

## Answer on Question #73986, Physics / Other

A man goes x to place y and return to place x on his motor bike. the distance between place x and y is 180 km and takes 4 hours 30 minutes to complete his journey, find his average speed and velocity in km/h

### Solution:

The average speed during the course of a motion is often computed using the following formula:

$$\text{Average Speed} = \frac{\text{Distance Traveled}}{\text{Time of Travel}}$$
$$v_{av} = \frac{d + d}{t} = \frac{180 + 180 \text{ km}}{4.5 \text{ hours}} = 80 \text{ km/h}$$

Average Velocity is displacement over total time. Velocity is a vector quantity, and average velocity can be defined as the displacement divided by the time.

$$\text{Average Velocity} = \frac{\text{Displacement}}{\text{Time of Travel}}$$

A displacement is a vector whose length is the shortest distance from the initial to the final position of a point.

In our case

$$\text{displacement} = 0$$

$$\vec{v}_{av} = \frac{180 - 180}{4.5} = 0$$

**Answer:** 80 km/h; 0 km/h.