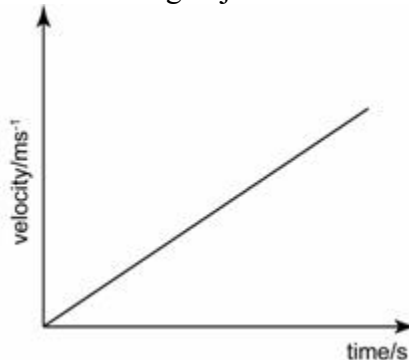


- 1) Motion
 - 2) Forces and Laws of motion
 - 3) Gravitation
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Section – A (01 marks each)

1. Velocity – time graph of a moving object is given in the following diagram. What conclusion can be drawn about the moving object?



2. Name the physical quantity whose unit is (i) kgms^{-2} (ii) $\text{Nm}^2\text{kg}^{-2}$
3. What can you say about the motion of an object if its speed-time graph is a straight line parallel to the time axis?
4. What is the quantity which is measured by the area occupied below the velocity-time graph?
5. A body is moving with a velocity of 10 m/s. If the motion is uniform, what will be the velocity after 10 s?
6. What would be acceleration of a body if its velocity-time graph is a line parallel to the time axis?
7. Name the principle on which a rocket and jet plane works?
8. Which law of motion gives the measure of force?
9. Define 1 newton force.
10. Name the physical quantity that corresponds to the rate of change of momentum.
11. At what place on the earth's surface is the weight of a body maximum?
12. If a mass of a body is 9.8 Kg on earth, what would be its mass on the moon?
13. What is initial velocity of a body when it is dropped from a height and final velocity when it is thrown vertically upwards?
14. What keeps the moon in uniform circular motion around the earth?
15. How is gravitation different from gravity?

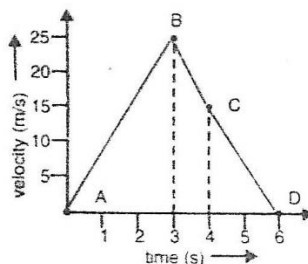
Section – B (02 marks each)

16. A bullet is fired into a wall with a velocity of 50 m/s. If the bullet stops at the depth of 10 cm inside the wall, find the retardation provided by the wall.
17. Distinguish between speed and velocity.
18. Distinguish between velocity and acceleration.
19. An object undergoes an acceleration of 10 m/s^2 starting from rest. Find the distance travelled by it in 5 sec.

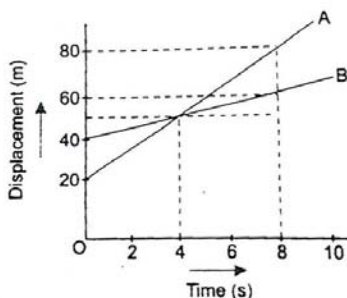
- 1) Motion
- 2) Forces and Laws of motion
- 3) Gravitation

20. From the velocity-time graph given below, Calculate:

- a) The acceleration from A to B
- b) The distance covered by the object in 3 sec.



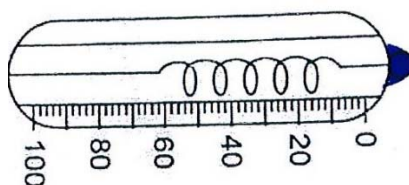
21. Mass of a planet is twice that of the Earth and its radius is four times of the Earth. Find the value of 'g' on its surface.
22. A shopkeeper has three toys made up of plastic, steel and wood of same shape and volume. Which one of them has the highest inertia? Why.
23. From the position – time graph shown in the figure, find:
 - a) Velocity at 'A'
 - b) Velocity at 'B'
 - c) Meeting point and time of 'A' and 'B'



24. The distance moved by a student at different intervals of time, while walking to the school is given in the table below. Draw the distance – time graph for the motion of the student.

Time(s)	0	10	20	30	40	50
Distance(m)	0	15	30	45	30	60

25. What is the physical quantity measured by a spring balance? Find the least count of the following spring balance:



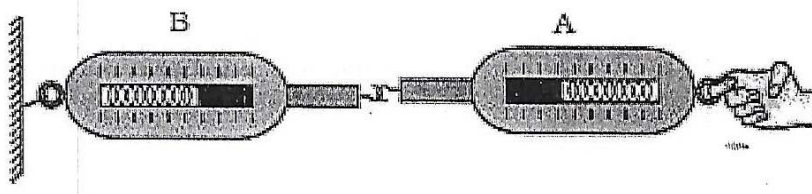
Physics Class IX

Revision Questions

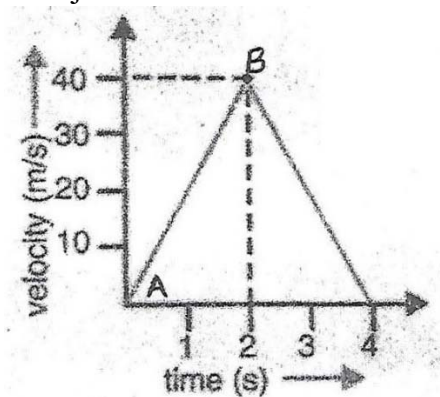
Chapters :

- 1) Motion
- 2) Forces and Laws of motion
- 3) Gravitation

26. Difference between thrust and pressure.
27. The stone is released from the top of a tower of height 19.6 m. Calculate its final velocity just before touching the ground. ($g = 9.8 \text{ m/s}^2$)
28. Look at the diagrams and answer the following questions:
 - a) When a force is applied through the free end of the spring balance 'A', the reading on the spring balance 'A' is 40 gwt. What will be the reading shown by the spring balance 'B'? Write the reason for your answer.



