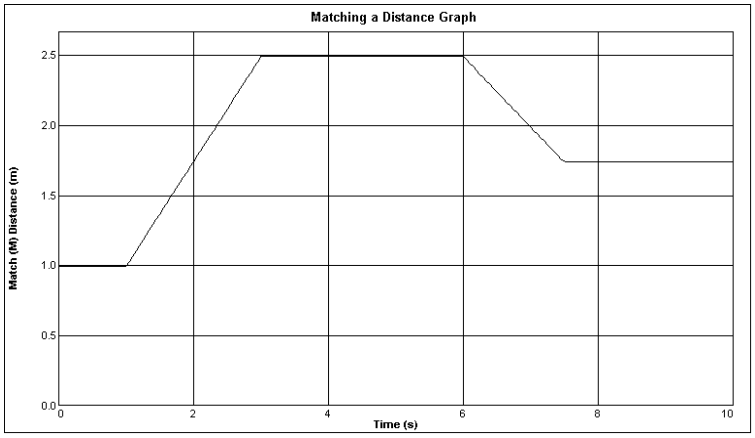
MOTION'S MYSTERIES

Physical Science and Technology -- Motion Lab

If you wanted to describe to someone how an object moves, how would you do it? This series of activities is designed to show you the proper manner in which the motion of an object is communicated. Key terms you will eventually need to understand include the following: ***distance traveled, displacement, speed, velocity, time, and acceleration***.

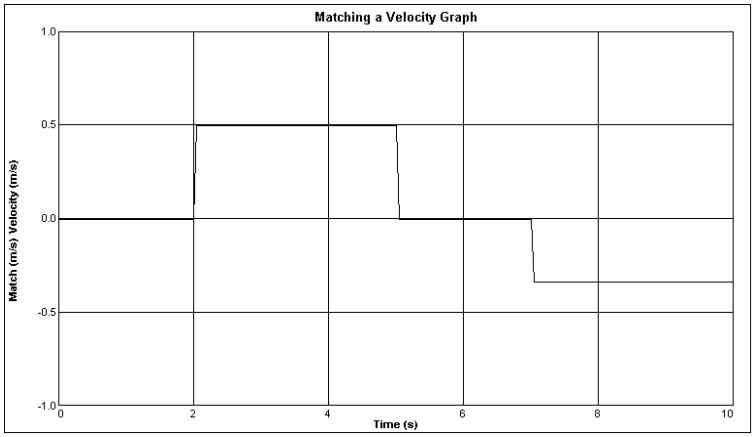
The graphs for this lab are found in the "_Physics with Vernier" folder.

PROCEDURE



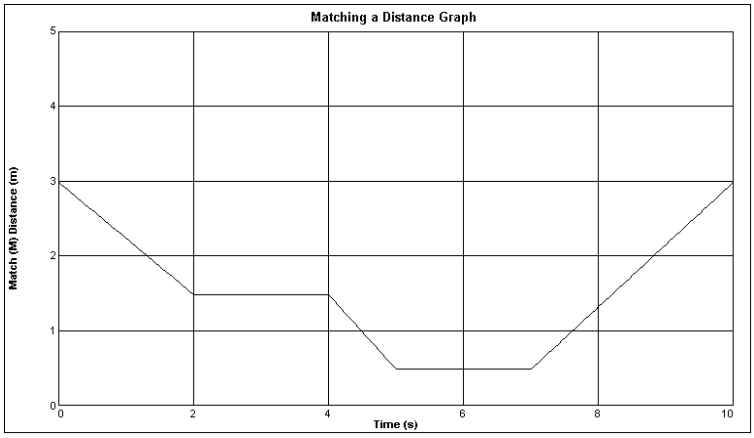
1. Predict how you *would* walk to produce this **distance** graph (01b) and write down your prediction. Use the terms DISPLACEMENT, VELOCITY, and TIME.

2. Test your prediction using the Motion Detector – try to walk in such a way that the graph of your motion matches the target graph on the computer screen. If you were not successful, repeat the process until your motion closely matches the graph on the screen. Sketch the graph with your best attempt ***and describe how you had to move to match the graph*** using the terms DISPLACEMENT, VELOCITY and TIME. Be as specific as possible, including estimates of your velocity and distance from the sensor at different times.



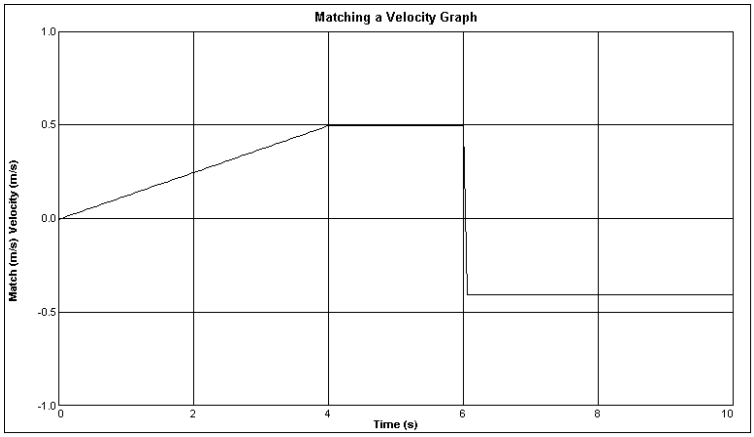
3. Predict how you *would* walk to produce this **velocity** graph (01d) and write down your prediction. Use the terms DISPLACEMENT, VELOCITY, ACCELERATION and TIME.

4. Test your prediction using the Motion Detector – try to walk in such a way that the graph of your motion matches the target graph on the computer screen. If you were not successful, repeat the process until your motion closely matches the graph on the screen. Sketch the graph with your best attempt ***and describe how you had to move to match the graph*** using the terms DISPLACEMENT, VELOCITY, ACCELERATION and TIME. Be as specific as possible, including estimates of your velocity and distance from the sensor at different times.



5. Predict how you *would* walk to produce this **distance** graph (01c) and write down your prediction. Use the terms DISPLACEMENT, VELOCITY, and TIME.

6. Test your prediction using the Motion Detector – try to walk in such a way that the graph of your motion matches the target graph on the computer screen. If you were not successful, repeat the process until your motion closely matches the graph on the screen. Sketch the graph with your best attempt ***and describe how you had to move to match the graph*** using the terms DISPLACEMENT, VELOCITY and TIME. Be as specific as possible, including estimates of your velocity and distance from the sensor at different times.



7. Predict how you *would* walk to produce this **velocity** graph (01e) and write down your prediction. Use the terms DISPLACEMENT, VELOCITY, ACCELERATION and TIME.

8. Test your prediction using the Motion Detector – try to walk in such a way that the graph of your motion matches the target graph on the computer screen. If you were not successful, repeat the process until your motion closely matches the graph on the screen. Sketch the graph with your best attempt ***and describe how you had to move to match the graph*** using the terms DISPLACEMENT, VELOCITY, ACCELERATION and TIME. Be as specific as possible, including estimates of your velocity and distance from the sensor at different times.