

Introductory activity to simple harmonic motion

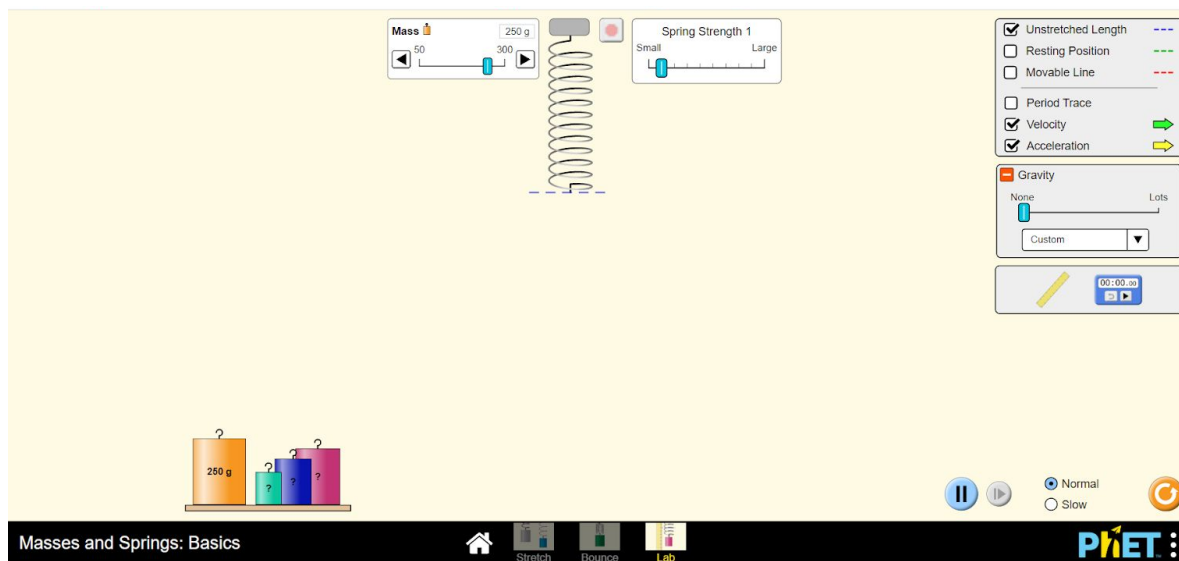
To complete the activity, go to the PhET simulation at the following link:

<https://phet.colorado.edu/en/simulation/masses-and-springs-basics>

1. Open the simulation using the third option:



2. Open the simulation (Lab) and set the experiment as below:



Set the mass to be attached to 250 g (or more); reduce the spring strength to Small; Check the boxes for Unstretched Length, Velocity, Acceleration; set Gravity to zero.

3. Then attach the mass to the spring. Leave it in equilibrium at the beginning and observe the centre of oscillation.

4. Pull the mass down and observe; describe what happens when the mass is shifted down and released.
5. Does any force act on the mass when you release it? Explain why
6. If there is a force acting on the mass, in this first phase of the motion, what force is it and how is it directed?
7. What happens to the mass while moving upwards? Describe the motion in terms of the velocity and acceleration that you can see in the simulation (refer to their direction and magnitude).
8. Describe what happens in the next phase of the motion, with reference to the centre of oscillation. Always discuss velocity and acceleration.
9. What is the direction of the force during the motion of the mass?
10. At what position is the velocity zero?
11. At what position is the acceleration zero?
12. At what position is the velocity the greatest?
13. At what position is the acceleration the greatest?

You may use the option of Ruler and Slow if you need to observe the motion more clearly: it slows down the motion and allows you to use a ruler to better observe the position.

