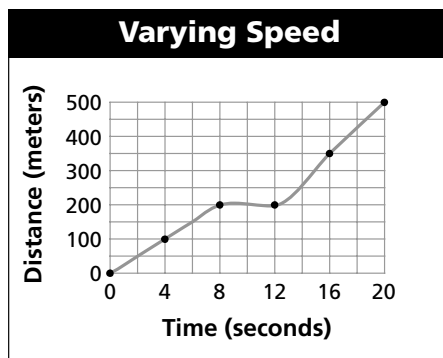


Chapter 11 Motion

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
Speed = Distance/Time = 200 m/8 s = 25 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.