

MAT HILITE



(अक्सर पूछा करते हैं.....)

Classes – 9th to 10th

Series
6



MATHEMATICAL LITERACY GROUP- CHANDIGARH

Using Graphs to Estimate Values

How do you think city planners can predict the volume of water that will be needed by its residents in the future?



Do you know we can use graphs to estimate values and make predictions?



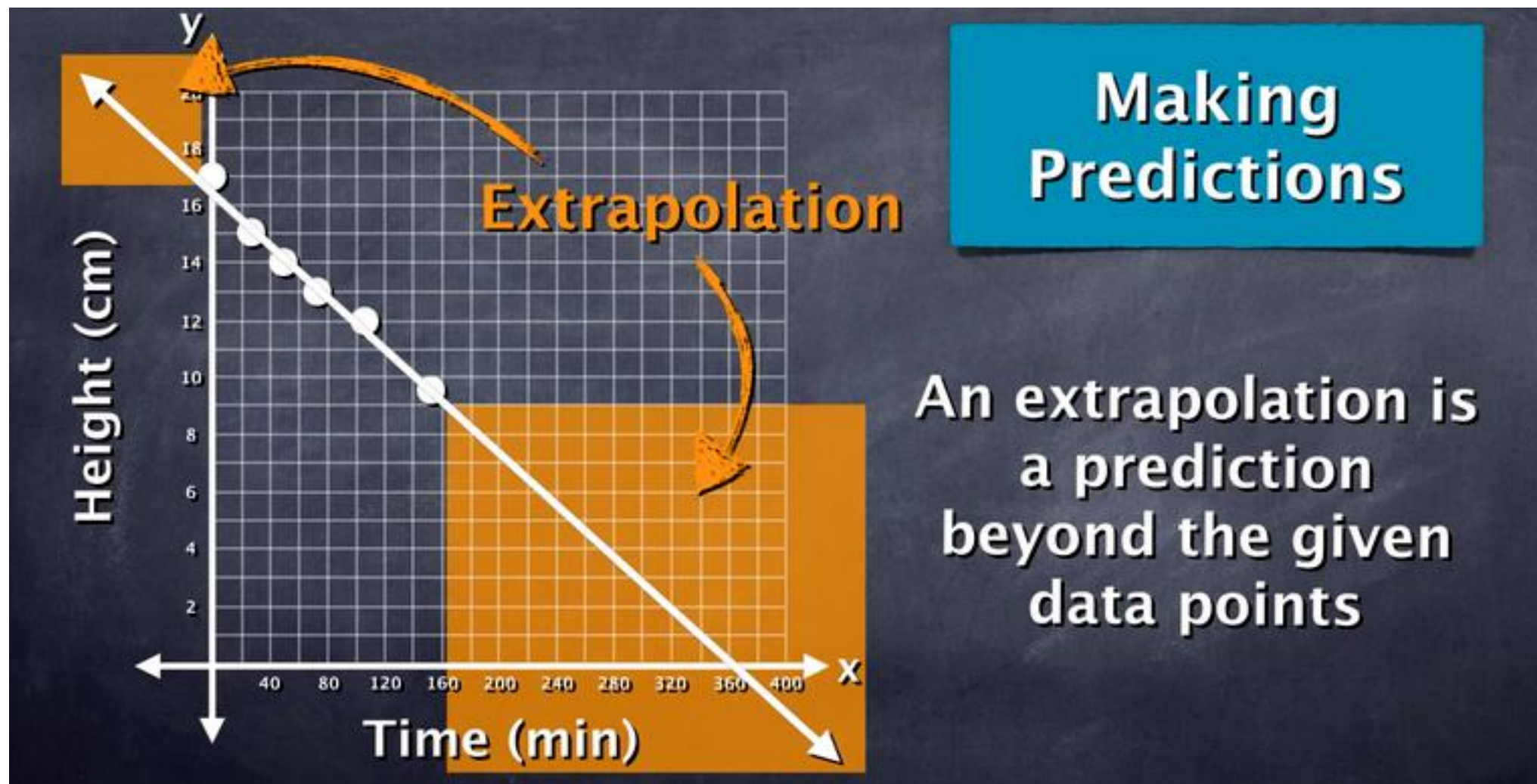
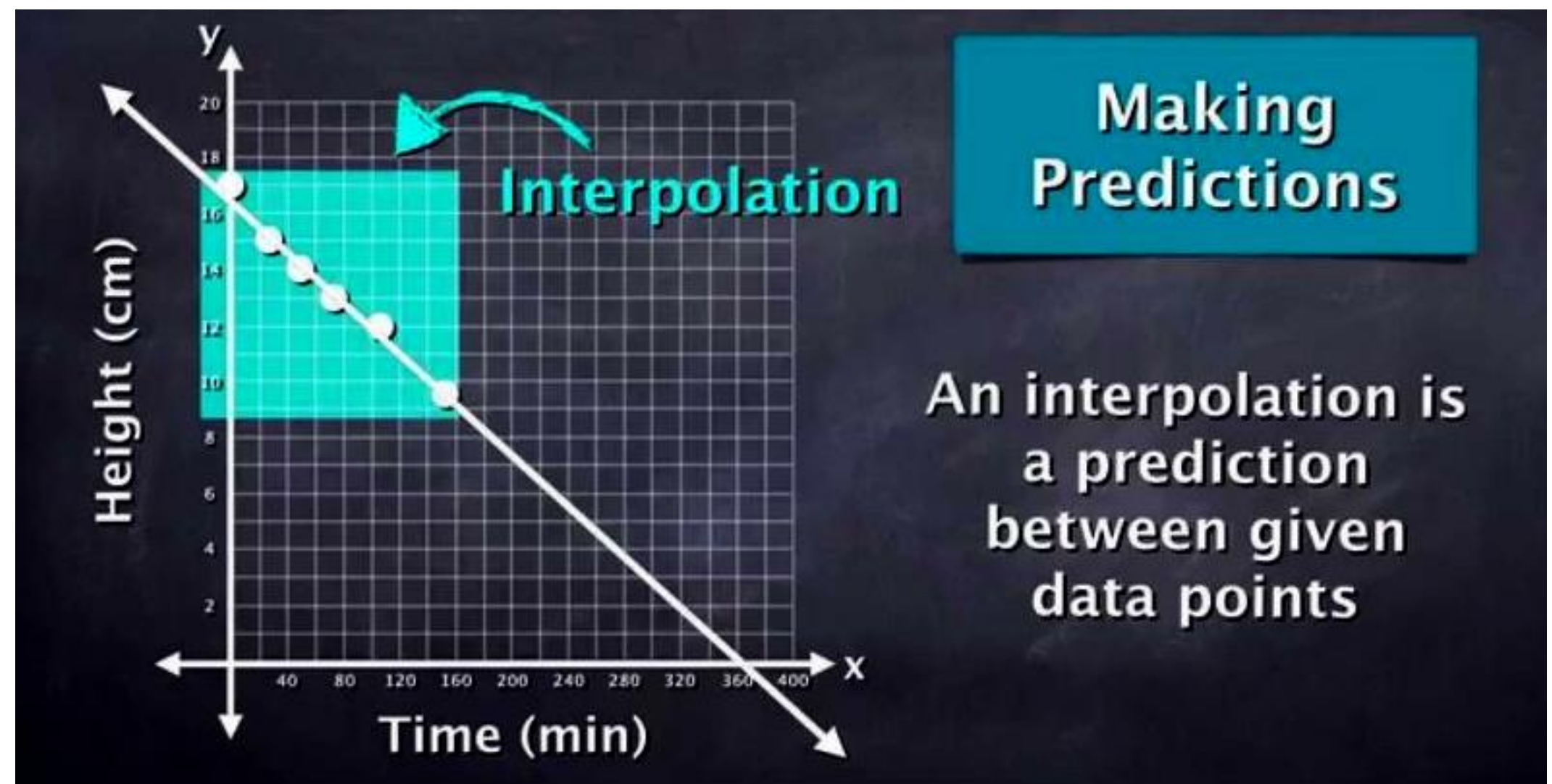
This can be done with Interpolating and Extrapolating the graph.



