GRADE 11 PHYSICS PRACTICE EXAM (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

1. **Which particle is primarily responsible for sustaining the chain reaction in fission?**

   A. Protons

   B. Neutrons

   C. Electrons

   D. Photons

2. **Doubling the velocity of an object with constant mass changes KE how?**

   A. It doubles

   B. It stays the same

   C. It quadruples

   D. It halves

3. **How long does it take for an object starting from rest to fall 10 m in vacuum (no air resistance)?**

   A. 0.99 s

   B. 2.22 s

   C. 3.15 s

   D. 1.43 s

4. **A position-time graph with a horizontal line indicates the object has what velocity during that interval?**

   A. Nonzero velocity

   B. Zero velocity

   C. Nonzero acceleration

   D. Increasing speed

5. **In a train that suddenly stops, a drink ends up in your lap. What force is responsible for its motion?**

   A. The force of the table acting on the drink

   B. The force of the tracks on the wheels

   C. There is no force acting on the drink responsible for its motion

   D. The force of the wheels on the track

6. When a cheerleader is thrown vertically upward into the air, which quantity increases as she rises?

A. Gravitational Potential Energy

B. Speed

C. Kinetic Energy

D. Acceleration

7. Which wave property most affects the intensity or loudness of sound?

A. Period

B. Frequency

C. Amplitude

D. Speed

8. If only conservative forces act on a system, what happens to the total mechanical energy?

A. Remains Constant

B. Increases

C. Decreases

D. Becomes Zero

9. In a one-dimensional perfectly elastic collision between a 1 kg block moving at 3 m/s and a 2 kg block at rest, what are the final velocities?

A. v1f = -1 m/s, v2f = 2 m/s

B. v1f = 3 m/s, v2f = 0 m/s

C. v1f = 1 m/s, v2f = -2 m/s

D. v1f = 0 m/s, v2f = 3 m/s

10. If equal masses are given the same amount of heat, the object with greater heat capacity will experience a smaller change in temperature.

A. Greater temperature rise

B. Smaller temperature rise

C. Same temperature rise

D. Cannot be determined

Answers

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

Explanations

1. Which particle is primarily responsible for sustaining the chain reaction in fission?

A. Protons

B. Neutrons

C. Electrons

D. Photons

Neutrons are the particle that drives the chain reaction in fission. When a heavy nucleus fissions, it splits into smaller fragments and releases energy along with several neutrons. Those free neutrons can travel and collide with other fissile nuclei, causing them to fission as well. This sequence lets the reaction continue without additional external input, as long as enough neutrons survive to trigger further fissions. Charged particles like protons would face strong electrostatic repulsion from the positively charged nuclei, making it hard to induce fission in neighboring atoms. Electrons don't play a role in initiating fission cascades, and photons, while they can interact with matter, do not efficiently sustain a fission chain reaction. The effectiveness of a sustained chain relies on neutrons being produced and able to propagate to other nuclei, which is why neutrons are the correct answer.

2. Doubling the velocity of an object with constant mass changes KE how?

A. It doubles

B. It stays the same

C. It quadruples

D. It halves

Doubling the velocity while mass stays the same makes kinetic energy increase fourfold. Kinetic energy is KE = 1/2 m v^2, so if velocity becomes 2v, KE becomes 1/2 m (2v)^2 = 1/2 m 4v^2 = 4 × (1/2 m v^2). The energy required to reach that speed scales with the square of speed, not linearly, so the energy quadruples. The other possibilities would imply a linear change or no change, which doesn't match the v^2 dependence.

3. How long does it take for an object starting from rest to fall 10 m in vacuum (no air resistance)?

A. 0.99 s

B. 2.22 s

C. 3.15 s

D. 1.43 s

In this situation, gravity provides a constant downward acceleration with no air resistance, and the object starts from rest. The distance fallen under constant acceleration from rest is s = (1/2) g t^2. Rearranging gives t = sqrt(2s/g). Plugging in s = 10 m and g ≈ 9.8 m/s^2: 2s/g = 20 / 9.8 ≈ 2.0408, and t ≈ sqrt(2.0408) ≈ 1.43 s. So it takes about 1.43 seconds to fall 10 meters in vacuum. For context, that time would correspond to a fall of roughly 4.9 m after 1.0 s, or about 24 m after 2.22 s, illustrating how distance grows with the square of time.

4. A position-time graph with a horizontal line indicates the object has what velocity during that interval?

A. Nonzero velocity

B. Zero velocity

C. Nonzero acceleration

D. Increasing speed

Velocity is given by the slope of a position-time graph. A horizontal line means position does not change as time passes, so the slope is zero. Therefore the velocity during that interval is zero—the object is at rest. Since the velocity stays zero, the acceleration is also zero in that interval. If the line were tilted, that would indicate a nonzero velocity; if the slope changed over time, that would indicate a nonzero acceleration or increasing speed.

