

VIRGINIA 7TH GRADE SCIENCE SOL PRACTICE TEST (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- Practice answering questions under realistic conditions,
- Improve accuracy and speed,
- Review explanations to strengthen weak areas, and
- Approach the exam with greater confidence.

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

How to Use This Guide

This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here's how to get the most out of your Examzify study guide:

1. Start with a Diagnostic Review

Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.

2. Study in Short, Focused Sessions

Break your study time into manageable blocks (e.g. 30 – 45 minutes). Review a handful of questions, reflect on the explanations.

3. Learn from the Explanations

After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.

4. Track Your Progress

Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.

5. Simulate the Real Exam

Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.

6. Repeat and Review

Don't just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.

There's no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!

Questions

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- 1. Which statement about why an object sinks in water is correct?**
 - A. It sinks because it is cold.
 - B. It sinks because it has a small volume.
 - C. It sinks when its density is less than the water's density.
 - D. It sinks when its density is greater than the water's density.
- 2. What type of organisms expedite the decay process and return nitrogen to the soil?**
 - A. Decomposers
 - B. Producers
 - C. Primary consumers
 - D. Consumers
- 3. How does the genetic variation arise in sexual reproduction?**
 - A. Through the combination of different alleles from two parents and crossing over during meiosis
 - B. Only through mutation in one parent
 - C. By random fertilization only
 - D. By asexual cloning
- 4. Which term describes the role an organism plays in its environment, including how it obtains energy and interacts with others?**
 - A. Niche
 - B. Habitat
 - C. Population
 - D. Ecosystem
- 5. Which statement best describes a limiting factor in an ecosystem?**
 - A. A factor that increases population growth
 - B. A factor that never changes
 - C. A factor that restricts population growth
 - D. A factor that only affects predators

6. Which statement correctly defines solubility?

- A. Solubility is the amount of solute that dissolves in a solvent.
- B. Solubility is the rate at which a solution forms.
- C. Solubility is the color change when a solution forms.
- D. Solubility is the temperature at which a solution forms.

7. Where are vesicles formed within a cell?

- A. Golgi Bodies
- B. Endoplasmic Reticulum
- C. Nucleus
- D. Lysosomes

8. The threadlike structures made up of DNA are called what?

- A. Chromatids
- B. Nucleotides
- C. Chromosomes
- D. Genes

9. What is a phenotype?

- A. The observable trait
- B. The genetic makeup
- C. The enzyme that carries out metabolism
- D. The location of a gene

10. Which of the following is a clear example of potential energy?

- A. A moving skateboard.
- B. A lit light bulb.
- C. A running engine.
- D. A raised rock on a cliff.

Answers

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

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Explanations

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1. Which statement about why an object sinks in water is correct?

- A. It sinks because it is cold.
- B. It sinks because it has a small volume.
- C. It sinks when its density is less than the water's density.
- D. It sinks when its density is greater than the water's density.**

Buoyancy depends on density relative to water. The upward buoyant force equals the weight of the water the object displaces. If the object's density is greater than water's density, its weight is larger than the buoyant force, so it sinks. If the object's density is less than water's, the buoyant force can support it and it floats; if the densities are equal, it can hover with neutral buoyancy. So the correct idea is that sinking happens when the object's density is greater than the water's density. Cold temperature, or having a small volume, doesn't by itself determine sinking, and an object with density less than water would not sink.

2. What type of organisms expedite the decay process and return nitrogen to the soil?

- A. Decomposers**
- B. Producers
- C. Primary consumers
- D. Consumers

Decomposers are the microorganisms and fungi that break down dead organisms and waste. As they digest these materials, nitrogen that was locked in proteins and DNA is released into the soil mainly as ammonia, which becomes ammonium. This process, called ammonification, returns nitrogen to the soil so other organisms, like plants, can reuse it. While other creatures such as earthworms help by physically breaking down litter, the specific role of decomposers is to chemically decompose organic matter and recycle nitrogen back into usable forms. Examples include bacteria and fungi.

3. How does the genetic variation arise in sexual reproduction?

- A. Through the combination of different alleles from two parents and crossing over during meiosis**
- B. Only through mutation in one parent
- C. By random fertilization only
- D. By asexual cloning

Genetic variation in sexual reproduction comes from mixing genetic material from two parents and from the reshuffling of genes during meiosis. During meiosis, homologous chromosomes exchange segments in a process called crossing over, creating chromosomes with new combinations of alleles. At the same time, the way chromosomes are independently assorted into gametes means each gamete carries a different set of parental alleles. When a sperm and egg meet in fertilization, their randomly chosen genetic material combines to form a zygote with a unique genetic makeup. This combination of two parents' alleles plus recombination during meiosis is what drives the variety seen in offspring. While mutations can add new changes, and fertilization adds even more variety, the core mechanism described here is the mixing and rearranging of parental genes through crossing over and independent assortment.

4. Which term describes the role an organism plays in its environment, including how it obtains energy and interacts with others?

