple way to memorize scientific facts

The scientific method is best described as a systematic process for experimentation that is used to explore observations and answer questions. It encompasses a range of steps, including making observations, forming a hypothesis, conducting experiments, gathering data, and analyzing results. This structured approach allows scientists to draw conclusions based on evidence, leading to a deeper understanding of natural phenomena. This method is essential for ensuring that studies are conducted fairly and that results can be replicated and verified. It enables researchers to build on previous work, refine their hypotheses, and contribute to a cumulative body of knowledge. By prioritizing careful observation and experimentation, the scientific method facilitates a logical progression of inquiry that is integral to scientific advancement.

10. What is a group of the same species living in an area called?

A. Community

B. Population

C. Ecosystem

D. Biome

A group of the same species living in a specific area is known as a population. In ecological terms, a population represents all the individuals of a single species that share a common environment and have the potential to interbreed. This concept is crucial in understanding dynamics related to species survival, reproduction, and the ability of that species to adapt to changes in their environment. The term "community" refers to a broader concept that includes multiple populations of different species living and interacting in the same area. An "ecosystem," on the other hand, encompasses not only the living organisms (biota) within a specific environment but also the physical components (like soil, water, and climate) that interact with these organisms. Lastly, a "biome" is a larger geographical area characterized by specific climate conditions and particular types of ecosystems, such as deserts or rainforests. Therefore, the most accurate term for a group of the same species in a specific location is population.