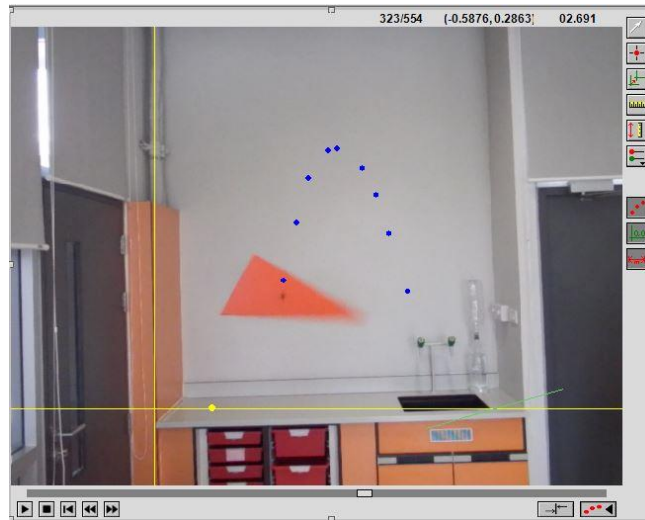
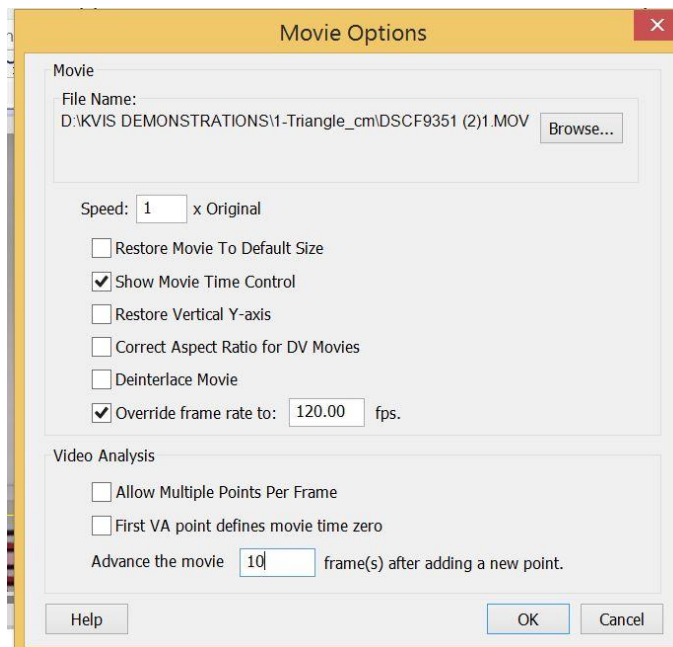


Triangle Demonstration 3: motion of the c.m.

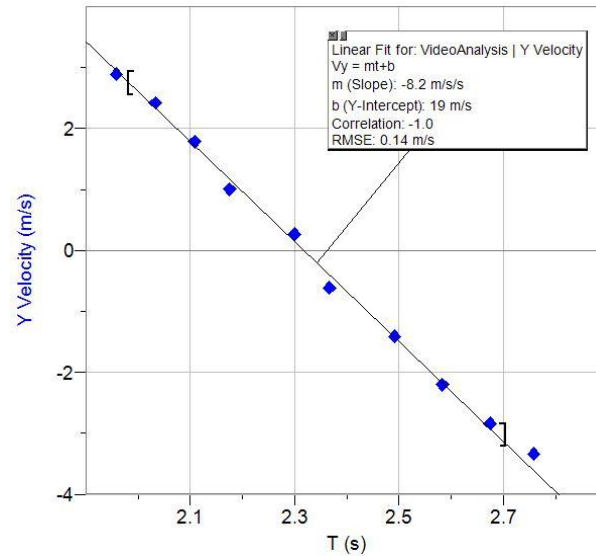
1 Mark the centre of mass of a triangle (70 cm long side) with a white-board marker. Toss it vertically with a spinning motion. Film the motion. Insert the video in Logger Pro. This particular video was taken at 120 frames per second.



2 Open *Options ... Movie options*. Set the frame rate to 120 frames per second (for this video). Set the frame advance to ten (convenient but optional).

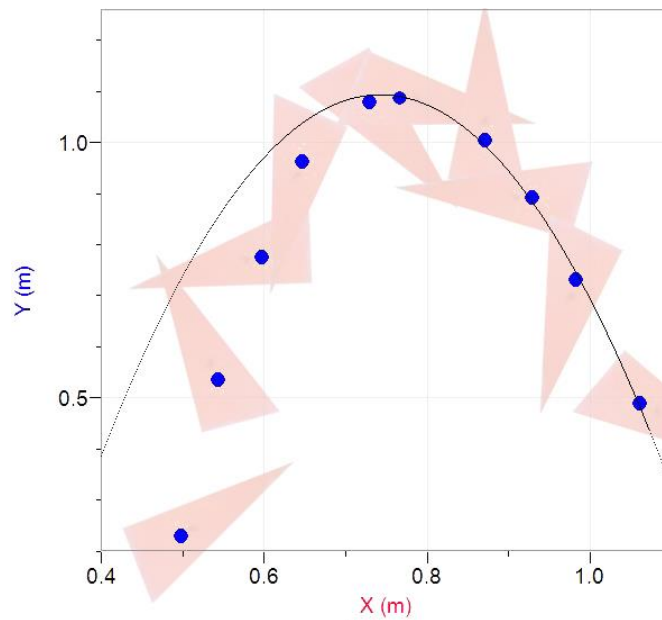


3 By clicking frame by frame plot a vertical velocity/time graph for the centre of mass of the spinning triangle.



The vertical-velocity/time graph is a straight line. The slope would be the acceleration due to gravity (-10 m/s/s) if there was no air resistance. The low value shows that air resistance is an important factor in this situation.

4 A plot on the (x, y) plane shows that the first part of the path is approximately parabolic but that air resistance has reduced the range.



Note: the c. of m. moves from right to left and the deviation from a parabolic path increases on the downward trajectory (as expected).