5. In a train that suddenly stops, a drink ends up in your lap. What force is responsible for its motion?

A. The force of the table acting on the drink

B. The force of the tracks on the wheels

C. There is no force acting on the drink responsible for its motion

D. The force of the wheels on the track

The main idea is inertia: an object in motion stays in motion unless a net external force acts on it. When the train suddenly slows, the drink keeps moving forward at the train's previous speed because nothing is applying a horizontal force to change its motion at that instant. The force that stops the train acts on the train itself (via the tracks), not on the drink. As a result, relative to the train, the drink appears to surge forward into your lap. Any subsequent slowing of the drink would come from friction with your lap or air resistance, not from the initial forward motion being caused by a force on the drink.

6. When a cheerleader is thrown vertically upward into the air, which quantity increases as she rises?

A. Gravitational Potential Energy

B. Speed

C. Kinetic Energy

D. Acceleration

Gravitational potential energy increases with height in a gravitational field. As the cheerleader rises, her height above the reference point grows, so $U = mgh$ becomes larger. The upward motion slows because gravity does negative work on her, so her speed and thus kinetic energy decrease. In an idealized, air-free scenario, the decrease in kinetic energy exactly matches the increase in potential energy, keeping total mechanical energy constant. Gravity's acceleration itself stays about g downward and does not increase as she goes higher, so acceleration isn't the quantity that rises.

7. Which wave property most affects the intensity or loudness of sound?

A. Period

B. Frequency

C. Amplitude

D. Speed

Loudness depends on how much energy the sound wave carries, which is determined mainly by its amplitude. The amplitude of a sound wave corresponds to how large the pressure variations are as the wave travels through air. Larger pressure fluctuations mean more energy being transported per unit area each second, so the intensity—and thus the perceived loudness—increases. In fact, for sound waves the intensity is proportional to the square of the amplitude of the pressure fluctuations, so doubling the amplitude makes the sound about four times as intense. Period and frequency set how often cycles occur and the pitch of the sound, not how much energy is carried. Speed describes how fast the wave travels through a medium, which changes with the medium but not the energy per unit time carried by the wave. That's why amplitude is the main factor affecting how loud a sound is.

8. If only conservative forces act on a system, what happens to the total mechanical energy?

A. Remains Constant

B. Increases

C. Decreases

D. Becomes Zero

The total mechanical energy, which is the sum of kinetic and potential energy, stays the same when only conservative forces act. Conservative forces perform work that exactly converts between kinetic and potential energy, so the amount of energy in the system's motion plus its stored energy doesn't change overall. Mathematically, the work done by conservative forces equals the negative change in potential energy, and the work-energy theorem says the change in kinetic energy equals the work done. Put together, $\Delta K = -\Delta U$, so $\Delta(K + U) = 0$, meaning $E = K + U$ is constant. In practice, energy merely shifts between motion and position, as seen in a pendulum or a mass on a spring. If non-conservative forces were present, some energy would be lost to other forms (like heat), and the mechanical energy would not be constant.

9. In a one-dimensional perfectly elastic collision between a 1 kg block moving at 3 m/s and a 2 kg block at rest, what are the final velocities?

A. $v_{1f} = -1$ m/s, $v_{2f} = 2$ m/s

B. $v_{1f} = 3$ m/s, $v_{2f} = 0$ m/s

C. $v_{1f} = 1$ m/s, $v_{2f} = -2$ m/s

D. $v_{1f} = 0$ m/s, $v_{2f} = 3$ m/s

In a one-dimensional perfectly elastic collision, both momentum and kinetic energy are conserved, and the relative speed of the two bodies is preserved in magnitude but reverses direction. That means the difference between the final velocities satisfies $v_1 - v_2 = -(u_1 - u_2)$. Here, $m_1 = 1$ kg with $u_1 = 3$ m/s, $m_2 = 2$ kg with $u_2 = 0$. The initial relative speed is $u_1 - u_2 = 3$, so the final relative speed must be $v_1 - v_2 = -3$. Momentum conservation gives $1 \cdot 3 + 2 \cdot 0 = 1 \cdot v_1 + 2 \cdot v_2$, so $v_1 + 2v_2 = 3$. Solve the system: - $v_1 - v_2 = -3$ - $v_1 + 2v_2 = 3$ From the first, $v_1 = v_2 - 3$. Sub into the second: $(v_2 - 3) + 2v_2 = 3$ $3v_2 - 3 = 3$ $v_2 = 2$, so $v_1 = 2 - 3 = -1$. Interpretation: the lighter block rebounds backward at 1 m/s, and the heavier block moves forward at 2 m/s.

10. If equal masses are given the same amount of heat, the object with greater heat capacity will experience a smaller change in temperature.

A. Greater temperature rise

B. Smaller temperature rise

C. Same temperature rise

D. Cannot be determined

The key idea is how heat changes temperature through heat capacity. The amount of heat added is related to the temperature rise by $Q = C\,\Delta T$, where C is the heat capacity. For equal masses, a larger heat capacity means a larger C, so the same amount of heat gives a smaller temperature change since $\Delta T = Q / C$. Intuitively, heat capacity measures how much energy is needed to raise the temperature by one degree; the object that requires more energy per degree will warm less for the same fixed amount of heat. So the object with greater heat capacity indeed experiences a smaller change in temperature.

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://grade11physics.examzify.com

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