**Mam , What is Interpolating and Extrapolating?
I can only draw a graph by using known values.**

Ok, Let me explain the concept of Interpolating and Extrapolating the graph.







Mam please explain with examples....

To estimate the distance travelled in 1.5 hours

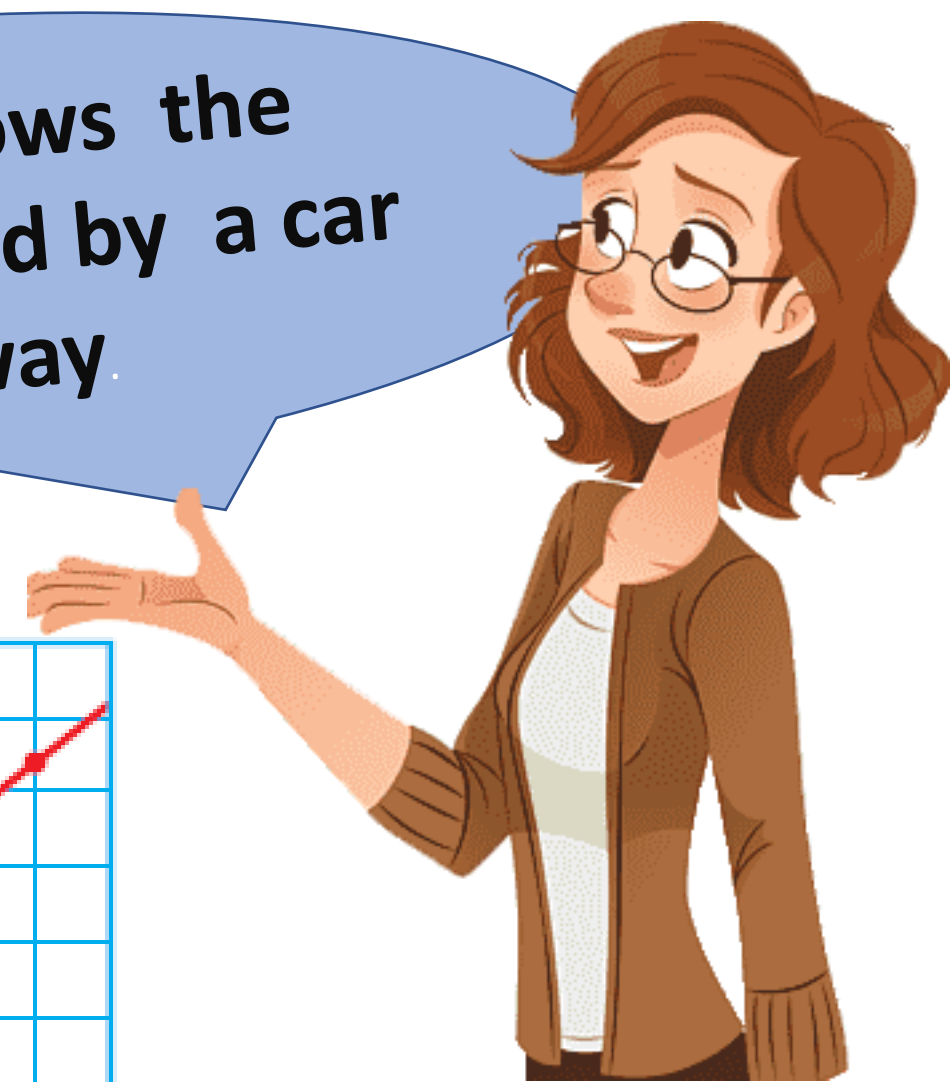
- Begin at 1.5 on the Time axis.
- Draw a vertical line to the graph.
- Then draw a horizontal line from graph to the Distance axis.

