REVISION SHEET

SUBJECT: PHYSICS   **CLASS-IX**   **TERM 2**

Chapter-7 Motion

1. **Choose the correct option:**

i.   A body travels along a straight path from its initial position to a point 20m away and then returns back to its initial position. The change in the position of the body is _____ and the distance travel is _____.

   a) 20m, 40m   b) 40m, 40m

   c) 0m, 40m   d) 0 m, 0m

ii. The direction of acceleration is same as the direction of _____.

   a) displacement   b) velocity   c) change in velocity   d) all of these

2. **In each of the following questions, two statements are given one labelled. Assertion**

   (A) and the other labelled Reason (R). Select the correct answer to these questions the

   codes (a), (b), (c) and (d) as given below:

   a) Both A and R are true, and R is correct explanation of the assertion.

   b) Both A and R are true, but R is not the correct explanation of the assertion

   c) A is true, but R is false

   d) A is false, but R is true.

   (i)   Assertion: The velocity and acceleration of a body can be opposite in directions.

         Reason: A body can be addressed as well as in motion at the same point of time with respect to different frames of reference.

   (ii) Assertion: An object projected vertically upwards with certain velocity falls back to its initial position after some time with the velocity whose magnitude is equal to the magnitude of the initial velocity of projection.
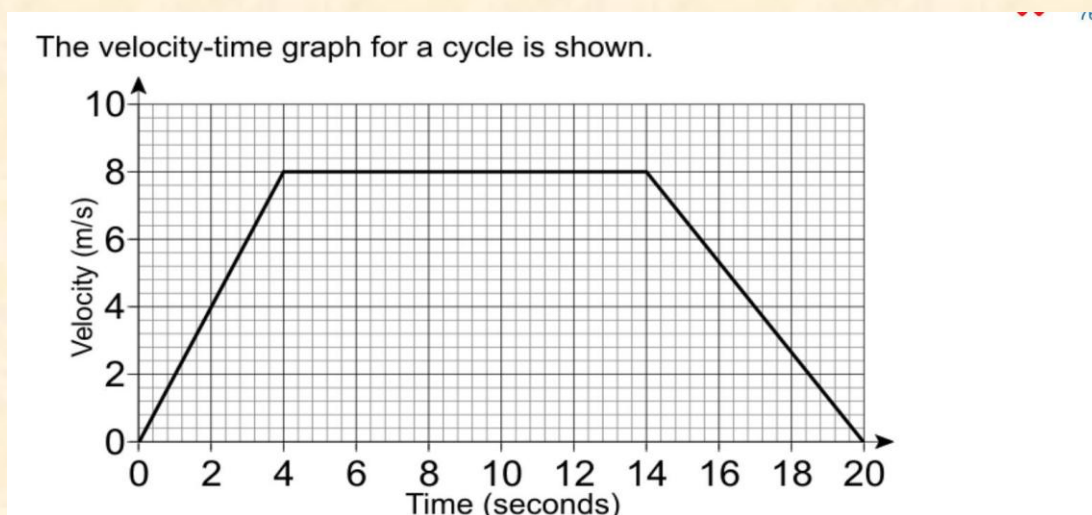
         Reason: The rate of change in the magnitude of velocity of a body traveling vertically upward will be equal to that while the body falls back to its initial position.
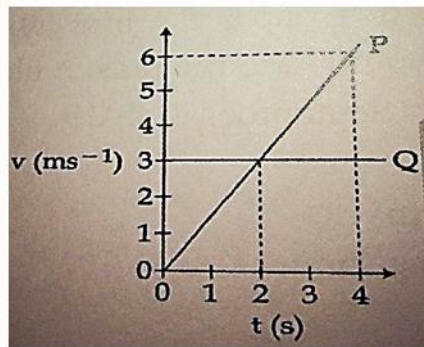
3. Answer the following questions.

1. Define and give an example for

   a) uniform Acceleration.

   b) non-uniform acceleration

2. The initial velocity of a body accelerated uniformly at the rate of 1.2 m/s^2 is 3.4 m/s. If the final velocity of the body after t seconds is 27.4m/s. Find the value of t.

3. Draw the following graphs:

       a) d-t graph for Uniform motion

       b) d-t graph for non-uniform motion

       c) v-t graph for zero acceleration

       d) v-t graph for uniform acceleration

       e) v-t graph for non- uniform retardation

4. Given below is the velocity-time graph for the motion of the car. What does the nature of the graph show? Also find the acceleration of the car.

The velocity-time graph for a cycle is shown.

   a) Calculate the acceleration when the object in

       (i) First 4 seconds

       (ii) Between 4 seconds and 14 seconds

       (iii)Between 14 seconds to 20 seconds

   b) Calculate the distance covered by the cyclist between 14 to 20 seconds

5. The motion of a scooter moving in straight line is shown in the given figure. Calculate the total distance covered by the scooter.

4. Answer the following case study-based questions

A bus starts from rest at a bus stop and moves along a straight road. It accelerates uniformly and reaches

a speed of 15 m/s in 30 seconds. The bus continues to move with this constant speed for the next

2 minutes. After this, the driver applies brakes and the bus comes to rest in 15 seconds.