29. It is difficult to balance our body when we accidentally slip on a peel of a banana. Explain why?
30. From the velocity – time graph given below, calculate:
 - a) The acceleration from A to B
 - b) The distance covered by the object in 2 s

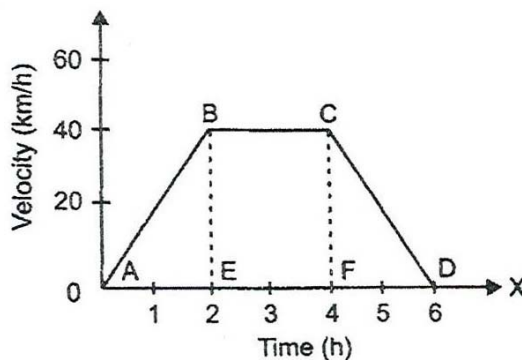


31. Derive the equation $v = u + at$ at graphically and numerically.
32. A cyclist goes around a circular track once every two minutes. If radius of the circular track is 105 m, calculate his speed.

- 1) Motion
 - 2) Forces and Laws of motion
 - 3) Gravitation
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Section – C (03 marks each)

33. Derive the equation $S=ut + \frac{1}{2} at^2$ using graphical method.
34. The velocity – time graph for an object is shown in the following figure.
 - a) Which part of the graph shows the accelerated motion? Calculate the acceleration.
 - b) Which part of graph shows retardation?
 - c) Calculate the distance travelled by the body in first two hours of journey.



35. State the universal law of gravitation. Calculate the new gravitation force between two objects when the distance between them is doubled.
36. List four differences between mass and weight of an object. An object weighs 294 N on the earth. What would be its mass on the Moon?
37. A stone is dropped from a height of 10 m from an unknown planet having $g = 20 \text{ m/s}^2$. Calculate the speed of stone when it hits the surface of planet. Also calculate the time it takes to fall through this height.
38. Derive the equation $v^2 = u^2 + 2as$ as using graphical method.
39. What do we mean by acceleration due to gravity? Derive an expression for acceleration due to gravity.
40. Mentioned any three effects of force on an object. Two objects of same mass having velocities ' v ' and ' $3v$ ' respectively are moving on a surface. Which of these two have greater momentum and why?
41. A ball is moving over a horizontal smooth surface with a constant velocity. Identify the forces acting on the ball. State Newton's first law of motion.
42. Starting from a stationary position, Rehan paddles his bicycle to attain a velocity of 6 m/s in 30 s. Then he applies brakes such that the velocity of the bicycle come down to 40 m/s in next 5 s. Calculate the acceleration of the bicycle in both the cases.
43. Two objects of masses 100 g and 200 g are moving along the same line direction with velocities of 2 m/s and 1 m/s, respectively. They collide and after the collision the first object moves at a velocity of 1.67 m/s. Determine the velocity of the second object.

- 1) Motion
 - 2) Forces and Laws of motion
 - 3) Gravitation
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Section – D (05 marks each)

44. a) State and derive Newton's second law of motion.
b) A bullet of 10 g strikes a sand bag at a speed of 103 m/s and gets embedded after travelling 5 cm. Calculate:
i) the resistive force exerted by the sand on the bullet.
ii) the time taken by the bullet to come to rest.
45. a) A stone is released from the top of a tower of height 19.6 m. Calculate its final velocity.
b) A stone is thrown vertically upward with an initial velocity of 40 m/s. Taking $g = 10 \text{ m/s}^2$, find the maximum height reached by the stone. What is the net displacement and the total distance covered by the stone?
46. A stone is allowed to fall from the top of a tower 100 m high and at the same time another stone is projected vertically upwards from the ground with a velocity of 25 m/s. Calculate when and where the two stones will meet.
47. Show that the weight of an object on the moon is $1/6^{\text{th}}$ of its weight on the earth.
48. a) Two objects, each of mass 1.5 Kg are moving in the same straight line but in opposite directions. The velocity of each object is 2.5 m/s before the collision during which they stick together. What will be the velocity of the combined object after the collision?
b) A bullet of mass 0.02 kg is fired from a gun weighing 7.5kg. If the initial velocity of the bullet is 200 m/s, calculate the speed with which the gun recoils?
49. A bullet of mass 10 g travelling horizontally with a velocity of 150 m/s strikes a stationary wooden block and comes to rest in 0.03 s. Calculate the distance of penetration of the bullet into the block. Also calculate the magnitude of the force exerted by the wooden block on the bullet.
50. a) Abdul, while driving to school, computes the average speed for his trip to be 20 km/h. On his return trip along the same route, there is less traffic and the average speed is 40 km/h. What is the average speed for Abdul's trip?
b) A motorboat starting from rest on a lake accelerates in a straight line at a constant rate of 3.0 m/s^2 for 8.0 s. How far does the boat travel during this time?