Brain International School

Vikas Puri, New Delhi

REVISION SHEET

SUBJECT: PHYSICS **CLASS-IX** **TERM 1**

Chapter-7 Motion

1. Choose the correct option:

i. If a body travels 6m towards east and 8 m towards south, the displacement of the body is:

a) 10 m towards south b) 14 m towards east

c) 10 m towards north- east d) 10 m towards south- east

ii. An object starts from rest and moves with a constant acceleration of 2 m/s^2. What is its velocity after 5 seconds?

a) 10 m/s b) 2 m/s c) 20 m/s d) 5 m/s

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 object gradually increasing its speed is said to be accelerated.

Reason: Acceleration is the rate of change of velocity.

(ii) Assertion: If a body travels towards left and then towards right along a straight path to the initial position, distance travelled will be greater than the displacement.

Reason: Distance depends on the length of the part travelled, while displacement is dependent on the change in position.

3. Answer the following question.

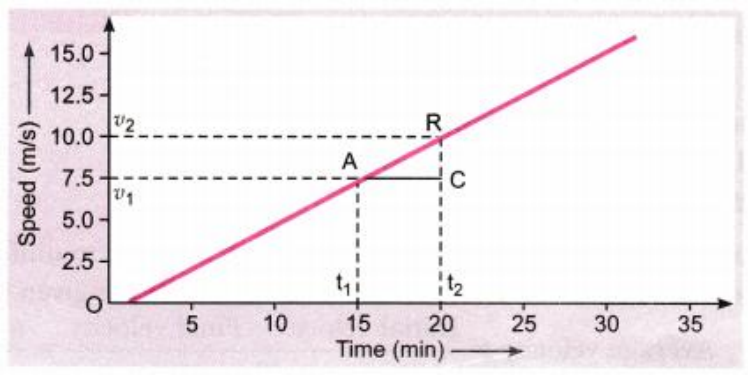
1. Differentiate between scalar and vector quantity.
2. The initial reading of the odometer of a car is 3000 km. After a five-hour journey, the reading changes to 3400 km. Find the average speed of the car in km/h and m/s.

3. An object projected upwards with an initial velocity of 30m/s decelerates uniformly at the rate of 10 m/s^2. Find the following:

i. The maximum height at which the velocity of the body reduces to zero.

ii. The time taken by the object to reach the maximum height.

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.



5. Name the physical quantity:

a) Represented by slope of a distance-time graph

b) Represented by slope of a velocity-time graph

c) Area under the slope of a v-t graph.

4. Answer the following case study-based questions

To cover a given distance different bodies can take different amounts of time. Some bodies move slowly and others bodies move faster. Different bodies can move at different rates and different bodies can move at the same rate. Also, we can measure the rate of the motion of a body by measuring the distance traveled and the time duration. In most cases body will not maintain uniformity in distance travel in equal intervals of time. Even if the body covers equal distance in equal intervals of time, the direction of motion may change. There will be completeness to the description of rate of motion of body if we specify direction along with its magnitude. If a body moves with non-uniform velocity, we use the concept of average velocity.

(i) If a body covers first one third of the distance between the two points with a uniform speed of 20km/h, next one third distance with uniform speed of 30 km/h and final one third distance with the uniform speed of 40 km/h. What is the average speed of the body for the entire journey?

(ii) A toy boy moves along a semicircular track of radius 14cm taking four seconds of time. Calculate the velocity of the toy bike.

(iii) Is it possible for an object to have zero average speed and non-zero average velocity? Explain.

Chapter-8 Force and Laws of motion

1. Choose the correct option:

   i. The physical quantity which is equal to the rate of change of momentum is

   a) impulse b) energy c) force d) velocity

   ii. Which of the following is an example of balanced forces?

   a) A moving car accelerating b) A book resting on a table

   c) A person pushing a wall and it doesn't move d) both b and c

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 table cloth cannot be pulled from a table without dislodging the dishes.

   Reason: Newton's second law of motion gives definition of inertia.

   (ii) Assertion: When we sit on a chair, our body exerts a force downward and that chair needs to exert an equal force upward or the chair will collapse.

   Reason: The third law says that for every action there is an equal and opposite reaction.

3. Answer the following question.

1. Which one has greater inertia? A stone of mass 1kg or a stone of mass 5 kg?
2. Why does a gun recoil?
3. Why are we hurt more during a fall on a concrete structure than on a sandy track?
3. A bullet of mass 4 g when fired with a velocity of 50 ms^{-1}, can enter a wall up to a depth of 10 cm. How much will be the average resistances offered by the wall?
5. A car weighing 1600 kg moving with a velocity of 30 m/s retards uniformly coming to rest in 20 seconds. Calculate the rate of change of linear momentum of the car.

4. Answer the following case study-based questions

Galileo conducted experiments with marbles rolling down inclined planes. He observed that when marbles roll down, its velocity increases due to gravity. When rolling up an incline, its velocity decreases. He reasoned that if a marble were to roll on a perfectly frictionless horizontal surface, it would continue moving forever at constant velocity unless external force stops it.

(i) What happens when we lost of a marble rolling up an inclined plane?

(ii) How did Galileo's experiment lead to first law of motion?

(iii) In real life, what does a rolling ball eventually stop even on a smooth surface?