PHYSICS

BOOKS - NAND LAL PUBLICATION

MOTION

Activity

1. Discuss whether the walls of your classroom are at rest or motion.

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2. Have you ever experienced that the train in which you are sitting appears to move while it is actually at rest ? Discuss.

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3. In your every - day life you come across a range of motions in which acceleration is in the direction of motion,

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4. In your every - day life you come across a range of motions in which acceleration is against the direction of motion,

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5. When will you say a body is in : uniform acceleration ?

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6. When will you say a body is in : non-uniform acceleration ?

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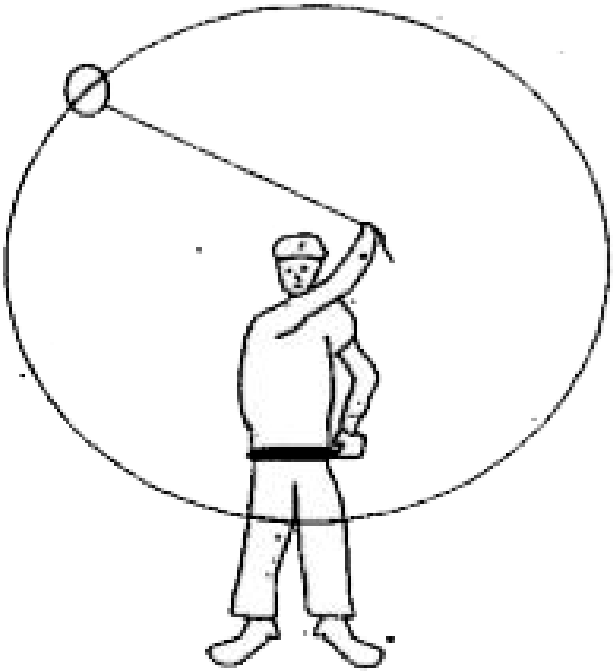
7. Take a piece of thread and tie a small piece of stone at one of its ends. Move the stone to describe a circular path with constant speed by holding the thread at the other end.



Now let the stone go by releasing the thread Can you tell the direction in which the stone moves after it is released ? By repeating the activity for a few times and releasing the stone at different positions of the circular path,

check whether the direction in which stone moves remains the same or not ?

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Intext Question

1. An object has moved through a distance. Can it have zero displacement ? If yes, support your answer with an example.

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2. A farmer moves along the boundary of a square field of side 10m in 40 s. What will be the magnitude of displacement of the farmer at the end of 2 minutes 20 seconds?

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3. Which of the following is true for displacement ?

(i) it cannot be zero

(ii) Its magnitude is greater than the distance travelled by the object

(iii) Its magnitude is less than or equal to distance travelled by the object.

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4. Distinguish between speed and velocity.

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5. Under what condition(s) is the magnitude of average velocity of an object is equal to its average speed ?

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6. What does the odometer of an automobile measure ?

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7. What does the path of an object look like when it is in uniform motion ?

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8. During an experiment, a signal from a spaceship reached the ground station in five minutes. What was the distance of the spaceship from the ground station ? The signal travels at a speed of light that is $3 \times 10^8 ms^{-1}$.

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9. When will you say a body is in : uniform acceleration ?

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10. When will you say a body is in : non-uniform acceleration ?

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11. A bus decrease its speed from $80kmh^{-1}$ to $60kmh^{-1}$ in 5 sec. Find acceleration of the bus.

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12. A train starting from a railway station and moving with uniform acceleration attains a speed $40kmh^{-1}$ in 10 minutes. Find its acceleration.

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13. What is the nature of the distance-time graphs (x - y) for uniform and non uniform motion of an object ?

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14. What can you say about the motion of object whose distance - time graph is a straight line parallel to time axis ?

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15. What can you say about the motion of an object if its speed - time graph is a straight line parallel to time axis ?

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16. What is the quantity which is measured by the area occupied below velocity -time graph ?

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17. A bus starting from rest moves with a uniform acceleration of $0.1ms^{-2}$ for two minutes. Find: the speed acquired.

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18. A train is travelling at a speed of $90 kmh^{-1}$. Brakes are applied so as to produce a uniform acceleration of $-0.5 ms^{-2}$. Find how far the train will move before it is brought to rest?