(i) Identify the type of motion of the bus during different stages of its journey.

(ii) Calculate the acceleration of the bus during the first 30 seconds.

(iii) Calculate the distance covered by the bus during the accelerating phase.

Chapter-8 Force and Laws of motion

1. ## Choose the correct option:

    i. Linear momentum of an object is 250g cm/s. If the velocity of the object is 5m/s, then the mass of the object is

    a) 0.5 g   b) 5 kg   c) 0.5 mg   d) 5 mg

    ii. Force is the rate of change of _____

    a) acceleration   b) momentum

    c) velocity   d) displacement

2. **In each of the following questions, two statements are given one labelled. Assertion**

   (A) and the other labelled Reason (R). Select the correct answer to these questions the

   codes (a), (b), (c) and (d) as given below:

   a) Both A and R are true, and R is correct explanation of the assertion.

   b) Both A and R are true, but R is not the correct explanation of the assertion

   c) A is true, but R is false

d) A is false, but R is true.

    (i)   Assertion: A body moving over rough surface with a constant velocity do not require any external force.

        Reason: According to the first law of motion, a body continues to be in its initial state of rest or of uniform motion unless it is acted upon by some external force.

    (ii)   Assertion: Two bodies of different masses can possess same momentum.

        Reason: Momentum is the product of mass and velocity of body.

3. Answer the following questions.

1. Two balls, A and B of masses, m and 2m are in motion with velocities 2V and V respectively. Compare their inertia and their momentum.

2. A man falling on a cemented floor receives more injuries than a man falling on a sandy floor. Why?

3. State and explain Newton's Third Law of Motion with examples.

3. Give reason and give the law related to these statements

  (a) some of the leaves may get detached from a tree if we vigorously shake its branch.

  (b) It is difficult for a fireman to hold a hose which ejects large amount of water with high velocity.

5. A hammer of mass 500g moving at 50 m/s strikes a nail. The nail stops the hammer. In a very short time of 0.01s. What is the force of the nail on the hammer?

4. Answer the following case study-based questions

  Two strings X and Y are tied to the two opposite faces of the block as shown in figure. If we apply
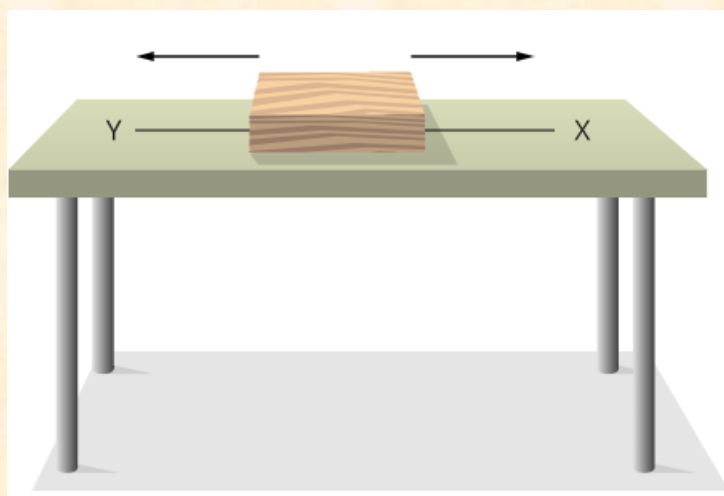
a force by pulling the string X, the block begins to move to the right. Similarly, if we pull the string

Y, the block moves to the left. But, if the block is pulled from both the sides with equal forces, the

block will not move. Such forces are called balanced forces and do not change the state of rest or

of motion of an object. Now, let us consider a situation in which two opposite forces of different

magnitudes pull the block. In this case, the block would begin to move in the direction of the greater

force. Thus, the two forces are not balanced and the unbalanced force acts in the direction the block

moves. This suggests that an unbalanced force acting on an object brings it in motion. Force is push

or pull.

(i)   What happens when a balanced force is acting on a moving object?

(ii) From above diagram if one person pulls from Y rope with 10N force and another person pull from X rope with 5N force, what is the net force acting on the box?

(iii) Differentiate between balanced and unbalanced force

Chapter-9 Gravitation

1. Choose the correct option:

   i.   What happens to the weight of an object as it moves away from the center of the Earth?

   a) It increases   b) It decreases   c) It remains the same   d) It becomes zero

   ii.   If an object floats in a liquid, the buoyant force acting on it is:

   a) greater than the weight of the object.   b) less than the weight of the object.

   c) equal to the weight of the object.   d) zero.

2. In each of the following questions, two statements are given one labelled. Assertion

   (A) and the other labelled Reason (R). Select the correct answer to these questions the

   codes (a), (b), (c) and (d) as given below:

   a) Both A and R are true, and R is correct explanation of the assertion.

   b) Both A and R are true, but R is not the correct explanation of the assertion

   c) A is true, but R is false

   d) A is false, but R is true.

(i)   Assertion: An iron nail sinks in water, but an iron ship floats.

Reason: The buoyant force depends only on the density of the liquid.

