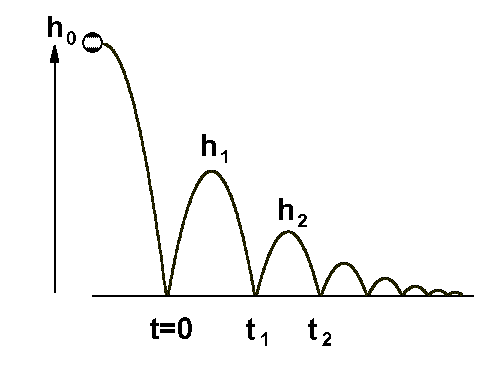
*When does the ball hit the plate? Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*



1. Describe what is happening in this picture of a bouncing ball in terms of motion/kinematics. You should include how position, velocity, and acceleration change in your description.

2. Describe what is happening in this picture of a bouncing ball in terms of energy. You should include conservation of energy and transfer of energy in your description.

3. Describe what is happening in this picture of a bouncing ball in terms of momentum. You should include types of collision in your description.

4. In the image above, assume the ball is only moving vertically. Determine the maximum height (h1) assuming the ball is dropped from a height of 2 meters with no initial velocity.

5. At what time (t1) does the ball hit the plate/surface?

6. Determine h2 and t2 in a perfect world situation. Support your answer with calculations and conceptual discussion.

7. Should h2 be higher, lower, or the same height in a real world scenario? Why?

8. Should t2 be longer, shorter, or the same time in a real world scenario? Why?

9. What if the ball was bouncing on an oscillating table/plate instead of on the ground? How would you determine when the ball would hit the plate? What would you need to know and why?