

# Mathematical Description of Motion

<http://ionaphysics.org/lab/Physlets/ConstV.html>

$$\text{average speed} = \frac{\text{change in distance}}{\text{change in time}}$$

1. A car travels 30 m in 60 seconds. Find the average speed of the car.
2. How far will the car travel if it maintains the same speed for 10 minutes?
3. How long will it take the car to travel a total distance of 450 m ?

Textbook

Read pages 31 - 34

Go to

<http://ionaphysics.org/lab/Physlets/ConstV.html>

Run the simulation and calculate the speed of the car.

Two types of quantities:

Scalars -

Vectors -

Examples of each

# Adding Scalars

# Adding Vectors

**Resultant: (Vector Sum)** A single vector which has the same effect as the combined effects of the vectors being added

A car moves 40 m North and then 30 m East. Find the total displacement of the car.

## Adding vectors:

1. Using some convenient scale, draw the first vector as an arrow.
2. Starting at the head of the previous vector, draw the next one to the same scale.
3. Repeat step 2 if necessary.
4. The resultant is drawn from the tail of the first vector to the head of the last vector.

<http://ionaphysics.org/lab/Explore/dswmedia/vector.htm>

An airplane heads due North. Its air speed is 60 mi/hr. The wind is from the west at 20 mi/hr. Find the resultant ground speed and direction of the plane.

A car travels 30 miles West and then 20 miles North.  
Find the resultant displacement of the car.