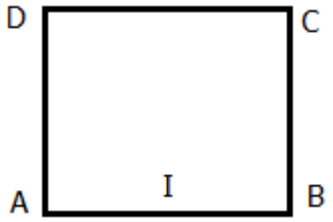
IX Motion And Rest Formative Check Points

Check Points 01

1. Rest and motion are relative terms. Explain.
2. A truck is approaching a person at rest. Is the person at rest relative to truck?
3. Give two examples for each state: rest and motion.
4. What do you mean by reference point?
5. Define distance.
6. What is displacement?
7. What is the SI unit of distance and displacement?
8. Is displacement a scalar or a vector quantity?
9. What is the difference between distance and displacement?
10. How will you show that the displacement of a body can be zero but the distance can never be zero?
11. A body is moving in a circular path and it completes one revolution in 4 seconds. What is the displacement of the body?
12. An ant traverses the boundary of a square shaped floor of side l along the path $ABCD$ as shown in figure. What is the (i) distance traversed by the ant, and (ii) displacement of the ant?



13. A particle moves a distance of 3 km towards east and then 4 km towards north.
    (i) Find the total distance travelled by the particle,
    (ii) The net displacement of the particle.
14. Imagine yesterday you left your house at 6:30 am for your school. After completing this journey of 3 km you found that the school was closed and came back to your home at 7:45 am. Find (i) the distance travelled by you, and (ii) your final displacement.
15. A body is moving along a circular path of radius r. What will be the distance and displacement of the body when it completes half a revolution?

ANSWERS

8. A vector quantity,
11. Zero,
12. Distance $3l$, Displacement l along $\vec{AD}$
13. (i) 7 km , (ii) 5 km.
14. (i) 6 km (ii) 0
15. $\pi r; 2r$

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Check Points 02

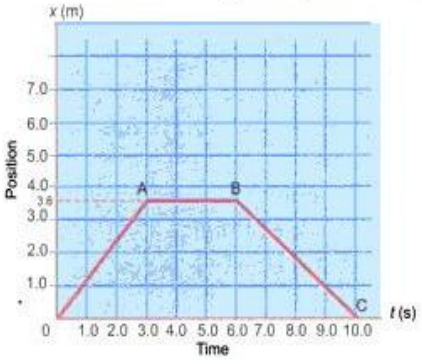
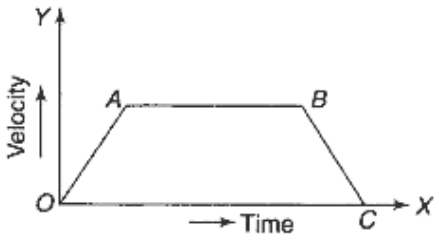
1. What is meant by uniform circular motion?
2. A particle is moving with a uniform speed. Is it necessary that it is moving along a straight line?
3. A planet goes round the sun with constant speed in a circular orbit. Is the motion uniform or accelerated?
4. A body moves in a circular path with uniform speed. Does its velocity change, if so, how?
5. Show that a uniform circular motion is an accelerated motion.
6. A satellite goes round earth in a circular orbit with constant speed. Is the motion accelerated?
7. Calculate the distance covered by the tip of minute's hand (length 8 cm) of a wall clock in one hour.

ANSWERS

2. No 4. Yes, due to change in direction 6. Yes 7. 50·2 cm

Check Points 03

1. What do you mean by a scalar quantity?
2. Name any three scalar quantities.
3. What do you mean by a vector quantity?
4. Name any three vector quantities.
5. Which quantity is distance:scalar or vector?
6. Which quantity is displacement:scalar or vector?
7. You are walking towards Taj Mahal. Is Taj Mahal at rest or in motion relative to you?
8. You arrive at a railway station and have to go to your home, which is at a distance 3 km from your house. You ask a Riksha to move 3 km. Will you certainly reach your home after travelling 3 km by Riksha?
9. What is the displacement of a satellite when it makes a complete round-trip along a circular path?
10. Under what condition can a body travel a certain distance and yet its net displacement be zero?
11. What do you mean by uniform motion?
12. What do you mean by non-uniform motion?
13. Define speed and state its SI unit.
14. Define velocity and state its SI unit.
15. Is speed a scalar or a vector quantity?

]	**Check Points 04**
1	A ball is dropped from the roof of a building. Is the motion of ball uniform or non-uniform?
2	A car after completing its journey returns to its initial position. Name two physical quantities which are zero for the car.
3	A particle is moving with a uniform velocity. Is it necessary that it is moving along a straight line?
4	Name the physical quantity which requires both, the speed and direction of motion of a body.
5	What does measure the odometer of a car?
6	An object undergoes an acceleration of 10 ms^{-2} starting from rest. Find the distance travelled in 5 s.
7	A car travelling at a velocity of 10 ms^{-1} due north speeds up uniformly to a velocity of 25 ms^{-1} in 5 s. Calculate the acceleration during this period.
8	A car moves in a circular path of radius 14 m at a speed of 10 ms^{-1}. Evaluate: (i) time taken to complete the circle (ii) find the angular velocity.
9	Discribe the motion of the object represented in Fig. Give the velocity for each segment *OA*, *AB* and *BC*. 
10 (a)	**Is the motion of a satellite accelerated?** Yes.
10 (b)	**Can uniform linear motion be acceler ated?** No.
11.	**The change in velocity may be due to a change in its speed or direction of motion or both. What happens to velocity: (a) between *OA* (b) between *AB* (c) between *BC*?**  *Ans.* (a) Velocity is increasing. (b) Velocity is constant. (c) Velocity is decreasing.
12.	What is uniform for an object falling from a height, and what is not uniform? *Ans.* Acceleration and direction are uniform. Speed and motion are not uniform.