Year 10 Force and Motion Practice Test (Sample)

Study Guide

Everything you need from our exam experts!

Table of Contents

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. Unbalanced forces have what in a force diagram?

A. Equal Length Arrows

B. Balanced Forces

C. Forces Cancel to Zero

D. Unequal Length Arrows

2. When an object is falling with constant velocity, what have we reached?

A. Steady velocity

B. Maximum velocity

C. Free fall

D. Terminal velocity

3. Which quantity describes how far an object has travelled?

A. Time

B. Distance

C. Speed

D. Velocity

4. Which is a valid reason to include a graph title?

A. To improve color

B. To attach legend

C. To indicate the axis labels

D. To identify the data represented

5. Which force prevents you from sinking into the ground?

A. Gravity

B. Friction

C. Buoyancy

D. Support

6. If the same amount of force is applied to two similar objects that have different masses, the smaller object will accelerate _____.

A. Slower

B. Not move

C. Same acceleration

D. Faster

7. In a distance-time graph, speed/velocity is represented by the ...

A. Line

B. Slope

C. Curve

D. Area

8. Which of the following is the unit for speed?

A. meters per second

B. kilograms

C. newtons

D. seconds

9. Two horizontal forces acting on a moving object are called what?

A. Thrust and Friction

B. Gravity and Thrust

C. Support and Friction

D. Weight and Drag

10. Which quantity is defined as the distance traveled per unit of time?

A. Distance

B. Time

C. Velocity

D. Speed

Answers

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

Explanations

1. Unbalanced forces have what in a force diagram?

A. Equal Length Arrows

B. Balanced Forces

C. Forces Cancel to Zero

D. Unequal Length Arrows

Unbalanced forces show a net force acting on an object, so a force diagram will depict arrows that don't cancel each other out. Each force is drawn with an arrow whose length represents its size; when the forces are unbalanced, the arrows have unequal lengths (and directions) so that their vector sum isn't zero. The longer or dominant arrows pull in their direction, creating a net force that causes acceleration in that direction. If the forces were balanced, the arrows would effectively cancel and the net force would be zero, which isn't the case with unbalanced forces.

2. When an object is falling with constant velocity, what have we reached?

A. Steady velocity

B. Maximum velocity

C. Free fall

D. Terminal velocity

When something falls through air, drag increases with speed while gravity remains constant. So as the object speeds up, the upward drag grows until it balances the downward weight. At that moment there is no net force, so the acceleration is zero and the velocity stays the same as it continues to fall. This constant falling speed is what we call terminal velocity. It's different from free fall (which would occur with no air resistance and involve continuous acceleration), and from a vague "steady" or "maximum" velocity—the defining feature here is the balance of forces that sets a fixed, final speed. The exact value depends on the object's size and shape and the air density.

3. Which quantity describes how far an object has travelled?

A. Time

B. Distance

C. Speed

D. Velocity

The quantity that describes how far an object has travelled is distance. It measures the total length of the path walked or rolled, regardless of direction, so it's a scalar value that only has magnitude. Time tells us how long something lasts, not how far. Speed tells us how fast something moves—that is, distance divided by time—so it describes rate, not total distance. Velocity adds direction to speed, giving how quickly and in what direction the object moves; it's tied to displacement (the straight-line gap from start to end), which can be smaller than the actual distance travelled if the path isn't straight. For example, walking around a 100 m loop once covers 100 m of distance, but your displacement might be zero if you end where you started, and your average velocity would be zero even though you travelled a full loop. That shows why distance is the right quantity for "how far travelled."

4. Which is a valid reason to include a graph title?

A. To improve color

B. To attach legend

C. To indicate the axis labels

D. To identify the data represented

The main idea is that a graph title tells readers what the graph is about—the data being shown. A clear title identifies the data represented, so you know right away what topic or dataset the graph covers and, if possible, the time frame. For example, a title like "Average monthly rainfall in City X, 2020" tells you exactly what data you're looking at. Color, legends, and axis labels come from other parts of the graph. The title isn't about improving color, it doesn't attach a legend, and it doesn't specify the axis labels or their units. Those elements help with different aspects of understanding the graph, while the title serves to identify what data is represented.

5. Which force prevents you from sinking into the ground?

A. Gravity

B. Friction

C. Buoyancy

D. Support

When you stand on the ground, the surface pushes back on you with an upward contact force. This is the normal force, often called the support force. It acts perpendicular to the ground and balances your weight pulling you downward. Because these two forces cancel, you don't sink into the ground. Gravity pulls you down, but the ground's upward push prevents sinking. Buoyancy only comes into play in fluids, not on a solid surface. Friction acts along the surface and helps with sliding, not vertical support, so it doesn't stop you from sinking.

6. If the same amount of force is applied to two similar objects that have different masses, the smaller object will accelerate _____.

A. Slower

B. Not move

C. Same acceleration

D. Faster

When you push with the same force on objects that differ in mass, acceleration follows a = F/m. With the force the same, the lighter object has a smaller mass in the denominator, so the result is a larger acceleration. Inertia is higher for the heavier object, so it resists pushing changes in motion more, meaning it speeds up less under the same push. Therefore, the smaller object will accelerate faster.

7. In a distance-time graph, speed/velocity is represented by the ...

A. Line

B. Slope

C. Curve

D. Area

Speed is the rate at which distance changes with time, so in a distance–time graph the slope of the line represents speed. A steeper line means a faster speed, and a flat (horizontal) line means no movement. If the line curves, the slope changes, giving the instantaneous speed at each point. The line itself isn't speed or distance; what matters for speed is how quickly distance increases as time passes.

8. Which of the following is the unit for speed?

A. meters per second

B. kilograms

C. newtons

D. seconds

Speed is how fast something moves, defined as distance traveled per unit of time. In SI units, distance is measured in meters and time in seconds, so the unit for speed is meters per second (m/s). This unit tells you how many meters are covered each second. Kilograms measure mass, not motion; newtons measure force; seconds measure time, not speed. For example, if you travel 20 meters in 2 seconds, your speed is 10 m/s.

9. Two horizontal forces acting on a moving object are called what?

A. Thrust and Friction

B. Gravity and Thrust

C. Support and Friction

D. Weight and Drag

Two horizontal forces on a moving object are thrust and friction. Thrust pushes the object forward along its path, while friction acts along the surface to oppose that motion. Gravity and weight pull downward, so they're vertical, not horizontal, and the normal (support) force from a surface is perpendicular to the surface. Drag is a resistive force that can act horizontally, but the pair that clearly represents two horizontal forces in the options is thrust and friction.

10. Which quantity is defined as the distance traveled per unit of time?

A. Distance

B. Time

C. Velocity

D. Speed

Speed is the quantity defined as distance traveled per unit of time. It describes how fast something moves without regard to direction, calculated as distance divided by time. For example, moving 200 meters in 20 seconds gives a speed of 10 meters per second. Distance is the total ground covered, not a rate; time is how long the motion lasts. Velocity is similar to speed but includes direction, defined as displacement divided by time, so it can point in a specific direction. That's why the term that matches distance per unit time is speed.

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://yr10forceandmotion.examzify.com

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