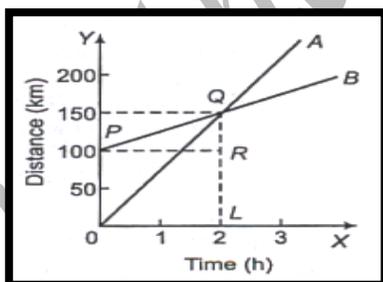


Revision Question Bank

1. A car moves with speed of 30 km / h for half an hour, 25 km /h for one hour and 40 km / h for 2 hours. Calculate the average speed of the car.
2. Rohit went on his bike from Delhi to Faridabad at 40 km/h and in the evening returned back at speed of 60 km/h. What is his average speed for the entire journey? What is his average velocity?
3. What is meant by uniform circular motion? Why do we need a force to keep a body moving uniformly along a circular path? Name this force.
4. Differentiate between speed and velocity.
5. Draw the shape of v-t graphs in the following cases
 - (a) Uniform retardation
 - (b) Non-uniform acceleration
6. Starting from a stationary position, Ajay paddles his bicycle to attain a velocity of 10 ms^{-1} in 25 s. Then, he applies brakes such that he again comes to rest after next 50 s. Calculate the acceleration of the bicycle in both cases. Also find the total distance covered by Ajay.
7. An athlete completes one round of a circular track of diameter 200 m in 40 s. What will be the distance covered and the displacement at the end of 2 min 20s?
8. State which of the following situations are possible and give an example of each of these.
 - (a) a body moving with a constant acceleration but with zero velocity.
 - (b) a body moving horizontally with an acceleration in the vertical direction.
 - (c) a body moving with a constant velocity in an accelerated motion.
9. The distance-time graph of two trains is given below. The trains start simultaneously in the same direction.



- (a) How much ahead of A is B when the motion starts?
 - (b) What is the speed of B?
 - (c) When and where will A catch B?
 - (d) What is the difference between the speeds of A and B
 - (e) Is the speed of both the trains uniform or non-uniform? Justify your answer.
10. Derive the equations of motion for uniformly accelerated motion from velocity-time graph.

Answers

- | | | |
|--|----------------|-------------------|
| 1. 4 Km | 2. 34.28 Km/hr | 3. 48 km/hr, zero |
| 6. $a_1 = +0.4 \text{ m/s}^2$, $a_2 = -0.2 \text{ m/s}^2$, Total Distance = 375m | 7. 2.2 km | |
| 9. (a) B is ahead of A by 100 km. (b) Speed of B = 25 km/hr, (c) At $t = 2\text{h}$, when A has covered a distance of 150 km. (d) 50 km/hr. (e) Uniform motion for both trains. | | |

MCQ's [Practical Based Questions]

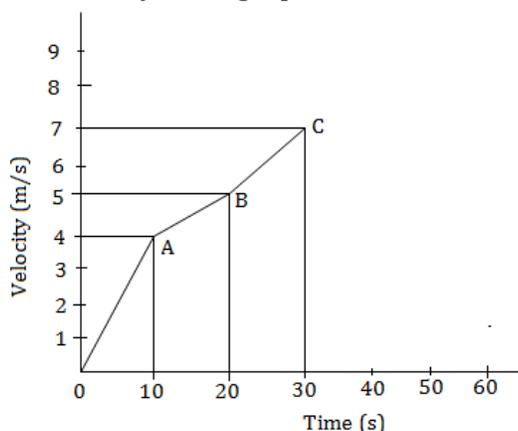
- A student added only two drops of iodine to a rice extract in test tube A. Another student added a little rice extract to iodine solution in test tube B. They would then observe :
 (a) a change of colour to blue-black in test tube A but not in test tube B.
 (b) a change of colour to blue-black in test tube B but not in test tube A.
 (c) a change of colour to blue-black in both test tubes A and B.
 (d) no change of colour in any test tube.
- Four samples of arhar dal (tuvar dal) were taken in four test tubes with some water in each and labelled P, Q, R and S. A few drops of the following were added to these test tubes; water to test tube P, HCl to test tube Q, NaOH to test tube R and alcohol to test tube S. We would be able to confirm adulteration of the dal with metanil yellow in test tubes :
 (a) P and Q (b) Q and R (c) R and S (d) S and P.
- Sidaknoor bought arhar dal (tuvar dal) from the market. On adding water to the dal the water became yellow in colour. She took a sample of this yellow water to the laboratory and added a few drops of HCl. The sample became pink. She confirmed that the adulterant added to the dal was :
 (a) turmeric. (b) metanil yellow. (c) potassium dichromate. (d) yellow dye.
- To observe starch granules in potato under a microscope, freshly cut surface of potato was pressed on a slide. The stain that will show starch granules clearly is :
 (a) methylene blue. (b) iodine. (c) safranin. (d) eosin.
- Chemically speaking starch is a form of :
 (a) fat (b) protein (c) hormone (d) carbohydrate.
- Adulterant metanil yellow may cause the following disease (s) in our body :
 (a) cancer and asthma. (b) paralysis, leprosy, etc.
 (c) stomach disorders and liver damage. (d) bronchitis and heat attack.
- Chemically speaking metanil yellow, an adulterant used in arhar dal is :
 (a) an acid (b) a base (c) a dye (d) a detergent.
- What does PFA stands for ?
 (a) Prevention of Food Adulteration act. (b) Procuring Food Agency.
 (c) Progressive Food Administration. (d) People's Food Agency.
- Metanil yellow is added to arhar dal so as to :
 (a) improve its taste. (b) increase its weight.
 (c) improve the colour and appearance. (d) all of these.
- Lead chromate is present as an adulterant in which food :
 (a) turmeric powder (b) chilli powder (c) arhar dal (d) black pepper.