(ii)   Assertion: Pressure exerted by liquid on the bottom of a container increases with increase in density of

the liquid.

Reason: Pleasure inserted by liquid on the bottom of the container increases with the increase in the

depth of the liquid.

3. Answer the following questions.

1. The earth attracts an apple. Does the apple also attract the earth? If it does, why does the earth not

move towards the apple?

2. A man falling on a cemented floor receives more injuries than a man falling on a sandy floor.

Why?

3. (a) What is free fall?

(b) Write the equation of motion if an object is thrown vertically upwards direction.

4. (i) If the acceleration due to gravity on Mars is 3.8 m/s^2, then what would be the weight of an

object on mars which has the mass of 10 kg on earth?

(ii) What would be its weight on earth?

(iii) What will be the percentage difference of your weight on earth and on mars?

5. A particle is thrown up with a velocity of 50m/s.

(a) What will be its velocity at the highest point?

(b) How high would the particle rise?

(c) What time would it take to reach the highest point?

4. Answer the following case study-based questions

A group of students designed a simple water lifting system using a motor in their school to lift
water from a tank 10 meters below the ground level to the roof of the school building. The motor
is rated 1 kW and operates for 20 minutes each day to lift 500 liters of water.

(i) What is the work done by the motor in lifting water each day?

(ii) Calculate the power used in joules per second.

(iii) Identify the energy transformation taking place in this system

Chapter-10 Work and Energy

1. ### Choose the correct option:

   i. If force and displacement of particle in direction of force are doubled. Work would be:

   a) Double   b) 4 times   c) half   d) 1/4 times

   ii. Two army persons A and B each of weight of 500 N climb up a rope through a height of 10 m. A takes 20 s while B takes 40 s to achieve this task. What is ratio of the powers of person A and B?

   a) 1:2   b) 1:4   c) 2:1   d) 4:1

2. **In each of the following questions, two statements are given one labelled. Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions the codes (a), (b), (c) and (d) as given below:**

   a) Both A and R are true, and R is correct explanation of the assertion.

   b) Both A and R are true, but R is not the correct explanation of the assertion

   c) A is true, but R is false

   d) A is false, but R is true.

   (i) Assertion: A body can be displaced in the absence of force acting on it.

   Reason: No force is needed to move a body with constant velocity.

   (ii) Assertion: When a body moves in a circular path, work is done by the centripetal force.

   Reason: Centripetal force acts perpendicular to the direction of motion.

3. Answer the following questions.

1. How much work is done by a force of 10 N in moving an object through a distance of 4 m in the direction of the force.

2. A light and a heavy object have the same momentum find out the ratio of their kinetic energies. Which one has a larger kinetic energy?

3. Calculate the work done in lifting 200 kg of water through a vertical height of 6 m.

4. In an experiment to measure his power, a student records the time taken by him in running up a flight of steps on a staircase. Use the following data to calculate the power of the student:

   Number of steps = 28; Height of each step = 20 cm; Time taken = 5.4 s. Mass of student = 55 Kg;

   Acceleration due to gravity = 9.8 m s−2

5. When loading a truck, a man lifts boxes of 100 N each through a height of 1.5 m.

   (a) How much work does he do in lifting one box?

   (b) How much energy is transferred when one box is lifted?

(c) If the man lifts 4 boxes per minute, at what power is he working? (g = 10 m s−2)

d) A is false, but R is true.

(i)   Assertion: A louder sound has a higher amplitude.

Reason: Amplitude measures the energy of the wave; higher energy means greater
loudness.

(ii)   Assertion: Echo is produced when sound is incident on hard and polished surface.

Reason: Sound energy can be totally reflected by objects with soft and loose texture.

3. Answer the following questions.

1. State and define two characteristics associated with sound waves.

2. State the conditions required to hear an echo.

3. A tuning fork is producing sound waves of frequency 512 hertz. Calculate the distance between

(a) two consecutive compressions and

(b) compression and an adjacent rarefaction

Given that speed of sound waves in air at room temperature is 348 m/s.

4. The speed of a sound wave in a medium is 760m/s. If 3600 waves are passing through a point in
the medium in 10 seconds, find its frequency as well as wavelength.

5. Sonar device installed on a Navy ship picks up a signal after reflection from an Navy submarine
after 7.2 seconds. How far is the enemy submarine from the ship? Take speed of sound in
seawater as 1500 m/s.

4. Answer the following case study-based questions

A violin and a flute may both be played the same time in an orchestra. Both sounds travel

through the same medium, that is, air and arrive at our ear at the same time. Both sounds travel

at the same speed irrespective of the source. But the sounds we receive are different. This is

due

to the different characteristics associated with the sound. Pitch is one of the characteristics.

How

the brain interprets the frequency of an emitted sound is called its pitch. The faster the vibration

of the source, the higher is the frequency and the higher is the pitch. The magnitude of the

maximum disturbance in the medium on either side of the mean value is called the amplitude

of

the wave. It is usually represented by the letter (A).

(i) If we strike a table lightly, we hear a soft sound. If we hit the table hard, we hear a louder