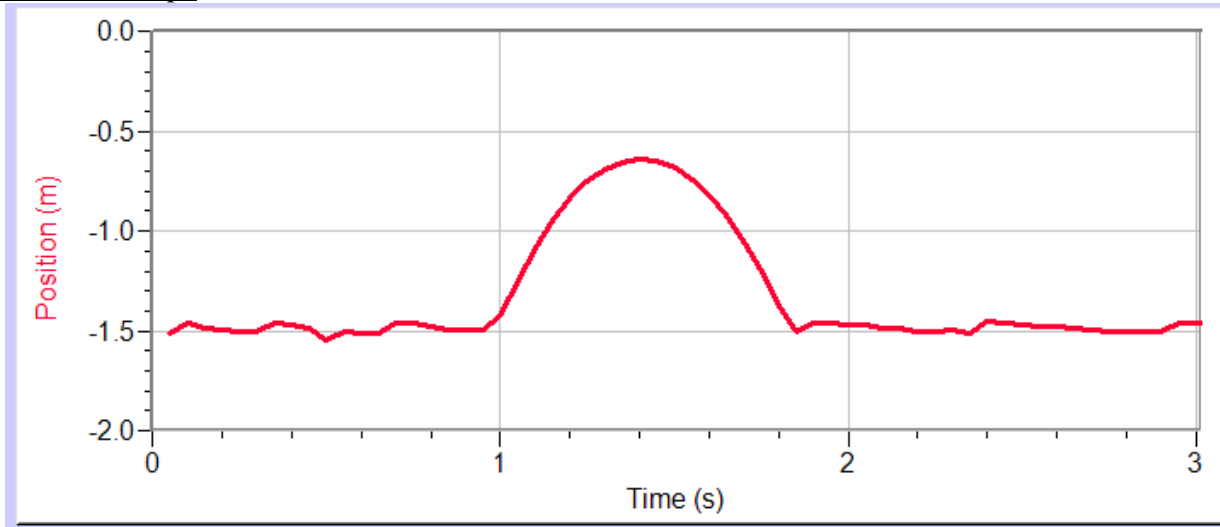


Purpose – To develop mathematical and graphical representations that describes the motion of falling objects.

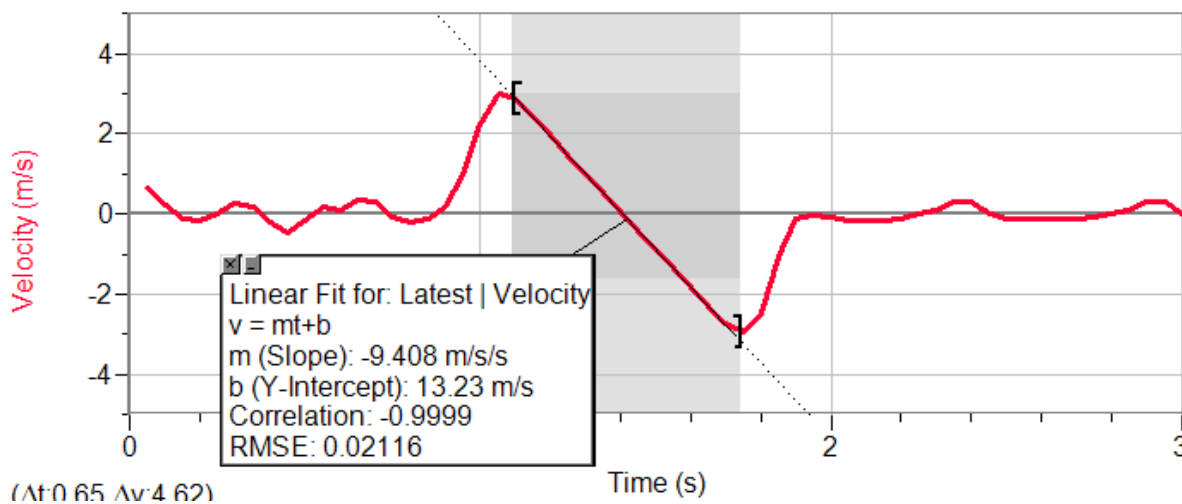
In this lab, a basketball was allowed to travel up and down in the air while a motion detector captured its movement. Use the graphs of position, velocity and acceleration vs. time provided to answer the questions.

Position vs. Time Graph



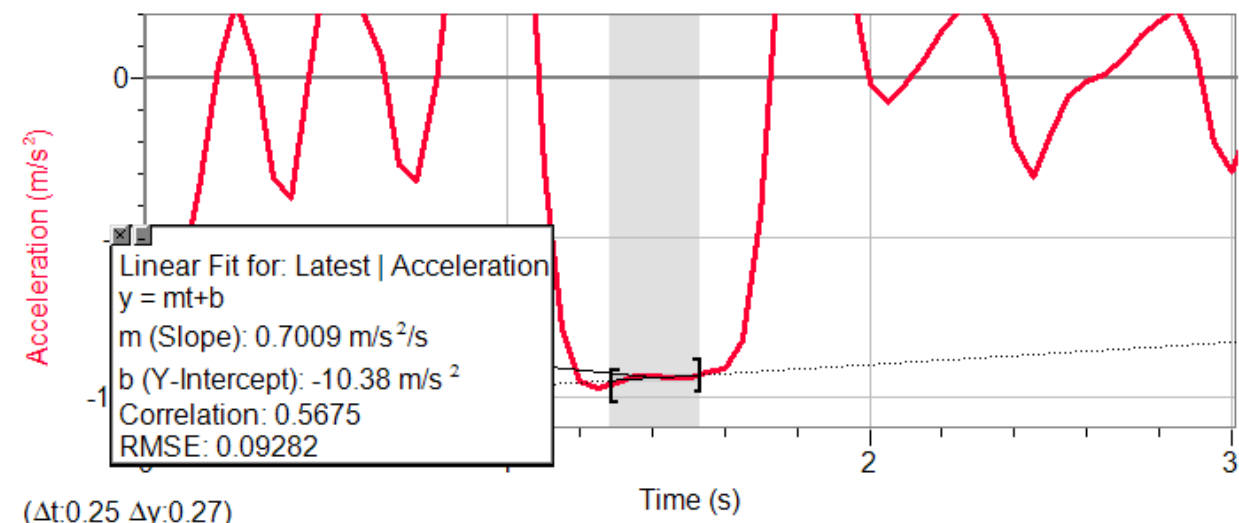
1. Using the graph above, describe the motion of the ball for the entire trip (look only at the curved portion).
2. What is the velocity of the ball at its maximum height?
3. Investigate the time for the ball's trip.
 - a) How much time does it take for the ball to reach the top (use the graph for an estimate)?
 - b) How much time does it take for the ball to reach the same position where the motion started?

Velocity vs. Time Graph



4. Using the graph above, describe the motion of the ball for the entire trip (only the highlighted section).
5. What quantity does the slope on a velocity vs. time graph describe?
6. Write the translated equation for the graph.
7. a) What is the slope of the line?
b) What is your experimental acceleration close to?

Acceleration vs. Time Graph



8. Using the graph above, describe the motion of the ball for the entire trip (only the highlighted section).
9. What is the ball's acceleration at the top of the trip?

