



## Calculating Average Speed and Average Velocity

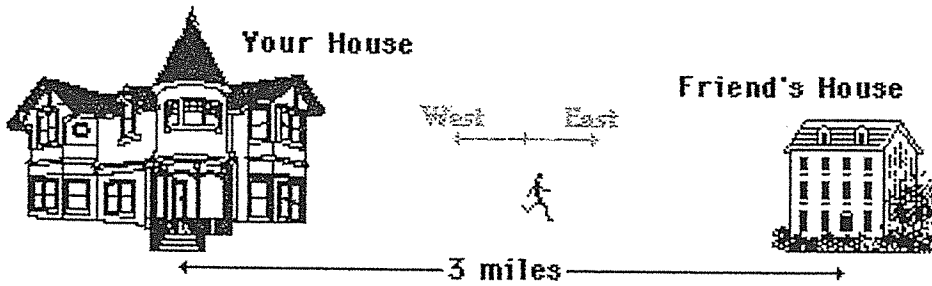
The average speed of an object is the rate at which an object covers distance. The average velocity of an object is the rate at which an object changes its position. Thus,

$$\text{Ave. Speed} = \frac{\text{distance}}{\text{time}}$$

$$\text{Ave. Velocity} = \frac{\text{displacement}}{\text{time}}$$

Speed, being a scalar, is dependent upon the scalar quantity distance. Velocity, being a vector, is dependent upon the vector quantity displacement.

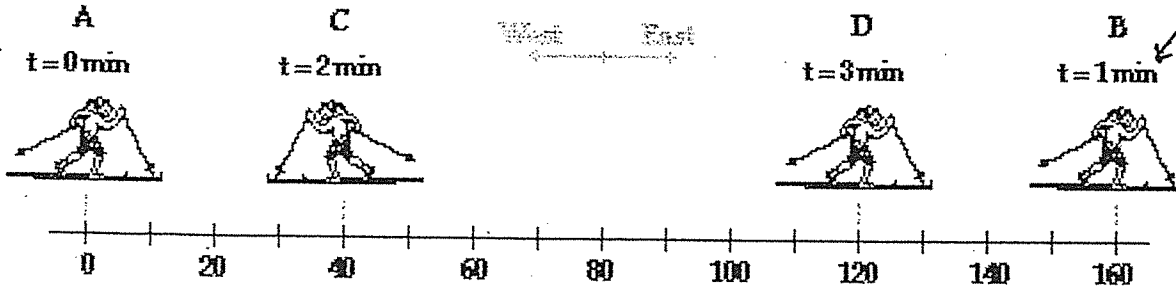
7. You run from your house to a friend's house that is 3 miles away in 30 minutes. You then immediately walk home, taking 1 hour on your return trip.



- a. What was the average speed (in mi/hr) for the entire trip? \_\_\_\_\_  
 b. What was the average velocity (in mi/hr) for the entire trip? \_\_\_\_\_

8. A cross-country skier moves from location A to location B to location C to location D. Each leg of the back-and-forth motion takes 1 minute to complete; the total time is 3 minutes. The unit of length is meters.

Read carefully



times represent the skier's location after x min have elapsed

a) What was the total time of travel? \_\_\_\_\_

B) total distance covered = \_\_\_\_\_  
 total displacement (incl. direction) = \_\_\_\_\_

c) Calculate the <sup>a)</sup> average speed & <sup>b)</sup> average velocity using the F.G.I.S format.

a) F: \_\_\_\_\_  
 G: \_\_\_\_\_  
 E: \_\_\_\_\_  
 S: \_\_\_\_\_

B) F: \_\_\_\_\_  
 G: \_\_\_\_\_  
 E: \_\_\_\_\_  
 S: \_\_\_\_\_