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19. A trolley, while going down an inclined plane has an acceleration of$2 cms^{-2}$ What will be its velocity 3 s after the start?

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20. A racing car has uniform acceleration of $4ms^{-2}$. What distance will it cover in 10 s after start?

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21. A stone is throw in a vertically upward direction with a velocity of $5ms^{-1}$ if the stone during its motion is $10ms^{-2}$ in the downward direction . What will be the height attained by

the stone and how much time will it take to reach there ?

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Exercise

1. An athelete completes one round of a circular track radius R in 40 s.What will be his displacement at the end of 2 minutes 20 sec?

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2. Joseph jogs from one end A to the other end B of a straight 300 m road in 2 minuts 30 seconds and then turns around and jogs 100 m back to point C in another 1 minute. What are Joseph's average speeds and velocities in jogging (a) from A to B and (b) from a to C ?

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3. Abdul while driving to school, computes the average speed for his trip to be 20 km h^{-1}. On this trip along the same route there os less

traffic and average speed is 40 km `h^-(-1) . What is the average speed for Abdul's trip ?

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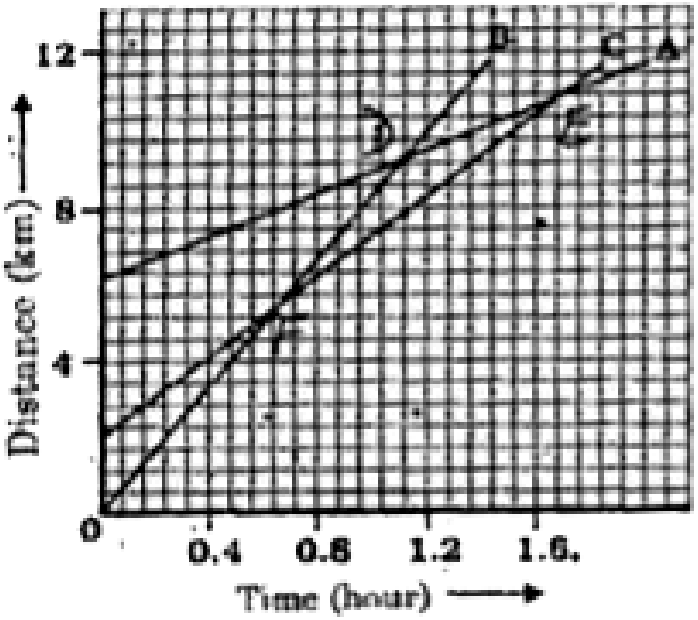
4. The following figure shows the distance time graph of three objects A,B and C. Study the graph and answer the following questions :



Which of the three is travelling the fastest ?

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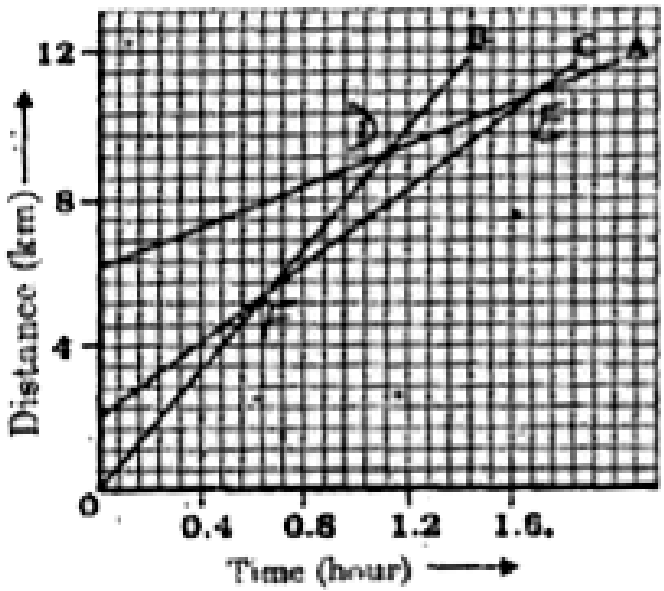
5. The following figure shows the distance time graph of three objects A,B and C. Study

the graph and answer the following questions

:



Are all three ever at the same point on the road ?

