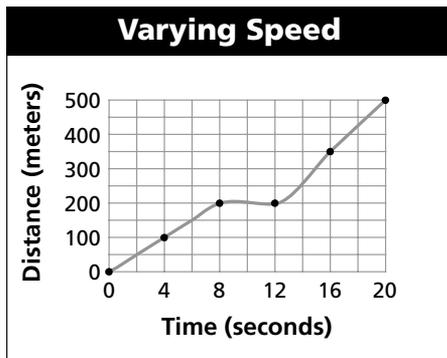


Chapter 11 Motion

# Interpreting a Distance-Time Graph

The distance-time graph below illustrates the motion of a car whose speed varied with time during a trip. Calculate the average speed of the car during the first 8 seconds of the trip. Give your answer in km/h.



**Math Skill:**  
Line Graphs and Conversion Factors

You may want to read more about this **Math Skill** in the **Skills and Reference Handbook** at the end of your textbook.

### 1. Read and Understand

*What information are you given?*

A graph of distance versus time.

### 2. Plan and Solve

*How will you determine speed for the time interval referenced in the question?*

- To determine the distance traveled in 8 s, move your finger up from the 8 s mark on the time axis to the plotted line.
- Now move your finger horizontally to the left to the distance axis. Read the value from the axis. (200 m)
- Calculate the average speed using the formula  

$$\text{Speed} = \text{Distance} / \text{Time} = 200 \text{ m} / 8 \text{ s} = 25 \text{ m/s}$$
- Convert from m/s to km/h:  

$$(25 \text{ m/s})(3600 \text{ s/h})(1 \text{ km}/1000 \text{ m}) = 90 \text{ km/h}$$

### 3. Look Back and Check

*Is your answer reasonable?*

A quick calculation from the interval of constant speed shows that the car traveled 100 meters in 4 seconds—an average speed of 25 m/s.

## Math Practice

*On a separate sheet of paper, solve the following problems.*

- How long did it take the car to travel a distance of 350 m? \_\_\_\_\_
- Determine the speed of the car in km/h during the interval 0 s to 12 s.