- A. Niche**
- B. Habitat
- C. Population
- D. Ecosystem

Understanding what an organism does in its environment centers on its niche. The niche is the specific role the organism plays, including how it gets its energy (what it eats and at what level in the food web) and how it interacts with other living things (such as prey, predators, competitors, or mutualists). For example, a bee's niche includes feeding on nectar and pollen and helping plants reproduce through pollination, while also interacting with flowers, predators, and other insects. This is different from the place where it lives (its habitat), which is simply the physical environment like a forest or meadow. It's also not about how many individuals are in an area (population) or the entire system of living things and their surroundings (ecosystem). Niche best captures the organism's functional role and its relationships in the environment.

5. Which statement best describes a limiting factor in an ecosystem?

- A. A factor that increases population growth
- B. A factor that never changes
- C. A factor that restricts population growth**
- D. A factor that only affects predators

Limiting factors are environmental features that prevent a population from growing without bound. When resources like food, water, space, or favorable conditions are limited, not all individuals can survive and reproduce, so the population levels off at a certain size. These factors can be biotic, such as predators, disease, or competition with others, or abiotic, such as drought, extreme temperatures, or habitat destruction. The statement that best describes a limiting factor is a factor that restricts population growth, because it directly limits how large the population can become. It's not about something that would increase growth, nor about something that never changes, nor something that only affects predators—the limiting factor is anything in the environment that reduces the potential for the population to keep increasing.

6. Which statement correctly defines solubility?

- A. Solubility is the amount of solute that dissolves in a solvent.**
- B. Solubility is the rate at which a solution forms.
- C. Solubility is the color change when a solution forms.
- D. Solubility is the temperature at which a solution forms.

Solubility describes how much solute can dissolve in a solvent under given conditions, usually depending on temperature. The statement that best defines solubility is that it is the amount of solute that dissolves in a solvent, because it directly describes how much of a substance can enter the solution. This is not about how fast the dissolving happens—the rate of dissolution. It isn't about a color change that might occur when mixing, which would point to a reaction or a different kind of change. And while temperature can affect solubility, solubility itself is not simply the temperature at which a solution forms. For example, warmer water can typically dissolve more sugar than cold water, illustrating how temperature can influence how much dissolves, but the core idea remains: solubility is about how much solute can dissolve in the solvent.

7. Where are vesicles formed within a cell?

- A. Golgi Bodies**
- B. Endoplasmic Reticulum
- C. Nucleus
- D. Lysosomes

Vesicles are small membrane-bound sacs that move materials around the cell, forming when a piece of membrane pinches off. The Golgi apparatus acts as the cell's shipping center: it takes proteins and lipids made in the endoplasmic reticulum, may modify them, sorts them, and then buds off vesicles from its membrane to deliver cargo to the cell membrane, outside the cell, or to other organelles. That's why the Golgi is the best answer for where vesicles are formed. The endoplasmic reticulum also helps by forming transport vesicles during protein and lipid synthesis, but the main formation of vesicles for dispatch happens at the Golgi. The nucleus houses genetic material and isn't involved in making vesicles, and lysosomes are digest enzymes-filled organelles created by the Golgi, not the source of general vesicle formation.

8. The threadlike structures made up of DNA are called what?

- A. Chromatids
- B. Nucleotides
- C. Chromosomes**
- D. Genes

DNA is packed into chromosomes, threadlike structures that carry the genetic information. Chromosomes form when long DNA molecules wrap around proteins, allowing the genome to fit inside the cell and be organized for division and inheritance. They carry genes—the specific sequences that code for traits. Nucleotides are the individual building blocks of DNA, not the overall structure. Chromatids are the identical copies that make up a duplicated chromosome, and genes are particular segments of DNA found along a chromosome. So the threadlike structures made up of DNA are chromosomes.

9. What is a phenotype?

- A. The observable trait**
- B. The genetic makeup
- C. The enzyme that carries out metabolism
- D. The location of a gene

Phenotype is what you can see or measure—the observable traits that come from how a organism's genes interact with its environment. For example, eye color, height, leaf shape, or fur pattern are phenotypes. The genotype is the genetic makeup—the alleles an individual carries—which helps determine the phenotype but isn't itself the trait you observe. The enzyme mentioned would be a protein that can influence how a trait is expressed, but that protein is part of the process, not the trait itself. The location of a gene describes where a gene sits in the genome, not the observable characteristics.

10. Which of the following is a clear example of potential energy?

A. A moving skateboard.

B. A lit light bulb.

C. A running engine.

D. A raised rock on a cliff.

Potential energy is energy stored due to an object's position. A rock raised on a cliff has gravitational potential energy because its height gives it the potential to do work on the way down, transforming into motion if released. The amount depends on mass, gravity, and height (mgh). The other scenarios involve energy that is already in use or in motion: a moving skateboard has kinetic energy, a lit light bulb is converting electrical energy to light and heat, and a running engine is actively releasing energy to power movement. So the raised rock clearly demonstrates stored gravitational energy.

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Next Steps

Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.

As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.

If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at hello@examzify.com.

Or visit your dedicated course page for more study tools and resources:

<https://va7thgradesciencesol.examzify.com>

We wish you the very best on your exam journey. You've got this!

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