Practice Question Set For GCSE
Subject : Physics
Paper-1 Topic : Motion And Forces

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Name of the Student:_____
Max. Marks : 17 Marks **Time : 17 Minutes**

Q1.

An atom of mass 6.6×10^{-26} kg is moving with a velocity of 480 m / s.

Calculate the momentum of the atom.

(3)

momentum = ... kg m/s

(Total for question = 3 marks)

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Q2.

Figure 10 shows a small steel ball held at a height, *h*, above the ground.

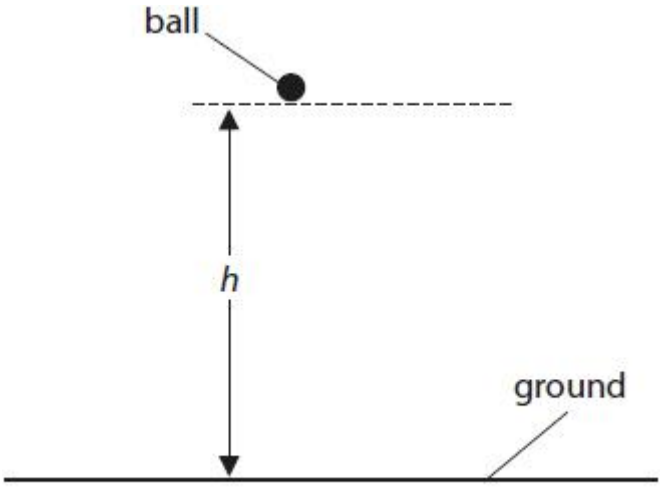


Figure 10

The ball is released and allowed to fall to the ground.

The height *h* is 1.4 m.

Calculate the time, *t*, for the ball to reach the ground.

Use the equation

$$t^2 = \frac{2h}{g}$$

g = 10 m/s^2

(2)

t = ... s

(Total for question = 2 marks)

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Q3.

A motorcycle is travelling at a velocity of 6.2 m/s.

The motorcycle accelerates at 2.5 m/s^2 until its velocity is 10 m/s.

(i) Calculate the time taken for this acceleration.

Use the equation

$$\text{time taken} = \frac{\text{change in velocity}}{\text{acceleration}}$$

(2)

time taken = ... s

(ii) The motor cycle now decelerates (slows down) from 10 m/s to a stop.

The deceleration is at a constant rate of 4.4 m/s^2.
Calculate the distance the motorcycle travels as it slows down to a stop.
Use the equation

$$v^2 - u^2 = 2 \times a \times x$$

(2)

distance = ... m

(Total for question = 4 marks)

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Q4.

Figure 14 shows a gymnast landing on a mat and coming to rest.

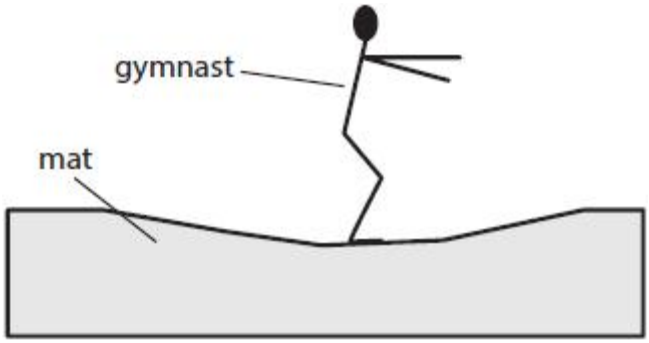


Figure 14

The gymnast has a mass of 53 kg.

The gymnast lands on the mat with a velocity of 4.0 m/s.

The average force exerted by the mat on the gymnast is 3500 N.

Calculate the time taken for the gymnast to come to rest.

Give your answer to an appropriate number of significant figures.

Use the equation

$$\text{force} = \frac{\text{change in momentum}}{\text{time}}$$

(3)

time = ... s

(Total for question = 3 marks)

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Q5.

The Asteroid Belt is part of our Solar System.

Vesta is an asteroid in the Asteroid Belt.

Vesta has an orbital speed of 1.9×10^4 m/s.

Vesta travels a distance of 2.2×10^{12} m when it orbits the Sun once.

Calculate the time taken for Vesta to orbit the Sun once.

(2)

time = ... s

(Total for question = 2 marks)

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Q6.

A car travelling at 15 m/s comes to rest in a distance of 14 m when the brakes are applied.

Calculate the deceleration of the car.
Use an equation selected from the list of equations at the end of this paper.

(3)

deceleration = ... m/s^2

(Total for question = 3 marks)

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