

Lab: Representing Motion

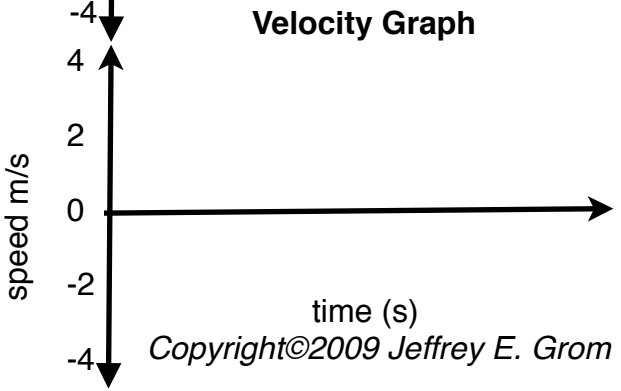
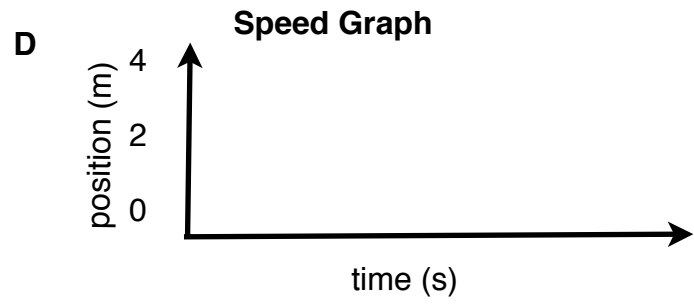
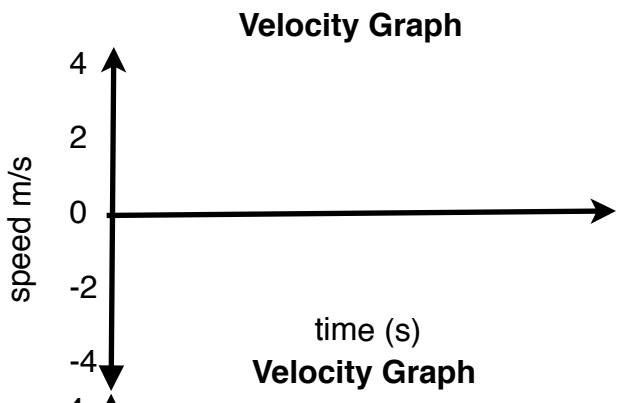
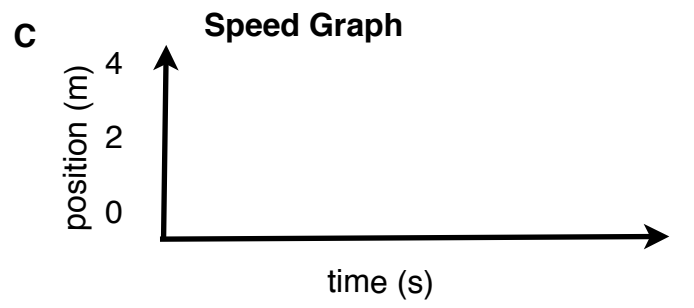
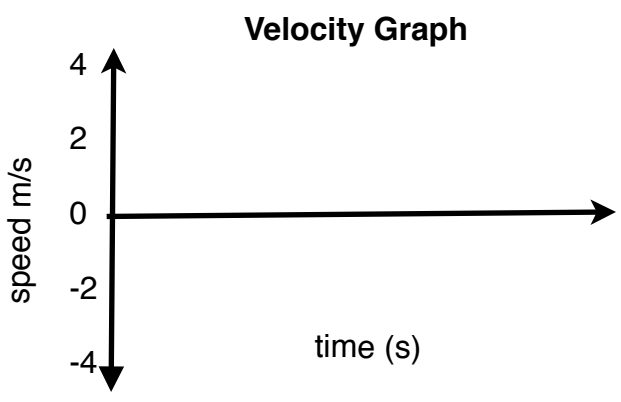
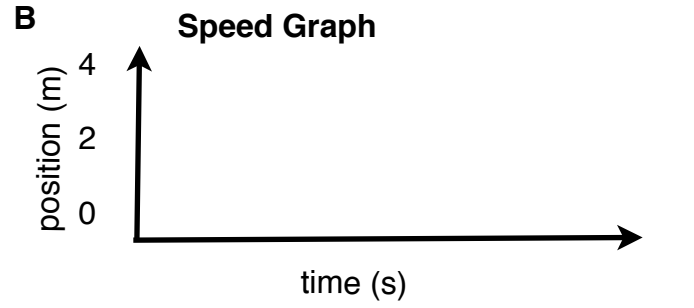
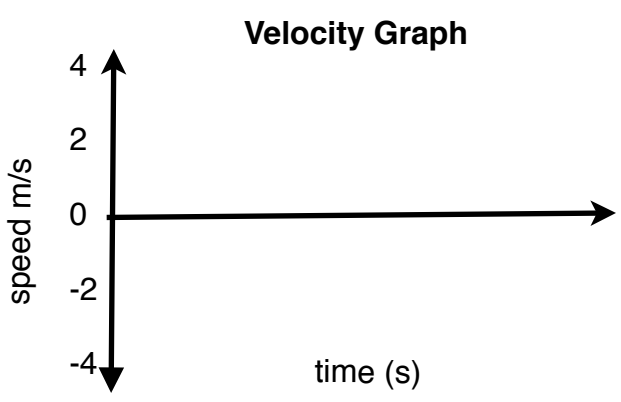
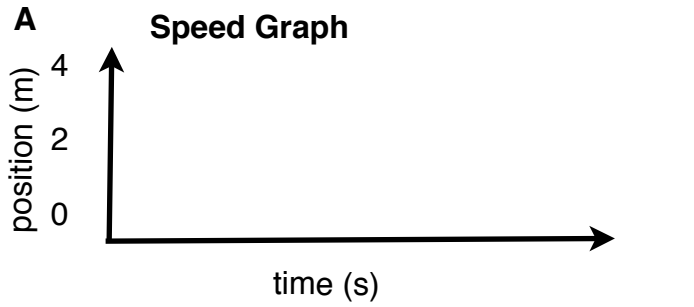
In this lab you will understand how position vs. time graphs are related to velocity graphs.

