Video Analysis

Objective: Using video analysis, create a graph of the horizontal motion of the object with v_x on it. Create a graph of the vertical motion of the object with the acceleration due to gravity on it.

The following steps will help if you get stuck:

A. Open logger pro
B. Click on Insert > Video analysis
C. Make a movie of an object being thrown horizontally and vertically (don't forget to have someone holding a meter stick in the movie)
D. Click on the movie and enlarge it.
E. Click on the lower right corner of the movie to enable video analysis.
F. Click on set origin and then click in the appropriate part of your video
G. Click on set scale > then set your scale.
H. Click on add point > then add points for the entire time the object is in the air.
I. After you are done editing the movie, click on the graph behind the movie. The red dots are the x-components of the video analysis. Select a portion of the graph that corresponds with the ball in the air and click on linear fit. The slope of a distance time graph is the horizontal velocity.
J. The blue dots are the y-components of the video analysis. Select a portion of the graph that corresponds with the ball in the air. Click on curve fit. Then select quadratic and 2xA is the acceleration due to gravity. Compare this number to the acceleration due to gravity. Calculate the percent error.

K. Print out one copy of both graphs with everyone's name on it (they will print in 520U), highlight the horizontal velocity and the vertical acceleration and answer the questions below and turn in.

L. Why is the basketball so clear at the top of its trajectory?

M. What is the horizontal speed of your basketball? Does the horizontal speed change anytime that it is in the air? Explain.

N. What is the name for the type of curve produced by the blue dots?