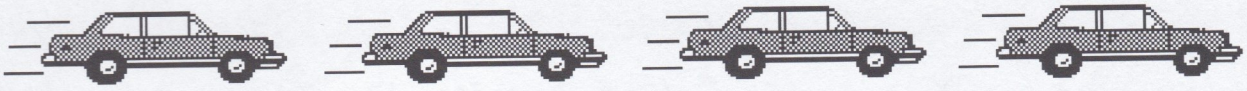
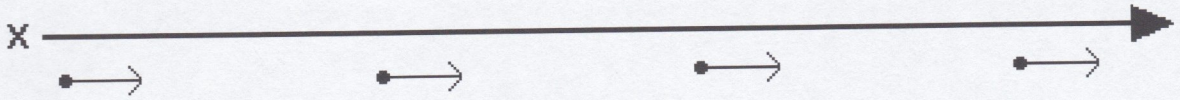
Reading: Motion Maps

A motion map represents the position, velocity, and acceleration of an object at various clock readings. (At this stage of the class, you will be representing position and velocity only.)

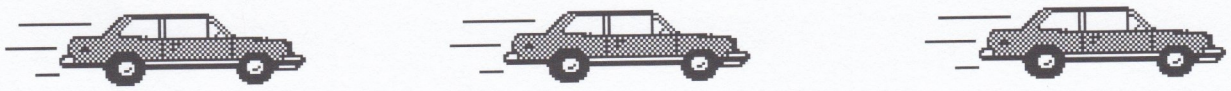
Suppose that you took a stroboscopic picture of a car moving to the right at constant velocity where each image revealed the position of the car at one-second intervals.



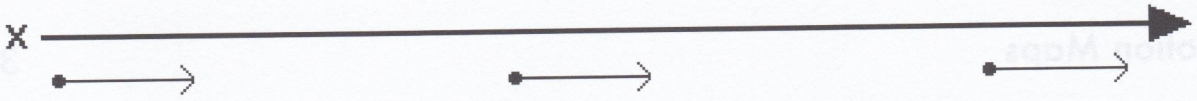
This is the motion map that represents the car. We model the position of the object with a small point. At each position, the object's velocity is represented by a vector.



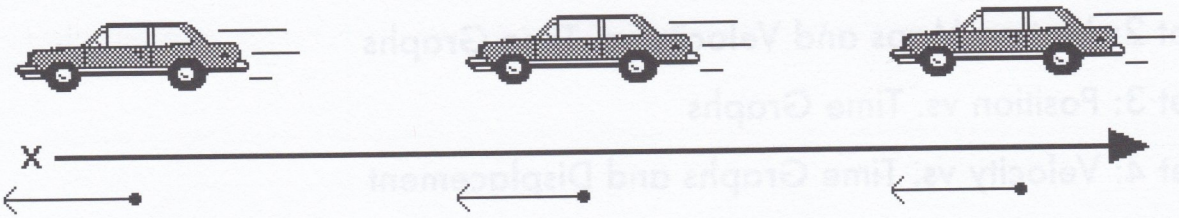
If the car were traveling at greater velocity, the strobe photo might look like this:



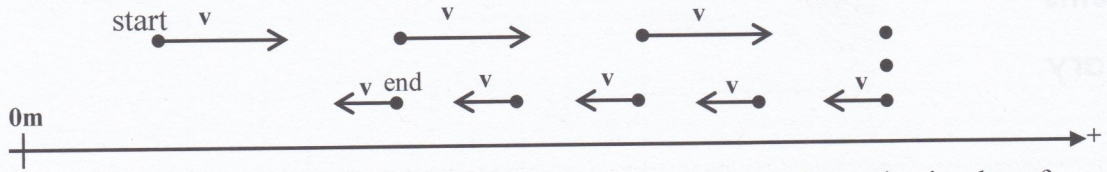
The corresponding motion map has the points spaced farther apart, and the velocity vectors are longer, implying that the car is moving faster.



If the car were moving to the left at constant velocity, the photo and motion map might look like this:



More complicated motion can be represented as well.



Here, an object moves to the right at constant velocity, stops and remains in place for two seconds, then moves to the left at a slower constant velocity.