Problems: Under your hypotheses draw your predictions for the following situations in both a position-time graph and a velocity graph:

- A: An object 2m away at rest for 10 seconds.
- B: An object starting at point 0 and moving away at a constant speed.
- C: An object starting at 4m and moving toward the starting point(0) at a constant speed.
- D: An object accelerating away from the starting point for the duration of the time.

HINT: Just draw the GENERAL TREND of what you think the graph should look like. Don't worry about minor changes from interference.

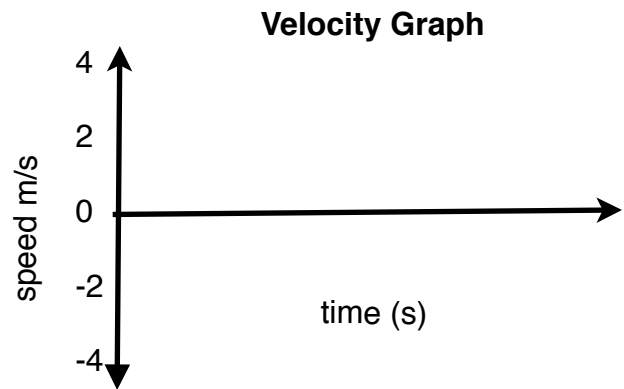
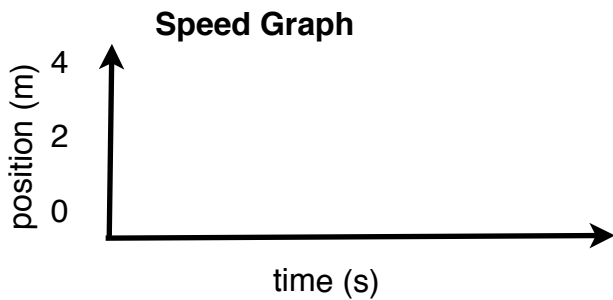
Hypotheses:



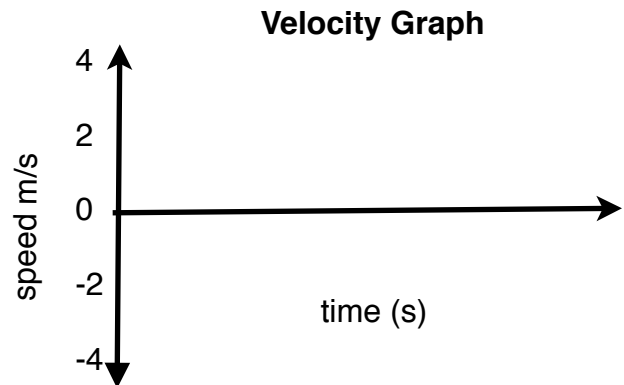
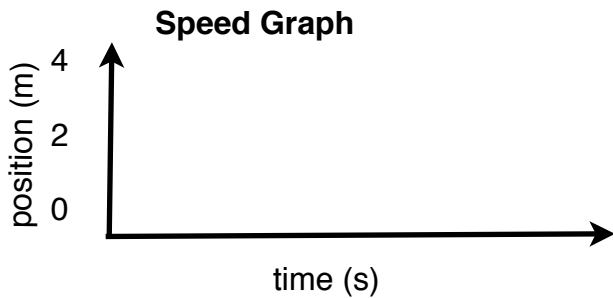
Procedure:

