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.

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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. **A particle has a straight-line position-time graph with slope 5 m/s. What is its velocity?**

   A. 5 m/s

   B. -5 m/s

   C. 0 m/s

   D. 10 m/s

2. **A 2 kg block slides down a 2 m high frictionless track. What is its speed at the bottom? (g = 9.8 m/s^2)**

   A. 5.6 m/s

   B. 6.26 m/s

   C. 7.0 m/s

   D. 8.5 m/s

3. **The acceleration of a moving object is always in the direction of the**

   A. Initial velocity

   B. Final velocity

   C. Net force

   D. Frictional force

4. **A gas expands at constant pressure P = 1.0×10^5 Pa with ΔV = 0.01 m^3. What is the work done by the gas?**

   A. 100 J

   B. 500 J

   C. 5000 J

   D. 1000 J

5. **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

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6. What is the expression for kinetic energy?

A. m g h

B. F d

C. m v

D. 1/2 m v^2

7. The capacity to do work is known as which quantity?

A. Work

B. Efficiency

C. Power

D. Energy

8. Which of the following is a non-contact force?

A. Friction

B. Pushing with a hand

C. Gravity

D. Normal force

9. Which statement best describes mechanical waves in fluid media?

A. Liquids are less efficient at transmitting waves because they are denser and dampen effects

B. Gases transmit waves more efficiently because of free motion

C. Denser fluids such as liquids and compressed gases transmit waves more efficiently because molecules are closer

D. Mechanical waves cannot travel through fluid media

10. In ΔU = Q − W, with Q = −50 J and W = 30 J, ΔU equals?

A. -50 J

B. -30 J

C. -80 J

D. 0 J

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Answers

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

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Explanations

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1. A particle has a straight-line position-time graph with slope 5 m/s. What is its velocity?

A. 5 m/s

B. -5 m/s

C. 0 m/s

D. 10 m/s

On a position-time graph, the velocity is given by the slope of the line. A straight-line graph means the velocity is constant, and the slope is 5 m/s. Since the slope is positive, the velocity is +5 m/s, meaning the particle is moving in the positive direction at 5 meters per second. If the slope were negative, it would be -5 m/s; if the slope were zero, the velocity would be 0 m/s; and a steeper slope like 10 m/s would correspond to a faster velocity of 10 m/s.

2. A 2 kg block slides down a 2 m high frictionless track. What is its speed at the bottom? (g = 9.8 m/s^2)

A. 5.6 m/s

B. 6.26 m/s

C. 7.0 m/s

D. 8.5 m/s

On a frictionless track, mechanical energy is conserved. The block starts with gravitational potential energy m g h, and as it slides down, that energy becomes kinetic energy (1/2) m v^2. With no energy lost, m g h = (1/2) m v^2. The mass cancels, giving v = sqrt(2 g h). Substituting g = 9.8 m/s^2 and h = 2 m: v = sqrt(2 × 9.8 × 2) = sqrt(39.2) ≈ 6.26 m/s. So the speed at the bottom is about 6.26 m/s. This speed would be the same for any mass on an ideal frictionless track dropping the same height. If friction were present, some energy would dissipate as heat, yielding a smaller final speed.

3. The acceleration of a moving object is always in the direction of the

A. Initial velocity

B. Final velocity

C. Net force

D. Frictional force

Acceleration is the rate at which velocity changes, so it points in the direction in which the velocity is changing. By Newton's second law, acceleration is in the same direction as the net force acting on the object (a = F_net / m). The current or final direction of velocity doesn't set where acceleration points; it's the sum of all forces that matters. Friction is just one force and may or may not be the dominant force—what matters is the net force. If the net force points forward, acceleration points forward; if it points backward, acceleration points backward.

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4. A gas expands at constant pressure P = 1.0×10^5 Pa with ΔV = 0.01 m^3. What is the work done by the gas?

