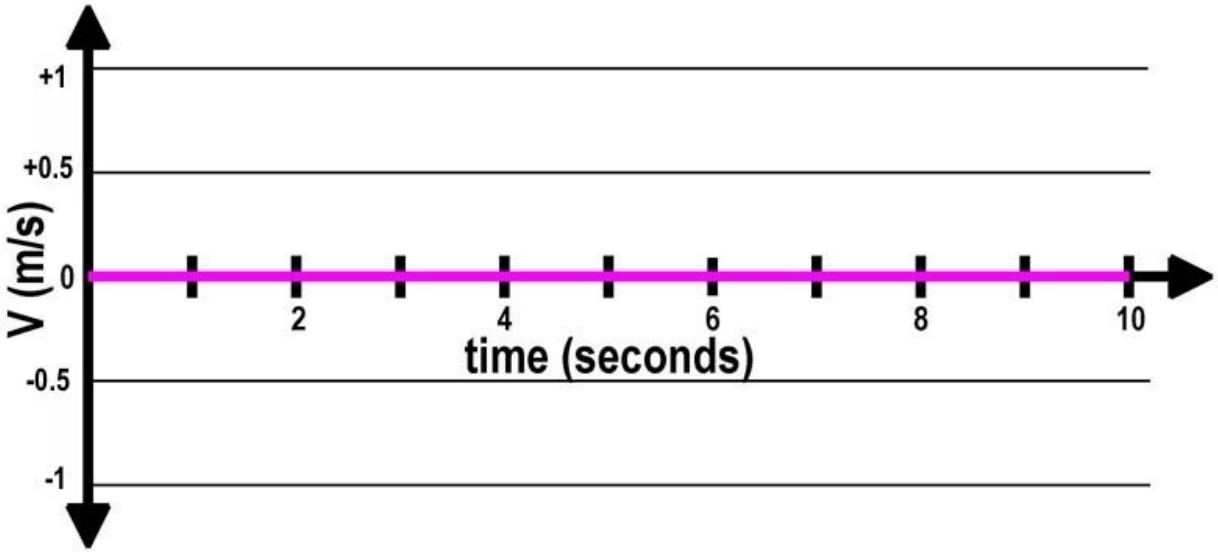
# Question #343

This is a follow-up to Question #342.

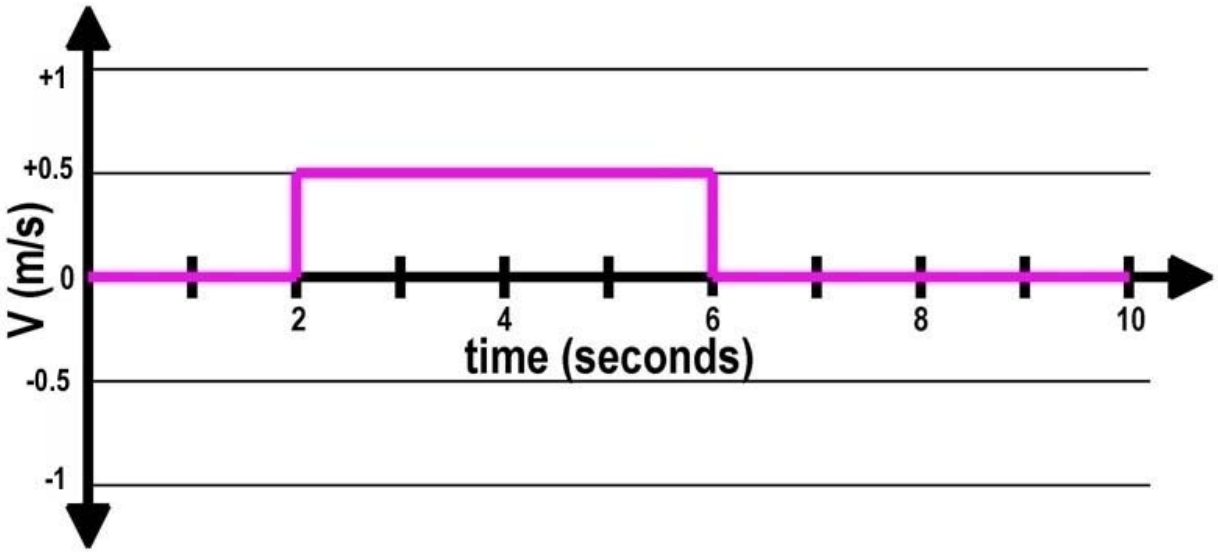
Shown in the photograph below is the *Vernier Software* ultrasonic motion detector system with software connected to the computer seen in the right side of the photograph. The ultrasonic range finder measures the time taken for a short burst of ultrasound emitted by the source to reflect off the styrofoam block which I am holding and return to the source, which also acts as a detector. That time is converted into a distance and plotted by the motion detector software. The *velocity vs. time* graph is obtained from the measured *distance vs. time* data.

Shown below are four graphs of v(t) versus t, where t is the time in seconds and v(t) is the velocity calculated from the pulsed ultrasonic range detector distance measurements.