This line intersects the axis at about 120 km.
So, the distance travelled in 1.5 hours is 120 km

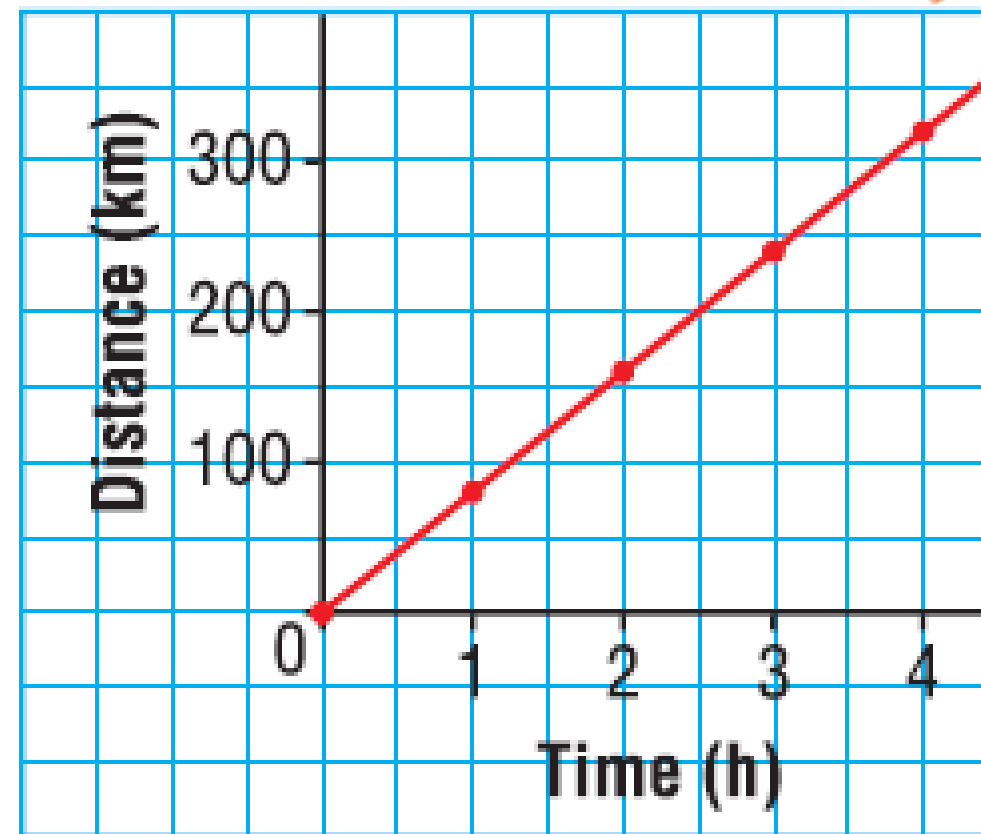


Observe this graph related to above example

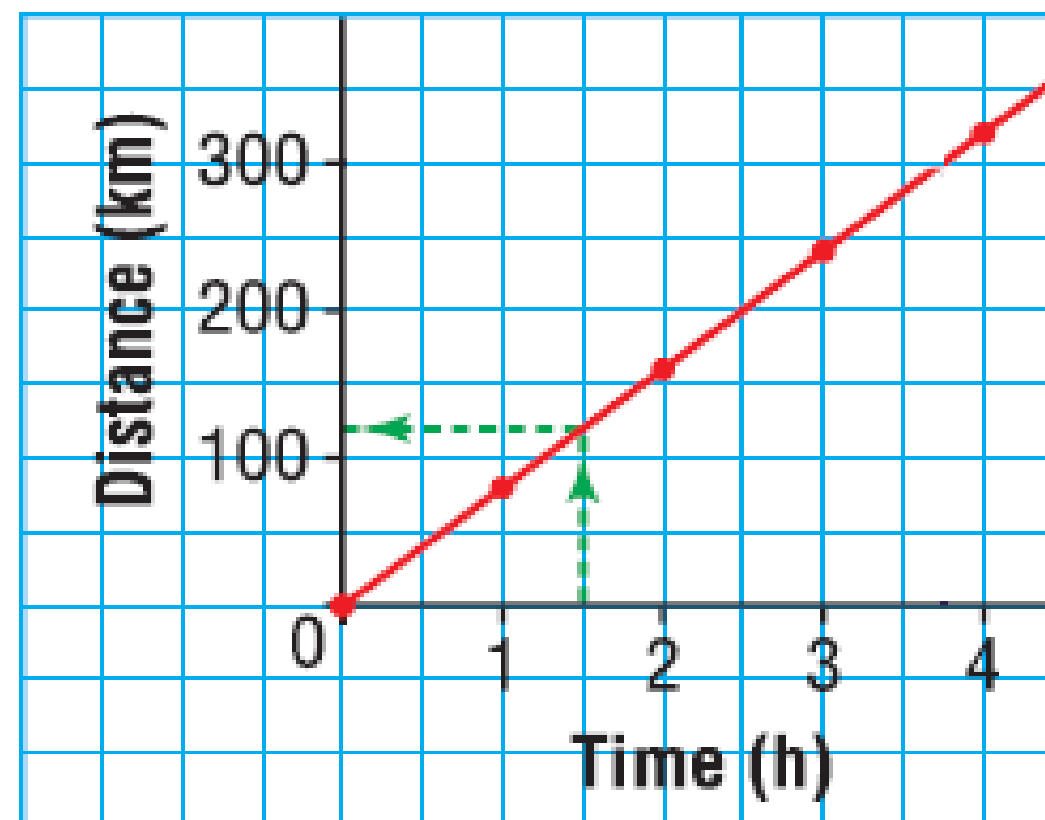
This graph shows the distance travelled by a car on highway.



