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STUDY MATERIAL SCIENCE
CLASS-VII

‣ 13. MOTION & TIME

Graphical Representation of time :

By drawing the distance-time graph, the motion of an object can be represented in diagram form. A distance-time graph represents how the distance travelled by a moving object changes with time

Method to draw Distance-time Graph :

To draw a distance-time graph, use a graph paper. For drawing the distance-time graph for a moving object, we require the readings of distances travelled by the object and the corresponding time values which have been obtained experimentally.

The distances travelled by car at various times are shown below:

Distance(km)	0	2	4	6	8	10
Time (min)	0	2	4	6	8	10

Step 1: We take the graph paper and draw a horizontal line OX (x-axis) and a vertical line OY (y-axis) at right angles to each other.

Step 2: Write time (min) on x-axis and distance (km) on the y-axis and also put arrows with them.

Step 3: In this problem, we have only small time values (0, 2, 4, 6, 8 and 10 min) to represent. So, the scale to be used for showing time can be 2 min = 2 cm. Here, we mark the time values 0, 2, 4, 6, 8 and 10 on the line OX as shown in the figure given as alongside.

Step 4: Again, the distance values given in this problem are small (0, 2, 4, 6, 8 and 10 km). So, the scale to be used for representing distance values on the graph can be 2 km = 2 cm. We now mark the distance values 0, 2, 4, 6, 8 and 10 on the line OY (see figure).

Step 5: We can see in the graph that the first reading given in this problem is time = 0 and distance = 0. The point O (called origin) represents the 0 (zero) values both for time and distance. Therefore, at point O on graph paper, time is 0 and distance is also 0. The second reading is time = 2 min and distance = 2 km.

Step 6: Now, the vertical line above the 2 min mark on the graph paper and horizontal line on the right side of 2 km mark on graph paper cross at point A(see figure). So,we put a pencil dot at point A.

Step 7: In the same way, the third, fourth, fifth and sixth readings of time and the corresponding readings of distance will give us points B, C, D and E on the graph paper which are marked as pencil dots (see figure).

Step 8: After joining the point O and the dots at point A, B, C, D and E with a pencil line, we will get a straight line graph OE (see figure). So, this is the required distance-time graph for the motion of the car.

Since the distance-time graph for the motion of the car is a straight line, so from here we can conclude that the car is moving with a constant speed (or uniform speed).

Distance-time graph of the car
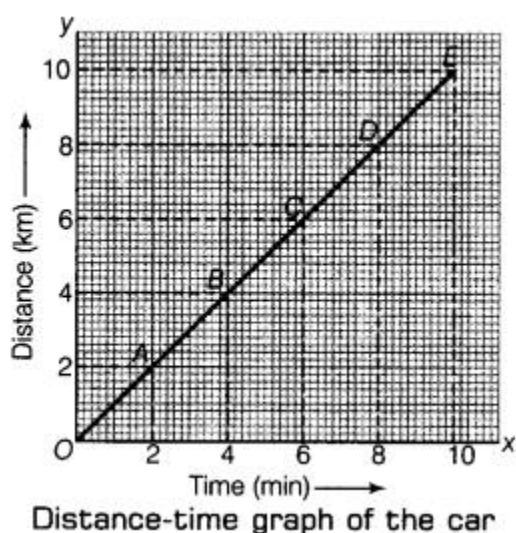
‣ **ASSIGNMENT :**

1. What is the distance time graph represents?
2. What is the nature of the graph of an object moving with uniform speed ?
3. Draw a distance-time graph from the given data :

Distance(km)	0	3	6	9	12	15
Time (min)	0	3	6	9	12	15