

## Motion - Physics Questions with detailed Solutions

Questions on the motion topic in physics are a common type of question that students are asked to answer in competitive exams. These questions can be challenging, but they can also be very rewarding to solve. To solve motion questions, it is important to understand the different types of motion, as well as the equations of motion. Once you have a good understanding of these concepts, you can start to tackle motion questions.

With a little practice, you will be able to solve motion questions with ease. So, we have attached 10 questions of Motion for you to practice with. You should aim to answer these questions in less than half a minute for each.

## Questions on Motion

You can also download the Motion questions and answers pdf. Just click on the **Download PDF** button. So let's start with the very first question.

**Q:1** Riding a bicycle is a good example of which of the following Newton's Laws of Motion?

1. Newton's Second Law of Motion
2. Newton's First Law of Motion
3. Newton's Third Law of Motion
4. None of the above

(**Difficulty: 2, Estimated Time: 10 Seconds**) It was very easy, right?

**Q:2** \_\_\_ is the motion of an object thrown into the air, subject to only the acceleration of gravity.

1. Projectile Motion
2. Oscillatory Motion
3. Rotary Motion
4. Linear Motion

(**Difficulty: 2, Estimated Time: 10 Seconds**) Did you guess it right? It was easy too!

**Q:3** Which among the following laws of physics propose that an object at rest stays at rest and an object in motion stays in motion unless acted upon by an unbalanced force?

1. Newton's First Law of Motion
2. Newton's Second Law of Motion

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3. Newton's Third Law of Motion

4. Pascal's Law

**(Difficulty: 3, Estimated Time: 15 Seconds)** This is a quite interesting question. Did you guess it right?

**Q:4** Identify the type of wave in which the movement of the particles is parallel to the motion of the energy.

1. Longitudinal waves

2. Transverse waves

3. Surface waves

4. None of these

**(Difficulty: 3, Estimated Time: 25 Seconds)** Now, this one was tricky. Have you got all your questions correct so far?

**Q:5** The angular displacement of an object in rotational motion is described using \_\_\_\_.

1. Radian

2. Second

3. Meter

4. cm

**(Difficulty: 3, Estimated Time: 20 Seconds)** We're halfway through. We will increase the difficulty level from now.

**Q:6** The component of force acting on an object to keep it moving in curvilinear motion along with a circular path, directed toward the axis of rotation is called \_\_\_\_\_.

1. Applied Force

2. Spring Force

3. Centrifugal Force

4. Centripetal Force

**(Difficulty: 3, Estimated Time: 20 Seconds)** Do you know the difference between Centrifugal force and centripetal force? Well, it's not a hint!

**Q:7** In Kepler's Laws of Planetary Motion, which law is also known as 'The law of equal areas'?

1. First Law

2. Second Law

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3. Third Law

4. Fourth Law

(**Difficulty:** 3, **Estimated Time:** 20 Seconds) Clock is ticking! Hurry up!

**Q:8** Motion of a piston in an automobile engine is an example of which type of motion?

1. Reciprocating Motions

2. Rotary Motion

3. Linear Motion

4. Simple Harmonic motion

(**Difficulty:** 2, **Estimated Time:** 10 Seconds) It's an easy one but a little bit tricky. Did you guess it right?

**Q:9** The speed of the Brownian motion is inversely proportional to

1. angle of the particles

2. speed of the motion

3. viscosity of the fluid

4. mass of the particles

(**Difficulty:** 4, **Estimated Time:** 25 Seconds) If you know the formula, you can get it right!

**Q:10** What is used to study objects in rapid periodic motion?

1. Submillimeter telescope

2. Angioscope

3. Galileoscopes

4. Stroboscope

(**Difficulty:** 4, **Estimated Time:** 20 Seconds) Try to eliminate the options, you will get the answer. Did you guess them all correctly?

## Answer Key

Let's check out your score in this test.

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1. (1)	2. (1)	3. (1)	4. (1)	5. (1)
6. (4)	7. (2)	8. (4)	9. (3)	10. (4)

Comment below your score, considering each question has 1 mark only. If you scored 8 to 10, congratulations! You are one step closer to selection. If you have scored 5 to 8 marks, then you are doing well, keep it up. If you have scored less than 5 marks then you need to work a little harder on this subject. But don't worry, we are here to help you master the subject.

Let's check the answers and solutions and try to find out what went wrong.