A. 100 J

B. 500 J

C. 5000 J

D. 1000 J

When a gas expands against a constant external pressure, the work it does is given by W = P ΔV. Here, P = 1.0×10^5 Pa and ΔV = 0.01 m^3, so W = (1.0×10^5)(0.01) = 1.0×10^3 J, i.e., 1000 joules. The positive value indicates the gas is doing work on the surroundings during the expansion.

5. 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.

6. What is the expression for kinetic energy?

A. m g h

B. F d

C. m v

D. 1/2 m v^2

Kinetic energy is the energy of motion, and it depends on both how heavy the object is and how fast it's moving. The amount of energy stored in a moving object is given by KE = 1/2 m v^2, so you can see that doubling the speed makes the energy quadruple, while doubling the mass doubles the energy. This squared relationship comes from how work changes the motion: the work done on an object to accelerate it builds up its kinetic energy, and when you work through the math with F = m a, you arrive at KE = 1/2 m v^2. The other expressions correspond to different concepts. m g h is gravitational potential energy, energy stored due to height in a gravitational field. F d is the work done by a force over a distance, which can equal kinetic energy in a specific situation but is not the universal formula for kinetic energy itself. m v is momentum, not energy.

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7. The capacity to do work is known as which quantity?

A. Work

B. Efficiency

C. Power

D. Energy

Energy is the capacity to do work. It means the ability to cause change or move something, even if the work hasn't been carried out yet. Energy can come in many forms—stored chemical energy, gravitational potential energy, kinetic energy of motion, thermal energy, and more—and it can be transformed from one form to another to perform work. The reason this is the right choice is that the other terms describe different ideas: work is the actual transfer of energy when a force moves an object through a distance, power is the rate at which that work (or energy transfer) happens, and efficiency is the ratio of useful work to the energy put in. So the quantity that represents the capacity to do work is energy.

8. Which of the following is a non-contact force?

A. Friction

B. Pushing with a hand

C. Gravity

D. Normal force

Non-contact forces act without physical touch between the objects involved. Gravity fits this, because it pulls masses toward each other through space via the gravitational field, so the Earth can attract you even though there isn't a direct contact interaction at every moment. The other forces need contact to occur: friction is the resistive force that acts where two surfaces are in contact, a push with a hand requires your hand touching the object to transfer momentum, and the normal force is the support force from a surface on an object, again arising from contact between the surface and the object.

9. Which statement best describes mechanical waves in fluid media?

A. Liquids are less efficient at transmitting waves because they are denser and dampen effects

B. Gases transmit waves more efficiently because of free motion

C. Denser fluids such as liquids and compressed gases transmit waves more efficiently because molecules are closer

D. Mechanical waves cannot travel through fluid media

Mechanical waves move energy through a medium by pushing and pulling neighboring particles. In fluids, how easily this energy is transferred depends on how closely packed the molecules are and how hard they are to compress (the medium's stiffness). When molecules are closer together in a denser fluid, a disturbance can be transmitted to neighboring molecules more quickly, so the wave can propagate with less loss of energy per distance. Liquids have high density and appreciable stiffness, so they transfer mechanical waves, like sound, quite effectively. If you compress a gas, its density increases and the medium becomes stiffer to compression, which also improves transmission of the wave. The overall idea is that greater molecular proximity in the fluid enhances coupling and energy transfer, leading to more efficient wave propagation. Very dilute gases, with molecules far apart, tend to transmit waves less efficiently.

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10. In ΔU = Q − W, with Q = −50 J and W = 30 J, ΔU equals?

A. -50 J

B. -30 J

C. -80 J

D. 0 J

The change in internal energy is ΔU = Q − W. Here heat is leaving the system by 50 J (Q = -50 J) and the system does 30 J of work on the surroundings (W = 30 J). So ΔU = (-50) − 30 = -80 J. This means the internal energy decreases by 80 joules. The other numbers would only occur if the work or heat values were different (for example, if no work were done, ΔU would be -50 J; if the system did 0 J of work, ΔU would still be -50 J, etc.), but with the given values the result is -80 J.

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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://grade11physics.examzify.com

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

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