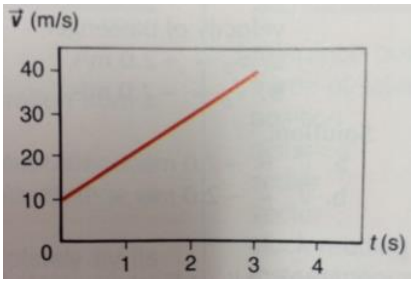
Graphing Uniform Motion

1. Draw a ***position-time graph*** of a moving elevator. Use the first floor as the reference point and up as positive. The elevator waits on the first floor for 30.0 s, rises to the third floor in 20.0 s, stops for 30.0 s, then goes to the basement, which it reaches in 40.0 s.

2. Using the graph to the right, describe how the instantaneous ***velocity*** changes with time.



3. Briefly answer each question about uniform motion.
   a. What does a horizontal slope tell you in a ***displacement-time*** graph?
   b. What does a horizontal slope tell you in a ***velocity-time*** graph?
   c. What goes on the y-axis in a ***velocity-time*** graph?
   d. What does a decreasing slope tell you in a ***displacement-time*** graph?

4. Using the table of values below, plot a ***displacement-time*** graph representing the data.

Displacement (m) [E]	Time (s)
0.0	0.0
20	1.0
40	2.0
60	3.0
60	4.0
0	5.0

5. From your graph in question 3, find the value of the **slope** of each time interval. What does this tell you?

6. A person drives a car at a constant +25 m/s for 10.0 min. The car runs out of gas, so the driver, carrying an empty gasoline can, walks at + 1.5 m/s for 20.0 minutes to the nearest gas station. After the 10.0 minutes needed to fill the can, the driver walks back to the car at the same speed. The car is then driven home at -25 m/s.
   a. Draw a ***velocity-time graph*** for the driver, using seconds as your time unit. You will have to calculate the distance the driver walked to the station in order to find the time needed to walk back to the car.
   b. Draw a ***position-time graph*** for the problem from the area under the curves of the velocity-time graph.