Answers

1.	c	2.	a	3.	b	4.	b	5.	d
6.	b	7.	c	8.	a	9.	c	10.	a

Previous Years Question Bank

1. Name the physical quantity that essentially varies as a body moves. **[CBSE Schools 2016-17]**
2. Explain an activity to show that, during a free fall heavier and lighter objects accelerate at the same rate. **[CBSE Schools 2016-17]**
3. The velocity-time graph shown, below represents the motion of a body : **[CBSE Schools 2016-17]**

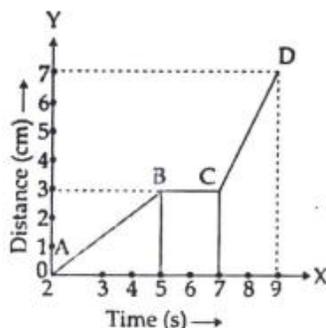


- (a) During which interval of time, the body is moving with maximum acceleration?
- (b) Calculate the average velocity for the entire journey.
4. Write the difference between distance travelled by a body and its displacement. An ant travels a distance of 12 cm from A to B and then moves a distance of 9 cm at right angle to AB. Find the resultant displacement and the total distance covered by it. **[CBSE Schools 2016-17]**
5. Give an example of a motion in which acceleration is uniform. **[CBSE Schools 2016-17]**
6. The following table show the distance travelled by three objects in every second.

Time	Distance travelled (in m)		
	Object A	Object B	Object C
1 st sec	10	5	12
2 nd sec	10	10	8
3 rd sec	10	15	15
4 th sec	10	20	17
5 th sec	10	25	12

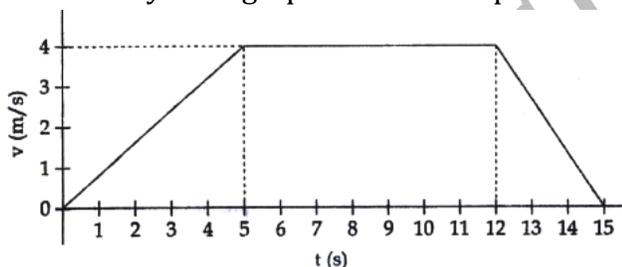
- (a) Classify the motion of the three objects as uniform or non-uniform motion.
- (b) Who has travelled:
 - (i) maximum and (ii) minimum distance in 4th sec?
- (c) Calculate the total distance travelled by 'A'? **[CBSE Schools 2015,17]**
7. A powerful motorcycle can accelerate from rest to 28 m/s in only 4 s. **[CBSE Schools 2016-17]**
 - (a) What is its average acceleration? (b) How far does it travel in that time?
8. (a) Draw a position-time graph and a speed-time graph for a ball thrown vertically upwards which comes to rest on reaching the ground. **[CBSE Schools 2016-17]**
 - (b) With the help of graphical method establish relation between initial velocity 'u', final velocity 'v', distance covered 's' for an object moving with an acceleration 'a'.
9. A boy on a cliff 19.6 m high drops a stone. One second later, he throws a second stone after the first. They both hit the ground at the same time. With what speed did he throw the second stone? **[CBSE Schools 2016-17]**