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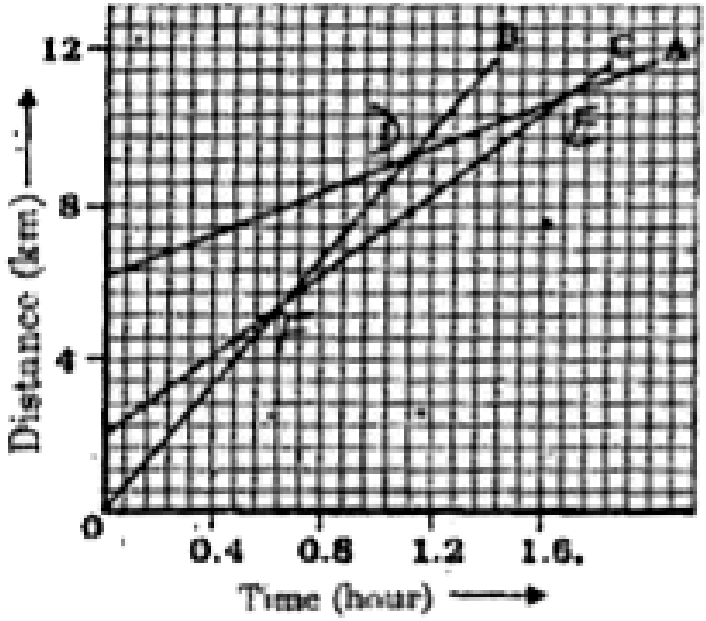

How far has C travelled when B passes A ?

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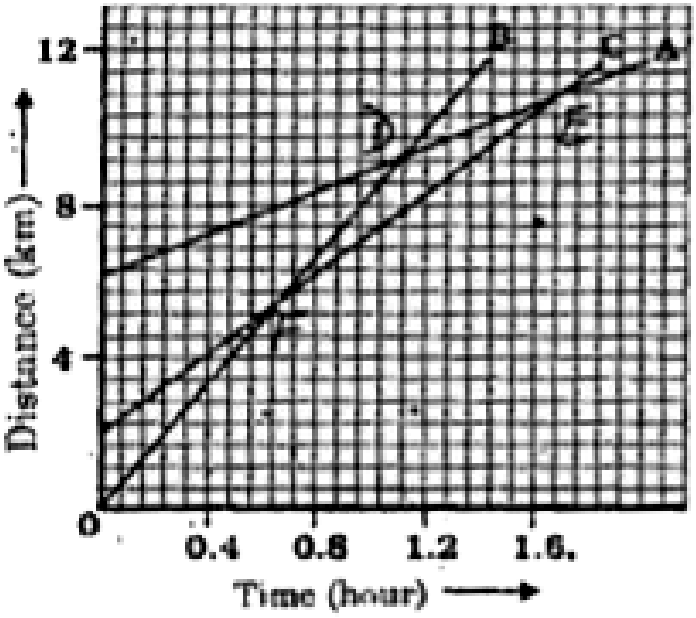
7. The following figure shows the distance time graph of three objects A,B and C. Study the graph and answer the following questions :



How far has B travelled by the time it passes C ?

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8. State which of the following situations are possible and give an example for each of these.an object with a constant acceleration but with zero velocity.

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9. State which of the following situations are possible and give an example for each of these.an object moving in a certain direction

with an acceleration in the perpendicular direction.

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10. An artificial satellite is moving in a circular path orbit of radius 42,250 km. Calculate its speed if it takes 24 hours to revolve around the earth.

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Additional Questions Very Short Answer Type Question

1. Why are viruses placed on the border line between living and non-living things?

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2. What is motion ?

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3. Give an example of motion in nature which cannot be perceived of directly.

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4. Give an example of motion in nature which cannot be perceived of directly.

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5. Give an example of motion in nature which cannot be perceived of directly.

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6. Give an example of a body which may appear to be moving for one person and stationary for other.

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7. What can we tell about motion from the above example ?

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8. What is displacement of object ?

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9. When do we say that the position of a body has changed ?

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10. What is meant by retar-dation ?

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11. Give an example of negative acceleration.

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Additional Questions Short Answer Type Question

1. What is meant by the term distance ?

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