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.

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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!

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Questions

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1. Which of the following is NOT a simple machine?

A. Pulleys.

B. Wedges.

C. Brakes.

D. Levers.

2. Which statement correctly describes gravity and mass?

A. Gravity is a magnetic force that attracts only metals.

B. Gravity acts only when objects are moving.

C. Gravity is the pull toward Earth and mass affects the strength of gravitational force.

D. Gravity is an illusion and does not affect motion.

3. During cellular respiration, what is released to power cellular activities?

A. Carbon dioxide

B. Energy from breaking down glucose using oxygen

C. Water

D. Sunlight

4. Which organelle contains the genetic material and directs all cell activities?

A. Ribosome

B. Chloroplast

C. Golgi

D. Nucleus

5. If a rolling ball slows down on a rough surface, what happens to its energy?

A. Kinetic energy increases.

B. Potential energy increases.

C. Energy is created.

D. Kinetic energy decreases; it is converted to heat due to friction.

6. The maximum reproductive capacity of a population is referred to as what?

A. Carrying Capacity

B. Growth Rate

C. Biotic Potential

D. Population Size

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7. Which statement best distinguishes weather from climate?

A. Weather describes short-term atmospheric conditions; climate is the long-term pattern of weather in a region.

B. Weather is the average conditions over centuries; climate is the daily forecast.

C. Weather and climate are the same; both refer to temperature only.

D. Weather describes the ocean, and climate describes the land.

8. Which statement correctly describes energy flow in an ecosystem and where energy comes from?

A. Energy flows from producers to consumers; energy ultimately comes from the sun.

B. Energy flows from consumers to producers; energy comes from soil.

C. Energy is recycled within organisms without input from outside.

D. Energy is created by organisms during photosynthesis only.

9. Which statement correctly defines producers, consumers, and decomposers?

A. Producers make their own food; consumers eat other organisms; decomposers break down dead matter.

B. Producers decompose dead matter; consumers make their own food; decomposers eat other organisms.

C. Consumers make their own food; producers eat other organisms; decomposers help pollinate plants.

D. Decomposers perform photosynthesis.

10. In a food chain, energy flows from producers to herbivores to carnivores. Why does the amount of usable energy decrease at each trophic level?

A. Because energy is lost as heat and through metabolic processes; only a small portion is transferred between levels.

B. Because producers are the only source of energy.

C. Because energy increases at higher trophic levels.

D. Because humans consume energy from the sun.

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Answers

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

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Explanations

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1. Which of the following is NOT a simple machine?

A. Pulleys.

B. Wedges.

C. Brakes.

D. Levers.

Understanding what counts as a simple machine: a simple machine is a device with a single basic action that changes the size or direction of a force to make work easier. Levers use a rigid bar and a fulcrum to multiply effort or lift a load, changing how the input force works. Pulleys change the direction of the force with a wheel and rope, letting you lift or move loads in a more convenient direction. Wedges act as two inclined planes joined together, splitting or separating materials by concentrating force to a sharp edge. Brakes, however, aren't a single device with one basic action. They're a system that uses friction or hydraulic pressure through multiple parts to slow or stop motion, which means they don't fit the definition of a simple machine.

2. Which statement correctly describes gravity and mass?

A. Gravity is a magnetic force that attracts only metals.

B. Gravity acts only when objects are moving.

C. Gravity is the pull toward Earth and mass affects the strength of gravitational force.

D. Gravity is an illusion and does not affect motion.

Gravity is the pull between masses, so on Earth that pull is toward the center of the planet. The strength of that pull depends on how much mass is involved and how far apart the objects are: bigger masses create a stronger attraction, and the force weakens as distance increases. So saying gravity is the pull toward Earth and that mass affects how strong it is captures both the direction and the relationship to mass. That's why this statement fits best. It isn't a magnetic force, it doesn't require motion to occur, and gravity isn't an illusion—it's a real force that affects how objects move.

3. During cellular respiration, what is released to power cellular activities?

A. Carbon dioxide

B. Energy from breaking down glucose using oxygen

C. Water

D. Sunlight

The energy released during cellular respiration is captured in ATP molecules, which act as the cell's rechargeable power packets. When glucose is broken down with oxygen, the chemical energy is transferred into ATP. That ATP is then used directly to power cellular activities like active transport, muscle movement, and biosynthesis. Carbon dioxide and water are produced as byproducts of the process, not as the energy source, and sunlight isn't involved in respiration (it fuels photosynthesis).

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4. Which organelle contains the genetic material and directs all cell activities?

A. Ribosome

B. Chloroplast

C. Golgi

D. Nucleus

The main idea is that the nucleus acts as the cell's control center. It stores the cell's genetic material in DNA, which holds the instructions for making every molecule the cell needs. By transcription of DNA into RNA, the nucleus regulates which proteins are produced, guiding growth, responses to signals, and all the activities a cell carries out. The nucleus is also surrounded by a nuclear envelope with pores that control what enters and leaves, and it contains the nucleolus where ribosomes begin to form. While other organelles have important jobs—ribosomes build proteins, chloroplasts (in plants) carry out photosynthesis and contain some DNA, and the Golgi packages and ships proteins—they do not direct the entire set of cellular activities the way the nucleus does.