## Answers and Solutions

**Q:1** The correct answer is **Option 1** i.e. **Newton's Second Law of Motion**

Riding a bicycle is a good example of Newton's Second Law of Motion.

Newton's first law states that every object will remain at rest or in uniform motion until and unless an external force is applied to it.

Newton's second law states that the rate of change of momentum of a body is directly proportional to the force applied to it.

Newton's third law states that for every action there is an equal and opposite reaction.

**Q:2** The correct answer is **Option 1** i.e. **Projectile motion**

**Projectile Motion** is the motion of an object thrown or projected into the air, subject to only the acceleration of gravity.

In **Linear Motion**, the particles move from one point to another in either a straight line or a curved path.

**Rotary Motion** is the motion that occurs when a body rotates on its own axis.

**Oscillatory Motion** is the motion of a body about its mean position.

**Q:3** The correct answer is **Option 1** i.e. **Newton's First Law of Motion**

**First Law of Motion:** It states that an object at rest remains at rest and an object in motion remains in motion with the same speed and in the same direction unless acted upon by an unbalanced force.

**Second Law of Motion:** It states that the acceleration of an object is dependent upon two variables - the net force acting upon the object and the mass of the object.

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$$F = ma$$

Force = mass x acceleration

**Third Law of Motion:** It states that for every action, there is an equal and opposite reaction.

**Pascal's Law:** It states that pressure change at any point in a confined incompressible fluid is transmitted throughout the fluid such that the same change occurs everywhere.

**Q:4** The correct answer is **option 1** i.e. **Longitudinal waves**

The orientation of particle motion relative to the direction of energy propagation is one of the ways waves are characterized. There are three categories:

**Longitudinal waves - Movement of the particles is parallel to the motion of the energy.** Sound waves moving through the air is an example of this type of wave.

**Transverse waves** - Movement of the particles is at right angles (perpendicular) to the motion of the energy. Movement of a wave through a solid object like a stretched rope or a trampoline is an example of this type of wave.

**Surface waves** - particles travel in a circular motion. These waves occur at interfaces. Examples include waves in the ocean and ripples in a cup of water.

**Q:5** The correct answer is **option 1** i.e. **Radian**.

Rotational motion refers to anything spinning or moving in a circular path, in a fixed orbit. It is also called angular motion or circular motion.

**To describe the angular displacement of an object in rotational motion the natural unit radians ( $\pi$ ) is used since rotational motion involves studying circular paths.**

One revolution (360 degrees) equals  $2\pi$  radians.

**Q:6** The correct answer is **option 4** i.e. **Centripetal Force**.

The component of force acting on an object to keep it moving in curvilinear motion along a circular path, directed toward the axis of rotation is called Centripetal Force.

Centripetal Force defined by Isaac Newton in 1684.

Centripetal Force is a real force that keeps the object from flying out.

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Formula of Centripetal Force (F) =  $mac = mv^2/r$ .

**Q:7** The correct answer is **Option 2** i.e. **Second Law**

Kepler's second law is also known as the 'The law of equal areas'.

According to this law, a planet no matter where it is in its orbit, covers the same area of space in the same amount of time.

**Q:8** The correct answer is **Option 4** i.e. **Simple harmonic motion**

Motion of a piston in an automobile engine is an example of Simple harmonic motion.

Simple harmonic motion are oscillatory(motion that moves back and forth) and periodic (motion that repeats itself after an interval of time) types of motion.

In Simple harmonic motion, the restoring force of a moving object is directly proportional to the displacement of the object from its equilibrium position.

**Q:9** The correct answer is **Option 3** i.e **viscosity of the fluid**

Brownian motion refers to random movements displayed by microscopic particles suspended in fluids (liquids or gases) resulting from the impact of molecules of the surrounding medium.

The speed of the Brownian motion is inversely proportional to the viscosity of the fluid. The lower the viscosity of the fluid, the faster the Brownian movement.

**Q:10** The correct answer is **Option 4** i.e **Stroboscope**

A stroboscope is an instrument that uses an intense, high-speed light source for visual analysis of objects in periodic motion and for high-speed photography.

This device is used for viewing rapidly moving objects by creating an optical illusion that appears to slow down or stop motion.

So, this is it for today. Science is really fun when it comes to understanding the mechanism. We will meet again with another topic of Science. Till then, you can practice the questions again by downloading the PDF of Motion.