Graph of a Car Journey



Graph of a Car Journey

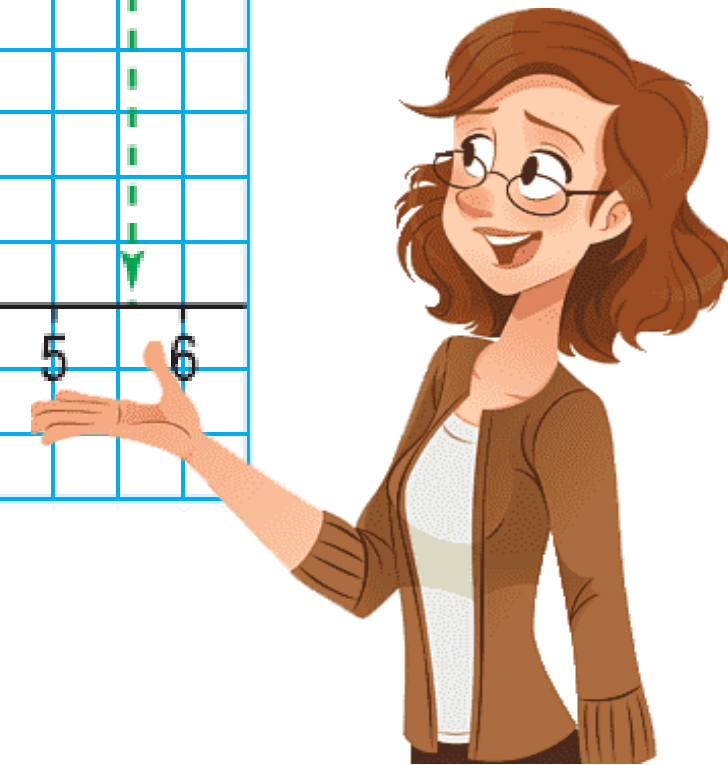
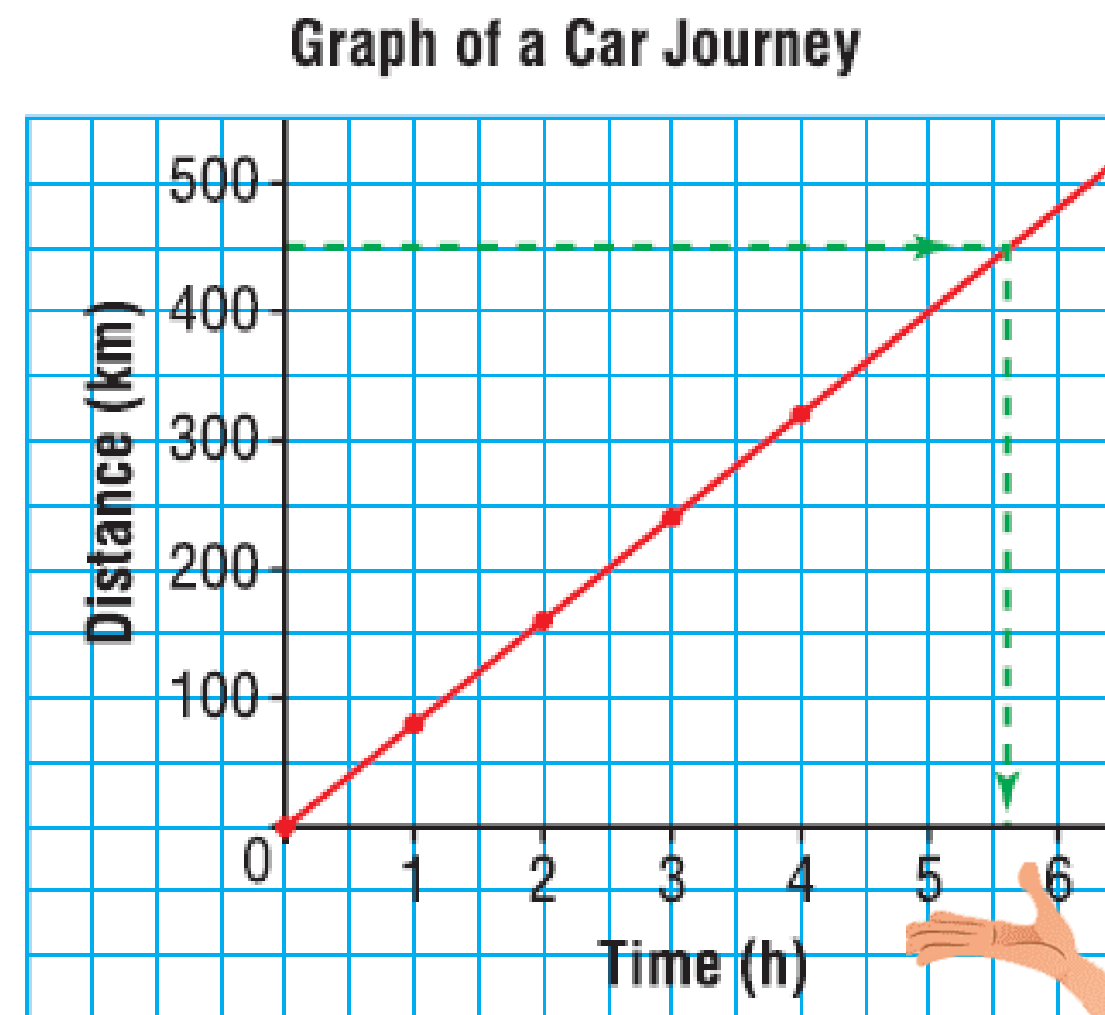


So Interpolation is to estimate values that lie between 2 given data points on the graph.

To estimate the time it takes to travel 450 km:

- Extend the graph on the Distance axis to show at least 450 km.
- Repeat the process as explained in previous graph to estimate the time taken to travel 450 km

It takes a little more than 5.5 hours to travel 450 km as shown in graph.

