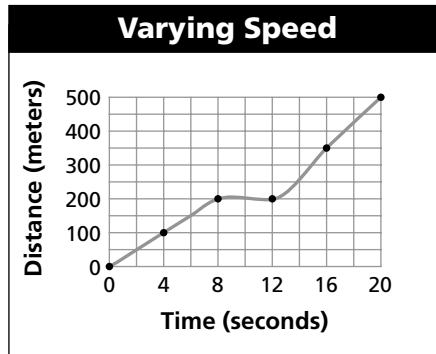


Chapter 11 Motion

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?

1. 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.
2. Now move your finger horizontally to the left to the distance axis. Read the value from the axis. (200 m)

3. Calculate the average speed using the formula

$$\text{Speed} = \text{Distance} / \text{Time} = 200 \text{ m} / 8 \text{ s} = 25 \text{ m/s}$$

4. 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.

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