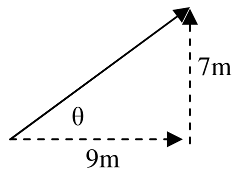
Due Wed., Sept 19

2012 PreAP Linear Motion 15

Answers will be given at the end of each problem in parenthesis. I also suggest scratch paper.



1. Find the length of the hypotenuse and the angle.
   (H = 11.4 m; θ = 37.9°)

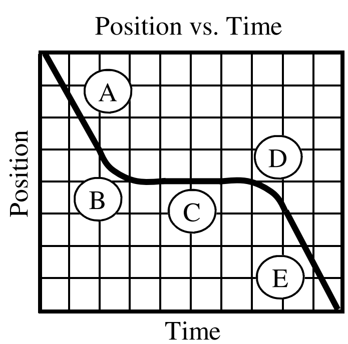
2. Jar Jar Binks has been caught. The devote Star Wars fans throw him into the air going 6.5 m/s. How high does he go? (2.16m)

3. Not liking this character, but not entirely diabolical, the Star Wars-ians drop Jar Jar Binks onto something soft, like Jabba the Hut. If they drop him from 8 m, how long does it take for Jar Jar to land on Mr. Hut? (1.28 sec)

4. Jar Jar then tries to get away, crawling slowly, using the celebration of the Star Wars devotees as cover. Jar Jar has an acceleration of 0.15 m/s^2. Jar Jar reaches 0.85 m/s before the 3.4 second celebration is over. How far does Jar Jar crawl before again being caught? (2.02 m)

5. Jar Jar Binks wakes up in one of Jabba the Hut's dungeon cells, since Mr. Hut was unhappy with being pelted by a Gungan. Jar Jar leans against the cell door and finds it open. After a few dazed seconds of surprise he starts running and doesn't see the dungeon pit in the dark. If it takes him 3.5 seconds to scream "Meesa Fallin' Again" before he hits the bottom, how far did he fall? (−60 m)

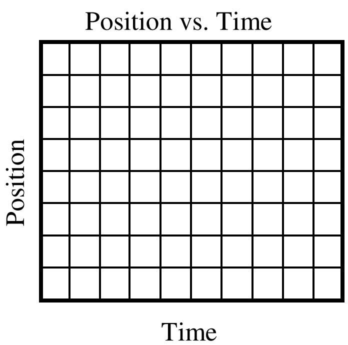
6. Jar Jar finds an old grappling hook and rope in the pit. (It's a movie. It doesn't have to make sense.) He tries to use it to get out of the pit. He throws it upwards going 18 m/s, letting go at his head. Missing the edge of the pit, of course, how long does it take the hook to come back and clobber his strangely shaped cranium? (0.37 sec)

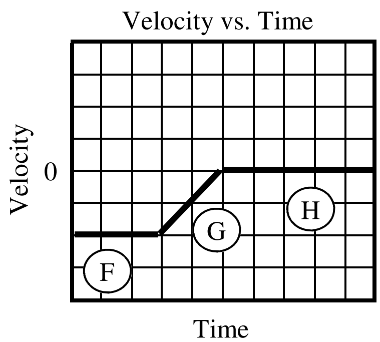


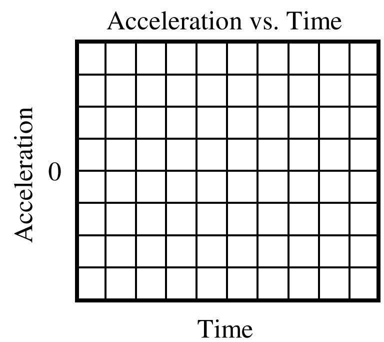
7. Assuming each square is 1 m by 1 second, calculate the average velocity for the first 6 seconds of the position vs time graph at the left. (−0.67 m/s)

8. Use line segments A—H to answer the following. Is it +, −, or 0?

A. ___ Δx for segment E.	F. _____Δv for segment A.
B. ___ v for segment H.	G. _____v for segment F.
C. ___ a for segment B.	H. _____ a for segment C.
D. ___ Δv for segment G.	I. _____ Δv for segment B.
E. ___ Δx for segment D.	J. _____Δx for segment D.







9. Transfer the velocity vs. time graph to the other two graphs. Assume each square is 1 m by 1 second.