10. The graph given alongside shows the position of a body at different times. Calculate the speed of the body as it moves from:



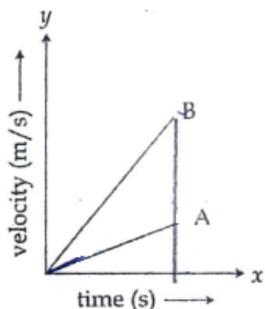
[CBSE Schools 2016-17]

- (i) A to B (ii) B to C (iii) C to D
11. State the type of motion of a particle placed at the tip of the 'Seconds' hand of a watch. [CBSE Schools 2016-17]
12. Define speed and velocity. Write their SI units. A body is moving with a velocity of 15 m/s. If the motion is uniform, what will be the velocity after 10 s? [CBSE Schools 2016-17]
13. (a) For a moving object, derive graphically relation between final velocity v , initial velocity u , acceleration a and time t . [CBSE Schools 2016-17]
- (b) Draw the distance-time graph for the following situations :
- (i) When a body is stationary (ii) When a body is moving with a uniform speed
- (iii) When a body is moving with non-uniform speed.
14. A body is moving with a velocity of 15 m/s. If the motion is uniform, what will be its velocity after 10 s? [CBSE Schools 2016-17]
15. The velocity-time graph of a truck is plotted below. [CBSE Schools 2016-17]



- (a) Calculate the magnitude of displacement of the truck in 15 seconds.
- (b) During which part of the journey was the truck deaccelerating?
- (c) Calculate the magnitude of average velocity of the truck.
16. A cheetah accelerates from rest at the rate of 4 m/s^2 [CBSE Schools 2016,17]
- (a) What will be the velocity attained by it in 10 s?
- (b) How far will it travel in this duration?
17. What do the following devices measure in a car? [CBSE Schools 2016,17]
- (i) Odometer (b) Speedometer
18. Define the term acceleration. State an example of uniformly accelerated motion. A train starting from stationary position and moving with uniform acceleration attains a speed of 36 km/h in 10 minutes. Find its acceleration. [CBSE Schools 2016-17]

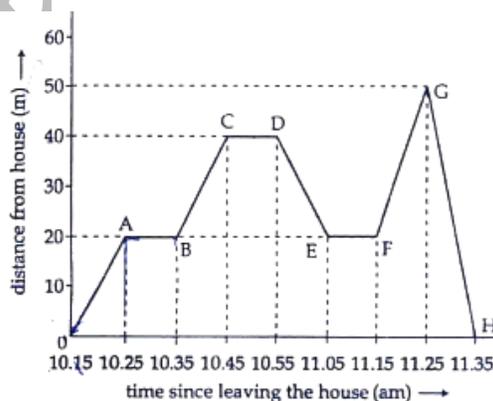
19. (a) Derive the equation of motion, $v = u + at$ by graphical method. **[CBSE Schools 2016-17]**
 (b) Which of the two bodies A and B in the following graph is moving with higher acceleration and why?



20. State an example of a motion in which acceleration of an object is always perpendicular to its direction of motion. **[CBSE Schools 2016-17]**
 21. A girl while riding a bicycle moves with the speed of 10 km/h for 2 h and with the speed of 15 km/h for the next 3 h. Find the total distance moved by her and her average speed. **[CBSE Schools 2016-17]**
 22. State the equation for position-time relation for a body moving in a straight line with uniform acceleration. Use graphical method to derive this equation. **[CBSE Schools 2016-17]**
 23. Give an example of a motion in which acceleration is uniform. **[CBSE Schools 2016-17]**
 24. A particle moves over three quarters of a circle of radius r cm. Calculate the magnitude of its distance and displacement. **[CBSE Schools 2016-17]**
 25. The distance time graph given below shows motion of a student from his home to outside. **[CBSE Schools 2016-17]**

(i) Identify the type of motion in following positions

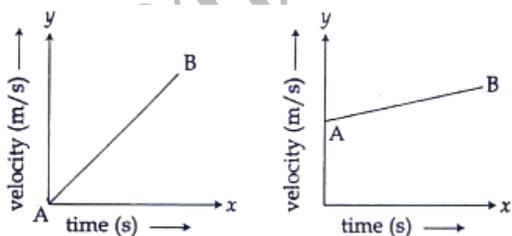
- O to A
- A to B
- B to C
- C to D
- D to E
- E to F
- F to G
- G to H



(ii) Displacement of the student

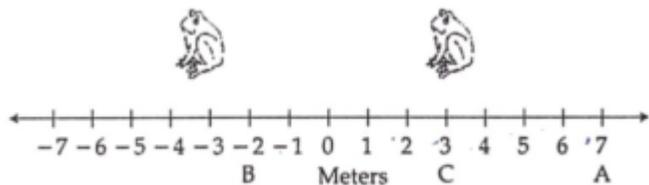
Write a story that describes the following graph.

26. (a) Give one similarity and one dissimilarity between the two graphs. **[CBSE Schools 2016-17]**



- (b) What do you understand by the term acceleration? What is meant by its being positive or negative? Explain with example. Write its SI units?

27. A frog hops along a straight line path from point 'A' to point 'B' in 10 s and then turns and hops to point 'C' in another 5 s. Calculate the average speed and average velocity of the frog / for the motion between :



(a) (A) to (B) (b) (A) to (C) (through B) **[CBSE Schools 2015-16]**

28. A body is thrown upwards with a speed of 29.4 m/sec find the height the body rises through in (a) 1 sec and (b) 2 sec. What can you say about the speed of the body in the 1st second and the next second?

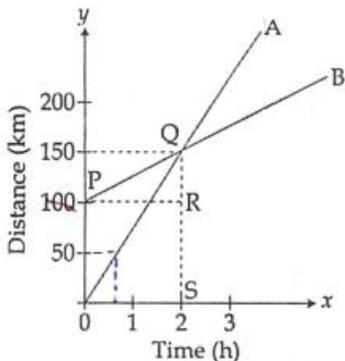
[CBSE Schools 2015-16]

29. Study the velocity-time table and answer the following: **[CBSE Schools 2015-16]**

Velocity (m/s)	0	10	15	20	15	10	0
Time (s)	0	5	10	15	20	25	30

- (a) What is the value of acceleration during 0-15 s ?
- (b) Is the body in uniform or non-uniform motion?
- (c) The time interval in which the acceleration is negative.

30. The distance-time graph of two buses is shown below. The buses start simultaneously in the same direction: **[CBSE Schools 2015-16]**



- (a) How much ahead of A is B when the motion starts ? (b) What is the speed of B ?
- (c) When and where will A catch B ?
- (d) What is the difference between the speeds of A and B?
- (e) Is the motion of both the buses uniform or non-uniform? Justify your answer.

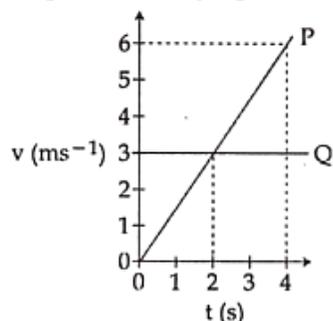
31. An artificial satellite revolves around the earth with a constant velocity. Is the statement true ? Justify your answer. **[CBSE Schools 2015-16]**

32. A body is accelerating at a constant rate of 10 ms⁻². If the body starts from rest, how much distance will it cover in 2 s? **[CBSE Schools 2015-16]**

33. Give one example each of the type of motion when: **[CBSE Schools 2015-16]**

- (a) acceleration is in the direction of motion. (b) acceleration is against the direction of motion.
- (c) acceleration is uniform.

34. The speed-time graphs of two cars are represented by P and Q as shown below:



- (a) Find the difference in the distance travelled by the two cars (in m) after 4s.
 (b) Do they ever move with the same speed? If so when?
 (c) What type of motion car P and car Q are undergoing? **[CBSE Schools 2015-16]**
35. Write one example each of the following situations : **[CBSE Schools 2015-16]**
 (i) uniformly accelerated motion. (ii) acceleration is against the direction of motion
 (iii) acceleration is in the direction of motion (iv) acceleration is non uniform. **[CBSE Schools 2015-16]**
36. A particle is released from rest from a height. **[CBSE Schools 2015-16]**
 Find the distance it falls through in 1 sec ?
 (b) Find the distance if it falls through in 3 sec. Also find the speed with which it strikes the ground after 3 secs.
37. A stone is thrown in a vertically upward direction with a velocity of 6 m/s. If the acceleration of the stone during its motion is 10 m/s^2 in the downward direction, what will be the height attained by the stone and how much time will it take to reach there? **[CBSE Schools 2015-16]**
38. (a) Can a body exist in a state of absolute rest or of absolute motion? Explain. With example. **[CBSE Schools 2015-16]**
 (b) Draw a velocity-time graph for an object in uniform motion. Show that the area under the velocity-time graph gives the displacement of the object in the given time interval.
39. Write 3 points of difference between distance and displacement. **[CBSE Schools 2014-15]**
40. Derive velocity position relation by graphical method. **[CBSE Schools 2014-15]**
41. (a) An object has moved through a distance. Can it have zero displacement? How?
 (b) Draw velocity time graph for uniform motion and non-uniform motion. How can we find acceleration from velocity time graph? **[CBSE Schools 2014-15]**
42. (a) Can an object have (i) zero velocity but non zero acceleration. **[CBSE Schools 2014-15]**
 (ii) zero acceleration but non zero velocity. If yes give example. If no explain why.
 (b) Name two quantities which can be obtained from the velocity time graph of an object. How can we convert speed from km/h to m/s?
43. (a) A car starts from rest and picks up a velocity of 18 m/s in 10 seconds. Calculate the acceleration of the car. **[CBSE Schools 2014-15]**
44. (a) Draw graph of following **[CBSE Schools 2014-15]**
 (i) Distance-time graph for a body at rest (ii) speed-time graph for a body in uniform motion.
45. (a) name the quantities which are measured by the area occupied below : **[CBSE Schools 2014-15]**
 (i) distance-time graph (ii) velocity -time graph.
 (b) Mention the nature of the motion of a body whose distance-time graph is a straight line parallel to the time axis?

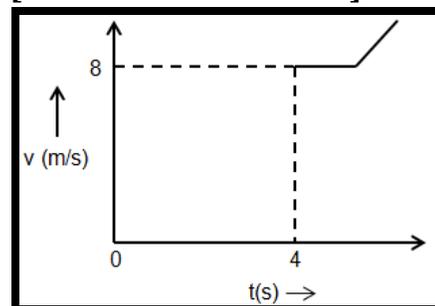
46. What is the difference between the motion of an object moving with uniform speed on a linear path and that on a circular path?

[CBSE Schools 2014-15]

47. The following velocity-time graph describes the motion of a truck:

[CBSE Schools 2014-15]

- (a) Explain the motion of the truck according to the graph.
- (b) Calculate displacement and the acceleration of the truck in 0 to 4 s.



48. Mohan along with his schoolmates goes on a camel safari. They travel 3 km north, then 3 km east and then 1 km north again. Draw the path along which they are moving. What distance did they cover? What is their displacement?

[CBSE Schools 2014-15]

49. The following table shows the position of Renu, while she is going to her school. Draw the distance travelled versus time-graph for her motion.

[CBSE Schools 2014-15]

Time	Distance from her home (km)
0.6:45 am	0
07:00 am	8
01:30 pm	8
01:45 pm	0

50. Which of the two bodies A and B in the following graph is moving with higher acceleration and why?

[CBSE Schools 2014-15]

51. Name the physical quantities whose SI units are :

- (i) m/s
- (ii) m/s²

[CBSE Schools 2014-15]

52. A man travels a distance of 1.5 m towards East, then 2.0 m towards South and finally 4.5 m towards east.

[CBSE Schools 2014-15]

- (i) Calculate the total distance travelled.
- (ii) Calculate the resultant displacement.