5. If a rolling ball slows down on a rough surface, what happens to its energy?

A. Kinetic energy increases.

B. Potential energy increases.

C. Energy is created.

D. Kinetic energy decreases; it is converted to heat due to friction.

When a rolling ball moves on a rough surface, friction acts opposite its motion and does negative work on the ball. This removes kinetic energy from the ball (the energy of motion), and that energy is transformed into heat in the ball and the surface. Since the ball isn't changing height on a flat surface, its potential energy doesn't increase. No energy is created or added; it's simply redistributed from kinetic energy into thermal energy, which is why the ball slows down.

6. The maximum reproductive capacity of a population is referred to as what?

A. Carrying Capacity

B. Growth Rate

C. Biotic Potential

D. Population Size

Biotic potential is the maximum capacity of a population to reproduce and grow under ideal conditions. It's about the highest possible rate at which a population could increase if resources were unlimited and there were no predators, diseases, or other limiting factors. This depends on traits like how many offspring can be produced, how often reproduction occurs, and how quickly generations turnover. For example, bacteria can have very high biotic potential because they reproduce rapidly, while elephants have a much lower biotic potential due to slower reproduction. Carrying capacity refers to the environment's limit on how many individuals can be sustained long-term, not the ideal growth rate. Growth rate describes how fast the population is actually increasing per unit time under current conditions, and population size is simply the current number of individuals.

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7. Which statement best distinguishes weather from climate?

A. Weather describes short-term atmospheric conditions; climate is the long-term pattern of weather in a region.

B. Weather is the average conditions over centuries; climate is the daily forecast.

C. Weather and climate are the same; both refer to temperature only.

D. Weather describes the ocean, and climate describes the land.

Weather and climate differ mainly by time scale and what they describe. Weather is the short-term state of the atmosphere in a particular place—things like temperature, humidity, precipitation, and wind you experience day to day. Climate is the long-term pattern of those conditions in a region, typically described by averages and statistics over many years (often about 30 years or more). So the idea that weather describes short-term conditions while climate is the long-term pattern fits best. For example, it might be hot today (weather), but the climate of the area includes what temperatures are typical across many years. The other statements mix up time scales or what is being described, such as treating climate as a daily forecast, or claiming weather and climate are the same, or limiting them to oceans or land.

8. Which statement correctly describes energy flow in an ecosystem and where energy comes from?

A. Energy flows from producers to consumers; energy ultimately comes from the sun.

B. Energy flows from consumers to producers; energy comes from soil.

C. Energy is recycled within organisms without input from outside.

D. Energy is created by organisms during photosynthesis only.

Energy moves through ecosystems in one direction: from producers to consumers, with the sun as the original source of that energy. Plants and other producers capture sunlight and store it as chemical energy through photosynthesis. Animals and other consumers then obtain energy by eating those producers or other organisms. As energy is used for life processes, some of it is lost as heat, so it doesn't cycle back to producers in a loop. That's why energy ultimately comes from the sun, not from soil or from energy being created inside organisms.

9. Which statement correctly defines producers, consumers, and decomposers?

A. Producers make their own food; consumers eat other organisms; decomposers break down dead matter.

B. Producers decompose dead matter; consumers make their own food; decomposers eat other organisms.

C. Consumers make their own food; producers eat other organisms; decomposers help pollinate plants.

D. Decomposers perform photosynthesis.

In ecosystems, energy and nutrients move through different roles: producers make their own food, typically through photosynthesis; consumers rely on eating other organisms to obtain energy; and decomposers break down dead matter and waste, recycling nutrients back into the environment. The statement that correctly captures this is that producers make their own food, consumers eat other organisms, and decomposers break down dead matter. This reflects how plants and algae capture energy, how animals and other organisms obtain energy by eating, and how decomposers like fungi and many bacteria recycle nutrients by decomposing dead material. The other ideas mix up these roles—for example, decomposers don't perform photosynthesis, and producers don't decompose dead matter—so they don't describe how these groups function in an ecosystem.

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10. In a food chain, energy flows from producers to herbivores to carnivores. Why does the amount of usable energy decrease at each trophic level?

A. Because energy is lost as heat and through metabolic processes; only a small portion is transferred between levels.

B. Because producers are the only source of energy.

C. Because energy increases at higher trophic levels.

D. Because humans consume energy from the sun.

Energy flows through ecosystems in one direction from producers to herbivores to carnivores. At each step, most of the energy is used for the organism's daily life activities or released as heat through metabolism, growth, movement, and digestion. Only a small portion of the energy captured by one level is stored in the tissues of the next level, so the amount available to the next consumer is reduced. This is why usable energy decreases as you move up the food chain, often summarized by the idea that only a fraction of energy is transferred to the next level. The other choices don't fit: producers aren't the only energy source in the system, energy does not increase at higher trophic levels, and humans don't directly obtain energy from the sun.

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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:

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

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