Name: _____

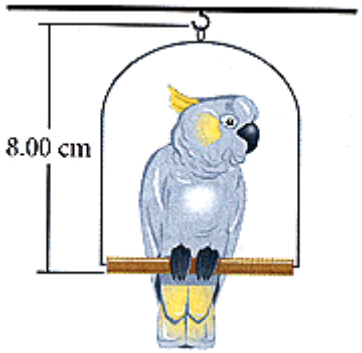
Date: _____

Section C D F

The Masters School DOBBS
Mr. Alex Rawson
Physics

Momentum V

1. The bird perched on the swing below has a mass of 48.0 g, and the base of the swing has a mass of 153 g. The swing and bird are originally at rest, and then the bird takes off horizontally at 1.30 m/s. How high will the base of the swing rise above its original level? *(Hint: This is a pendulum /"Tarzan" energy question, alongside a momentum question. Your answer should be between .0081 - .011 m)*



2. A 4.00 kg mud ball has a perfectly inelastic collision with a second mud ball that is initially at rest. The composite system moves with a speed equal to one-fifth the original speed of the 4.00 kg mud ball. What is the mass of the second mud ball? *(Your answer should be between 15 – 22 kg.)*

3. A 4.1 g bullet is fired into a block of wood with a mass of 22.5 g. The wood block is initially at rest on a 1.9 m tall post. After the collision, the wood block and bullet land 2.2 m from the base of the post. Find the initial speed of the bullet. *(Hint: This is a horizontal projectile problem, connected with a momentum problem. Your answer should be between 20 – 25 m/s. Draw a good diagram to help you visualize.)*