53. Define uniform velocity.

[CBSE Schools 2014-15]

A train 100 m long moving on a straight level track passage a pole in 5 s. Find

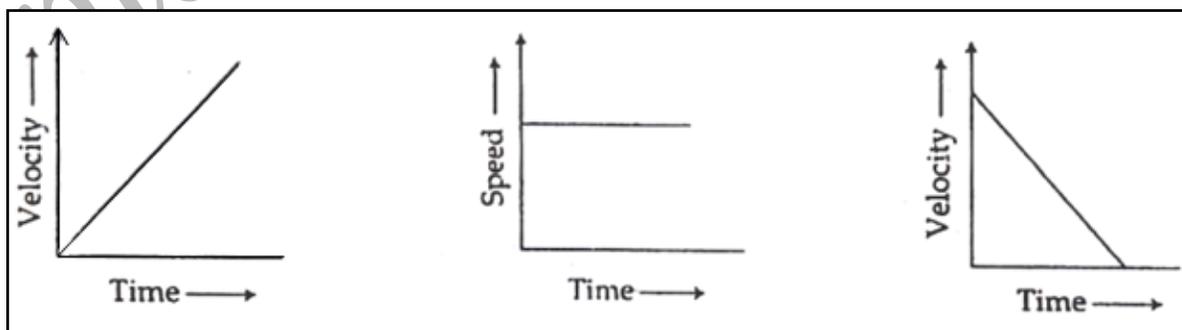
- (a) the speed of the train.
- (b) the time it will take to cross a bridge 500 m long.

54. Name the type of motion in which a body has uniform speed but not uniform velocity.

[CBSE Schools 2014-15]

55. Mention the type of motion represented by the following graphs :

[CBSE Schools 2014-15]



56. From the velocity time graph shown in figure for a body of mass 5 kg. Find force on body from
(i) O to A and (ii) B to C **[CBSE Schools 2014–15]**
57. State with reasons, if it is possible or impossible, for an object in motion to have:
(a) Zero distance covered and may have non zero displacement.
(b) Zero speed at an instant but non zero acceleration at the same time.
(c) Zero speed and may have non zero velocity.
(d) Acceleration opposite to the direction of motion.
(e) Positive acceleration while speeding up. **[CBSE Schools 2014–15]**

Chapter Test

Maximum Marks: 30

Maximum Time: 1hr

1. Odometer measures displacement of the vehicle. Correct this statement. [2]
2. A train accelerates uniformly from 36 km/h to 72 km/h in 20 s. Find the distance travelled. [2]
3. State three equations of motion. Which of them describes [2]
 - (a) Velocity-time relation
 - (b) Position-time relation
4. A train travels at a speed of 60 km/h for 0.5 h, 24 km/h, for the next 0.25 h and then at 72 km/h for the next 0.75 h. Calculate the total distance covered by the train and its average speed. [3]
5. A train starting from rest, pick up a speed of 10 m/s in 100 s. It continuous to move at the same speed for the rest 250 s. It is then brought to rest in the rest 50 s. Plot a speed-time graph for the entire motion of the train.

Calculate:

 - (a) Acceleration of the train while accelerating.
 - (b) Retardation of the train while retarding
 - (c) The total distance covered by the train. [3]
6. The brakes applied to a car produce an acceleration of 6 m/s^2 in the opposite direction to the motion. If the car takes two seconds to stop after the application of brakes, calculate the distance, it travels during the time. [3]
7. Answer the following questions: [3]
 - (a) Differentiate acceleration from velocity.
 - (b) Can a body have acceleration without change in magnitude of velocity? Explain with an example.
 - (c) A motor boat starting from rest on a lake accelerates in a straight line at a constant rate of 3 m/s^2 for 8 s. How far does the boat travel during this time?
8. A car moves with a speed of 30 kmh^{-1} for half an hour, 25 kmh^{-1} for one hour and 40 kmh^{-1} for two hours. Calculate the average speed of car. [3]
9. (a) List two differences between speed and velocity (b) When is a body said to have [4]
 - (i) uniform velocity
 - (ii) variable velocity,
 - (c) How is the average velocity of a body calculated when its velocity changes at a non-uniform rate?
10. An object starts linear motion with a velocity u and under uniform acceleration a , it acquires a velocity v in time t . Draw v - t graph. From this graph obtain all the equations of motion. [5]

Answers

- | | | | | |
|----------|-------------------|--------------------------------|-----------------------------|-------------|
| 2. 300 m | 4. 90 km, 60km/hr | 5. (a) $a = 0.4 \text{ m/s}^2$ | (b) $a = 0.2 \text{ m/s}^2$ | (c) 3.25 km |
| 6. 12m | 7. (c) 96 m | 8. 34.3km/hr | | |

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