Happy and Sad Balls

1. Pull back the “sad” ball pendulum and release it so it hits the wood block.  Experiment until you find the height at which the ball comes close to knocking over the block. Record the height the ball was released from.  Pull the happy ball back to the same height and release it to strike the block. Record what happens to the block when they collide.

2. Pull back the “happy” ball pendulum and release it so it hits the wood block.  Experiment until you find the height at which the ball just knocks the block over.  Record the height. Pull the “sad” ball back to the same height and release. Record what happens to the block when they collide.

**Questions:**

1.  In #1, which of the balls had the most momentum just before it struck the wood block?  Explain your reasoning.

2.  In #1, which of the balls had the greatest change in momentum when it struck the block? Explain your reasoning.

3.  In #1, in which of the trials did the ball receive the greatest impulse?  Explain.

4.  In every collision you performed, was there greater force on the ball, or on the block? Explain.

5.  In every collision you performed, was there greater impulse on the ball, or on the block?  Explain.

6.  In every collision you performed, was there a greater change in momentum for the ball or for the block?  Explain.

7.  Two bullets are shot at a block of wood.  One bullet is made of lead, and the other is made of rubber.  If both bullets have the same mass and velocity before they strike the block, which is most likely to tip the block over? Why?