



INDIAN SCHOOL MUSCAT
SENIOR SECTION
DEPARTMENT OF PHYSICS
CLASSIX (2016-17)
MOTION
WORKSHEET -1

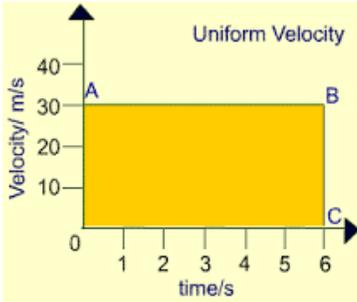
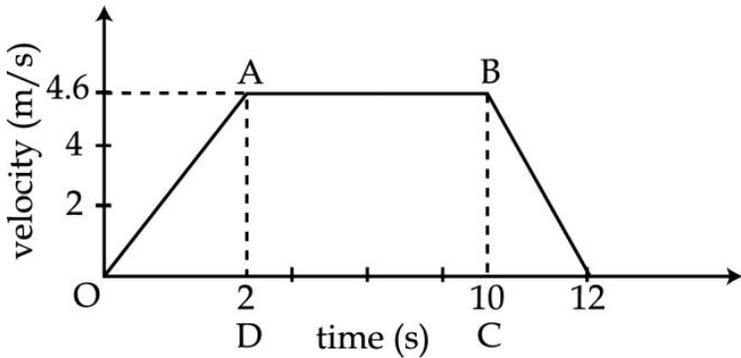


Section A: Conceptual and Application Questions

1.	What is the condition under which the distance and the magnitude of displacement are equal?	1
2.	What is the numerical ratio of average velocity to average speed of an object when it is moving along a straight path?	1 (2012)
3.	Is it possible for distance- time graph of a moving particle to be perpendicular to time axis? Justify your answer.	1
4.	Is it possible that the average velocity of a particle is zero when its average speed is not zero?	1
5.	Give two points of difference between speed and velocity. How is average speed of an object calculated when its speed changes?	2
6.	Draw the displacement- time graphs for an object (i) at rest (ii) in uniform motion (iii) in uniformly accelerated motion.	2
7.	Derive graphically (i) position-time relation (ii) velocity – time relation for an object under uniformly accelerated motion.	3
8.	Can uniform circular motion be considered as an accelerated motion? Explain.	2
9.	The slope of velocity –time graph represents which physical quantity? Write its S I unit.	2
10.	The displacement of a moving object in a given time interval is zero. Would the distance travelled by the object also be zero? Justify your answer.	2

Section B: Numerical Questions

11.	The minute hand of a clock is 7 cm long. Find the displacement and distance covered by the minute hand from 9 am to 9.30 am.	1
12.	A car covers 30 km at a uniform speed of 30 km/h. What would be the speed of the car for the next 90 km if the average speed for the entire journey is 60 km/h?	2
13.	Rajeev went from Delhi to Chandigarh on his motorbike. The odometer of the bike read 4200 km at the start of trip and 4460 km at the end of his trip. If Rajeev took 4 hours 20 minutes to complete his trip, find the average speed in kmh^{-1} as well as in ms^{-1} .	2
14.	A cyclist goes around a circular track once every 2 minutes. If the radius of the circular track is 110 m, calculate the speed of the cyclist.	2

15.	<p>Which type of motion is represented by the velocity- time graph given below?</p> <div style="text-align: center;">  </div> <p>(a) Name the physical quantity which can be calculated by the area of rectangle OABC. (b) What does the straight line AB represent?</p>	3 (2013)
16.	<p>A scooter moving at a speed of 10 m/s is stopped by applying brakes which produce a uniform acceleration 0.5 m/s^2. How much distance will be covered by the scooter before it stops?</p>	3
17.	<p>A train travelling at a speed of 36 km/h is brought to rest by applying brakes. If it travels 100 m before coming to rest, find the value of retardation.</p>	3
18.	<p>An object starting from rest travels 20 m in first 2 s and 160 m in next 4 s. Assuming uniform acceleration, what will be the velocity after 7 s from the start?</p>	3
19.	<p>A body starting from rest travels with uniform acceleration. If it travels a distance of 100 m in 5 s. Find the value of acceleration.</p>	5
20.	<p>Study the velocity – time graph of an ascending passenger lift in the figure shown below.</p> <div style="text-align: center;">  </div> <p>(a) What is the acceleration of the lift during: (i) the first two seconds (ii) between second and tenth second (iii) during the last two seconds</p> <p>(b) Which physical quantity is measured by area under the quadrilateral OABC? Calculate that physical quantity.</p>	5 (2014)
21.	<p>A train starting from rest attains a velocity of 72 km/h in 5 minutes. Assuming the acceleration is uniform, find (i) the acceleration (ii) the distance travelled by the train for attaining this velocity.</p>	5
22.	<p>A motorcyclist riding motorcycle A, who is traveling at a speed of 20 m/s applies the brakes and stops the motorcycle in 10s. Another motorcyclist of motorcycle B who is traveling at 5 m/s applies the brakes and stops the motorcycle in 20s. Plot speed-time graph for the two motorcycles. Which of the two motorcycles traveled farther before it comes to a stop?</p>	5 (2015)

23.	A car starts from rest and moves along the x-axis with constant acceleration 5 m s^{-2} for 8 seconds. If it then continues with constant velocity, what distance will the car cover in 12 seconds since it started from the rest?	5
24.	The body moves with a velocity of 2 m/s for 5 s, and then its velocity increases uniformly to 10 m/s in next 5s. Thereafter its velocity begins to decrease at a uniform rate until it comes to rest after 5s. (a) plot the velocity time graph for the motion of the body (b) from the graph find the total distance covered by the body after 2 s and 12 s.	5
25.	Two stones are thrown vertically upwards simultaneously with their initial velocities u_1 and u_2 respectively. Prove that the heights reached by them would be in the ratio of $u_1^2 : u_2^2$. Assume upward acceleration is $-g$ and downward acceleration is $+g$.	3