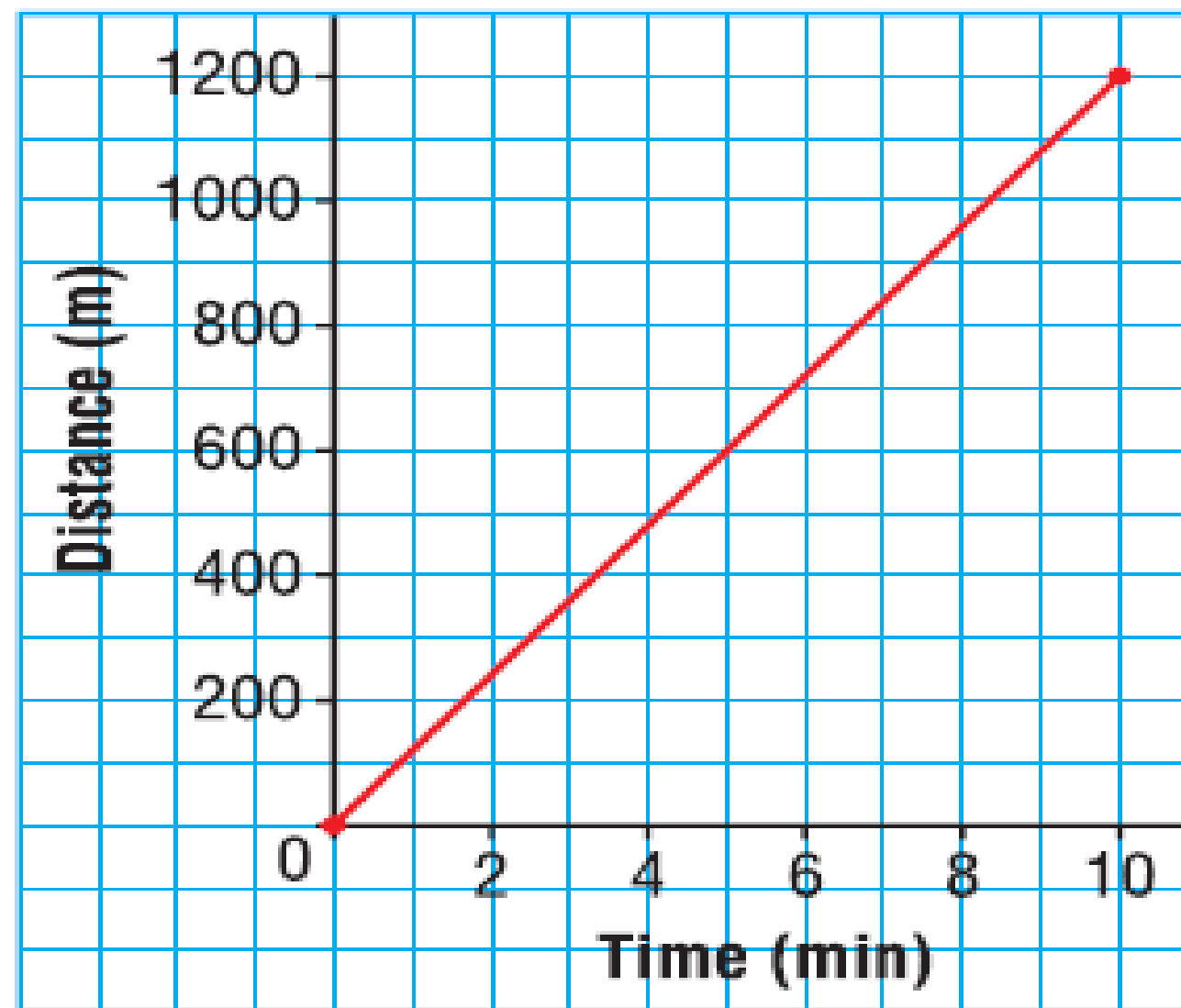


So Extrapolation is to estimate values that lie beyond given data points on the graph of linear relation.

Thanks Mam..... I have understand this concept please give some practice work related to this concept.



Katrina jogs on running track. This graph shows how far she jogs in 10 min. Assume Katrina continues to jog at the same average speed.



Use the graph to answer following.

1. Predict how long it will take Katrina to jog 2000m.
2. Predict how far Katrina will jog in 14 min.
3. What assumption did you make for the prediction in both cases ?