1. Be sure your motion detector is connected to the lab pro and computer. Be sure it is set up so that you have a path of about 4 meters to walk in front of without interfering with another group.
 2. Once connected, your Logger Pro should show two graphs. One measuring speed and the other showing velocity for the same movement.
 3. For each situation below, draw your prediction of what each of the the graphs will look like.
 4. Next, have one partner start the data collection and another do the movement stated in the graph. It may help to hold a book in front of you so the detector has something to aim at. Do not swing your arms, give as little interference as possible.
 5. If you think the graph is accurate, draw the representation on the same graph as your prediction with a pen or a different color pencil. If it is not accurate, do it over.
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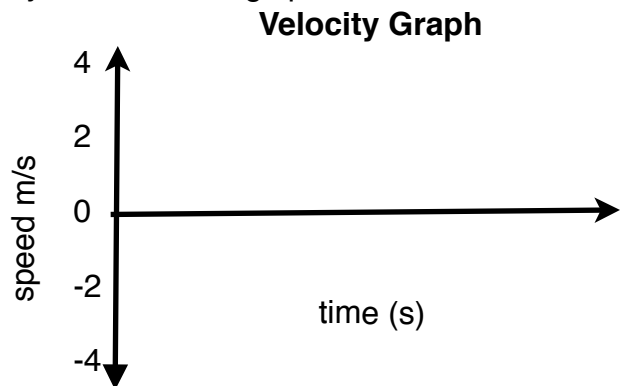
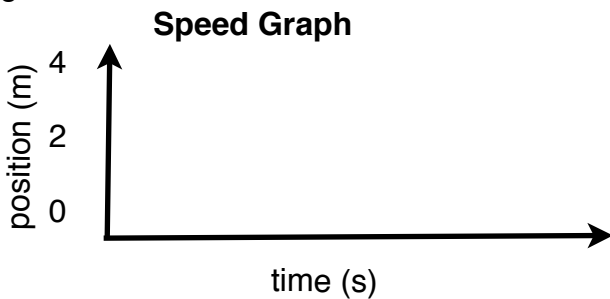
Start right in front of the detector and walk away at a constant speed.



Start at about 6m away walk toward the motion detector with increasing speed.

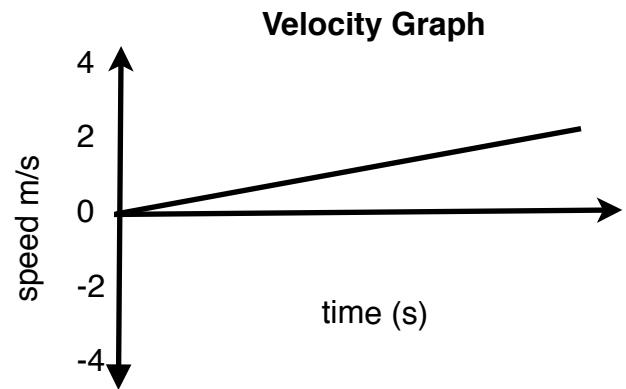
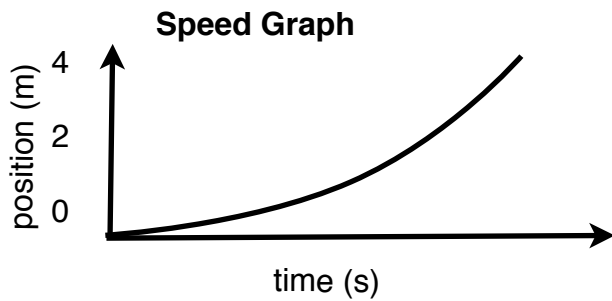


Start right in front of the motion detector and walk away quickly with increasing speed.

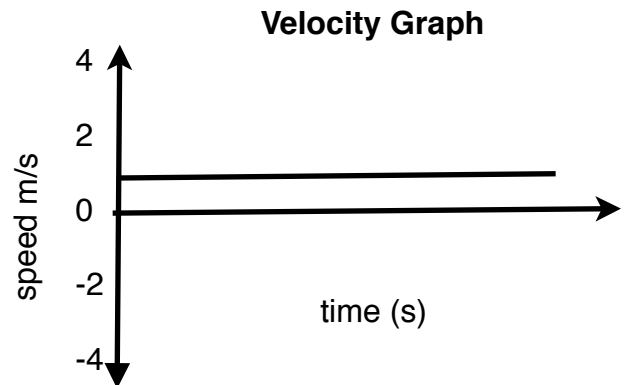
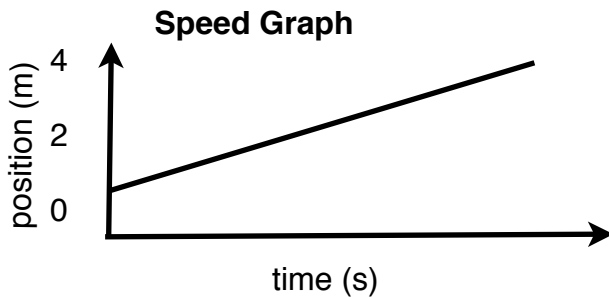


For the next graphs, predict the movement that is necessary to create the given lines

Prediction of the motion:



Prediction of the motion:



Prediction of the motion:

