

CALIFORNIA SCIENCE TEST (CAST) 8TH GRADE PRACTICE EXAM (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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THE FULL VERSION STUDY GUIDE

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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. Condensed, coiled, and shorted DNA that occurs during cell division is a _____.
- A. Genotype
 - B. Wave
 - C. Chromosome
 - D. Phenotype
2. The multi-step process of turning the code of a gene into its final product (most often a protein)
- A. Gene expression
 - B. Mutation
 - C. Gene mutation
 - D. Silent mutation
3. If there is no change in an object's velocity, the forces are what?
- A. Unbalanced forces
 - B. Velocity
 - C. Air Resistance
 - D. Balanced forces
4. What is the term for how fast an object is moving, defined as distance traveled divided by the time taken?
- A. Velocity
 - B. Speed
 - C. Acceleration
 - D. Momentum
5. The material through which a wave travels. This can be a solid, liquid, or gas.
- A. Density
 - B. Analog
 - C. Medium
 - D. Digital

- 6. What term is the distance between two successive crests?**
- A. Hertz
 - B. Wavelength
 - C. Amplitude
 - D. Frequency
- 7. What term describes an explanation that has been repeatedly tested and supported by extensive evidence?**
- A. Evolution
 - B. Genetic Variation
 - C. Mutations
 - D. Theory
- 8. Which term describes an organism's genetic makeup?**
- A. Phenotype
 - B. Genetic variation
 - C. Chromosome
 - D. Genotype
- 9. A layer of lava that erupts onto the Earth's surface and hardens is called?**
- A. Lava flow
 - B. Magma intrusion
 - C. Extrusion
 - D. Sill
- 10. When a wave bounces off a surface that it cannot pass through. This does not change the speed or frequency of the wave, but the wave can be flipped upside down.**
- A. Diffraction
 - B. Wavelength
 - C. Amplitude
 - D. Reflection

Answers

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

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Explanations

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1. Condensed, coiled, and shorted DNA that occurs during cell division is a _____.

- A. Genotype
- B. Wave
- C. Chromosome
- D. Phenotype

During cell division, DNA condenses into compact, coiled structures called chromosomes. This tightly packed form, with DNA organized around proteins, lets the cell split its genetic material evenly between the two new cells. That makes chromosome the best word to describe condensed DNA during division. The genotype is the genetic makeup behind traits, not the visible, condensed form during division, and the phenotype is the observable traits produced by that genotype. A wave isn't related to how DNA packs during cell division.

2. The multi-step process of turning the code of a gene into its final product (most often a protein)

- A. Gene expression
- B. Mutation
- C. Gene mutation
- D. Silent mutation

Gene expression is the multi-step process by which a gene's code is used to make a final product, usually a protein. It begins with transcription, where the DNA sequence is copied into messenger RNA, and continues with translation, where ribosomes read the mRNA and assemble amino acids into a protein. The protein may then fold and be modified to become functional. The other options describe changes to DNA (mutations) rather than the process of using gene code to make a product, and a silent mutation is a type of mutation that doesn't alter the protein. So, gene expression best captures the overall process.

3. If there is no change in an object's velocity, the forces are what?

- A. Unbalanced forces
- B. Velocity
- C. Air Resistance
- D. Balanced forces

When an object's velocity doesn't change, there is no net force acting on it. That means all the forces cancel out and the sum of the forces is zero, which describes balanced forces. If forces were unbalanced, there would be a net force and the object would accelerate, changing its velocity. Velocity is not a force, and air resistance is just one possible force; it only defines the motion state if it's balanced by other forces so that the total force is zero.

4. What is the term for how fast an object is moving, defined as distance traveled divided by the time taken?

- A. Velocity
- B. Speed**
- C. Acceleration
- D. Momentum

Speed is how fast an object moves, calculated as distance traveled divided by the time required. This is the exact way to describe how quickly something covers a distance, giving you the average rate of motion. The other terms describe different ideas: velocity adds a direction (how fast and which way), acceleration is the rate at which speed or velocity changes over time, and momentum combines mass with velocity. For example, traveling 100 meters in 5 seconds gives an average speed of 20 meters per second.

5. The material through which a wave travels. This can be a solid, liquid, or gas.

- A. Density
- B. Analog
- C. Medium**
- D. Digital

A medium is the substance through which a wave travels. Waves carry energy by making the particles of the medium vibrate and pass that motion along from one particle to the next, allowing the wave to move through solids, liquids, or gases. This is why sound can travel through air, water, or metal. Density describes how much mass is in a given volume, not the carrier of the wave, and analog and digital refer to how information is represented rather than what carries a wave.

6. What term is the distance between two successive crests?

- A. Hertz
- B. Wavelength**
- C. Amplitude
- D. Frequency

The distance between two successive crests is called wavelength. It describes how long one complete wave is in space, usually measured in meters. You can picture it as the length from one peak to the next peak in a ripple. Frequency, on the other hand, tells you how many crests pass a fixed point each second and is measured in Hertz. Amplitude is how tall the crest is (the wave's height). Hertz is the unit used for frequency, not a distance. So the term for the space from crest to crest is wavelength.

7. What term describes an explanation that has been repeatedly tested and supported by extensive evidence?

- A. Evolution
- B. Genetic Variation
- C. Mutations

D. Theory

In science, a well-supported idea that has withstood extensive testing is called a theory. A theory ties together many observations and experimental results, helps scientists understand why things happen, and makes predictions that can be tested with new data. Evolution fits this description as a broad framework describing how populations change over time, supported by evidence from fossils, genetics, and observed variation. Genetic variation and mutations are important processes that drive change, but they describe mechanisms, not the label for a tested, evidence-backed idea. So the best term for a repeatedly tested and well-supported idea is theory.

8. Which term describes an organism's genetic makeup?

- A. Phenotype
- B. Genetic variation
- C. Chromosome

D. Genotype

Genotype is the genetic makeup—the specific genes and alleles an organism carries. It acts as a blueprint that, together with the environment, helps determine traits. Observable traits form the phenotype, which can differ from the genotype because of environmental influences. Chromosomes are the carriers that hold genes, not the makeup itself, and genetic variation refers to differences in DNA among individuals rather than the makeup of one organism.

9. A layer of lava that erupts onto the Earth's surface and hardens is called?

- A. Lava flow
- B. Magma intrusion

C. Extrusion

D. Sill

When magma erupts onto the surface and then cools into solid rock, the process is extrusion. Extrusion describes lava reaching and erupting on the surface and forming a new rock layer as it hardens. A lava flow is just molten rock moving across the surface before it solidifies, not the act of forming a new surface layer. Intrusion refers to magma that solidifies underground, with dikes like sills forming underground sheets between rock layers. So the term that fits a lava erupting onto the surface and then hardening is extrusion.

10. When a wave bounces off a surface that it cannot pass through. This does not change the speed or frequency of the wave, but the wave can be flipped upside down.

- A. Diffraction
- B. Wavelength
- C. Amplitude
- D. Reflection**

Reflection is what happens when a wave meets a boundary it cannot pass through. It bounces back into the original medium, keeping the same speed and frequency because the wave continues in the same medium with the same oscillation rate. The boundary can impose a phase change, and when the boundary acts like a fixed end, the reflected wave inverts, so a crest becomes a trough and the wave appears flipped upside down. The direction follows the rule that the angle of incidence equals the angle of reflection, so the path after bouncing is a mirror of the incoming path.

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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://cast8thgrade.examzify.com>

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

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