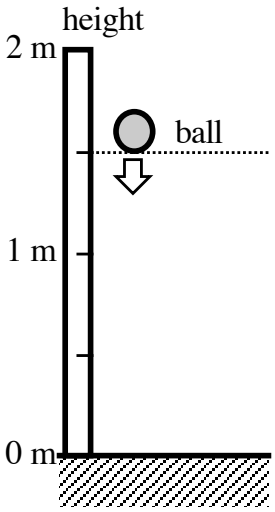
*Name*_____

Conservation of Energy

Consider an idealized 0.5 kg basketball that is initially held at rest 1.5 m above a floor. It is then dropped, and the final state we are interested in is just before it hits the ground.

1. After the ball is released, what physical observable change(s) does it experience that tells you that there must be a *kinetic energy* system involved, and whether it increases or decreases.

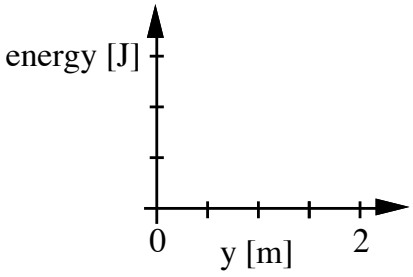
2. What is the kinetic energy of the ball just before it hits the ground? What is its velocity? (show work on a separate piece of paper)



3. On a separate piece of graph paper, make an energy versus height plot for the ball's:

(a) PE_{grav}
(b) KE
(c) Total energy $E_{total} = PE_{grav} + KE$.

4. Scale the energy [J] and height [m] axes of your graph.



5. **From your graph**, determine the amount of PE_{grav} and KE the ball has when it is 1.0 m above the floor.