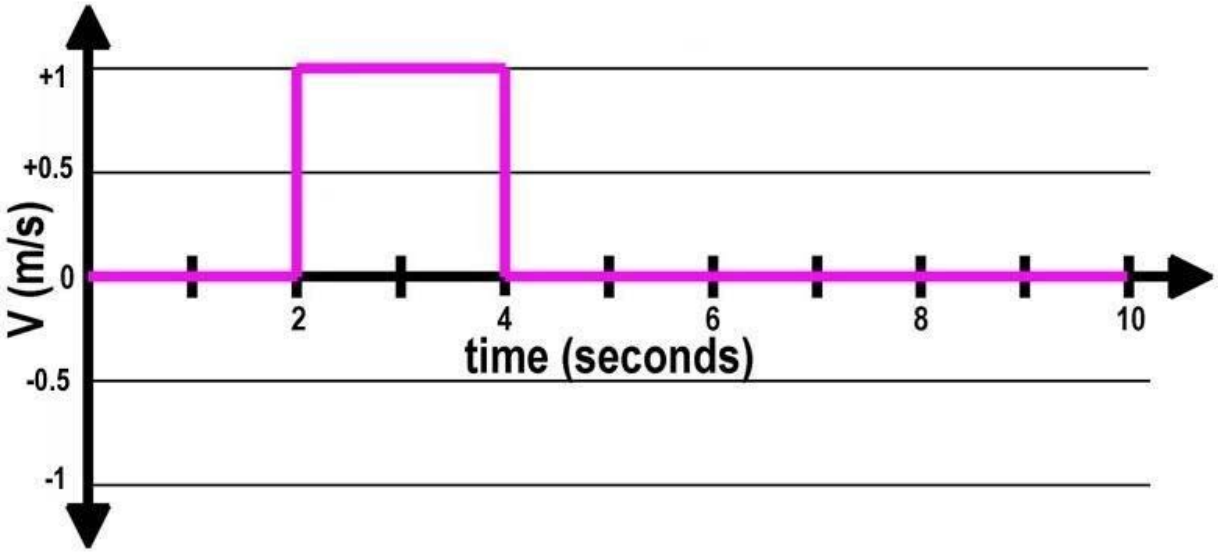
**(a)**



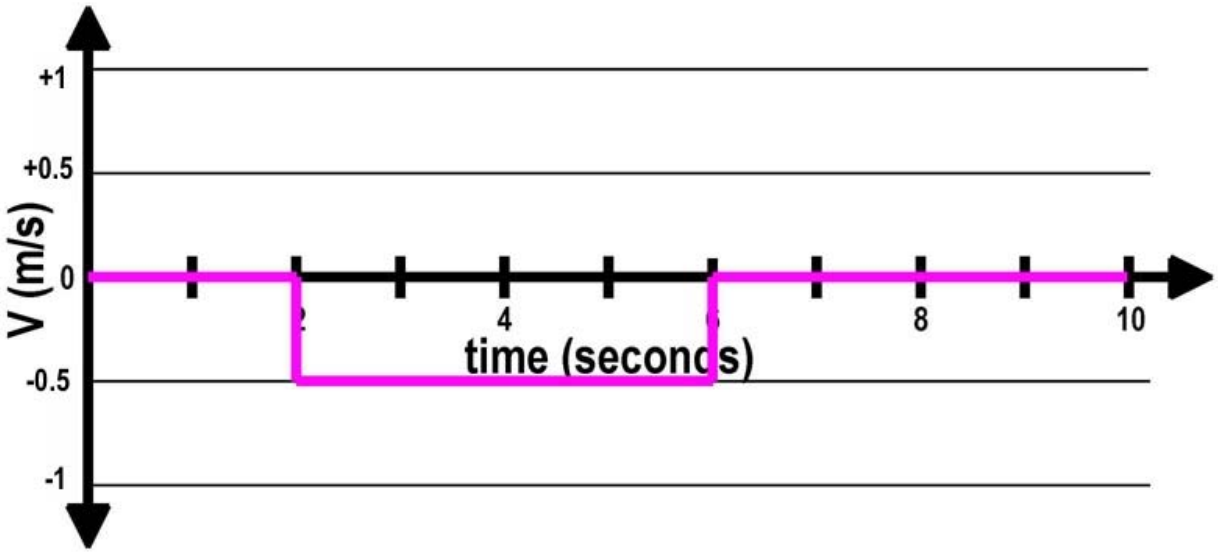

**(b)**


+1
+0.5
0
-0.5
-1
V (m/s)
2
4
6
8
10
time (seconds)

**(c)**


+1
+0.5
0
-0.5
-1
V (m/s)
2
4
6
8
10
time (seconds)

**(d)**




The links below include several examples of velocity versus time that I will create, that may or may not be the motion described by the four graphs above. You are to correlate my whereabouts as seen in the videos below with the four graphs above.

Links to the motion videos are:

- Video #1
- Video #2
- Video #3
- Video #4
- Video #5
- Video #6
- Video #7
- Video #8

My correlations are (print and mark your answers on the table):

- (a) Video #1, 2, 3, 4, 5, 6, 7, 8.
- (b) Video #1, 2, 3, 4, 5, 6, 7, 8.
- (c) Video #1, 2, 3, 4, 5, 6, 7, 8.
- (d) Video #1, 2, 3, 4, 5, 6, 7, 8.

Click here for Answer #343 after April 13, 2009.

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Question of the Week

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For questions and comments regarding the *Question of the Week* contact
Dr. Richard E. Berg by e-mail or using phone number or regular mail address
given on the Lecture-Demonstration Home Page.