Understanding the amplitude, period, and frequency in mass spring systems is crucial to even beginning to build a system. Engineers have to be exact in every calculation in their jobs, and mass spring systems are no exception. Three major examples of mass spring systems is the suspension system using a leaf spring in many vehicles, a scale at many local grocery stores when determining the weight of a produce, and the tuned mass damper in the New York City Corp Building.

The mass spring system in vehicles is vital to the safety of the driver and the condition of the vehicle. The leaf spring compresses and expands when going over a speed bump and ditch respectively. This system keeps the car stable so it doesn’t flip over or get caught in the ditch when encountering these speed deterrents. Understanding the amplitude, period, and frequency of the leaf springs keeps the vehicle from coming off the tires or not remaining level over the bumps/ditches.

In grocery stores, though not as critical to life and insurance, the measurements of the mass spring system need to be precise. Determining the weight of the produce determines the cost of the produce, and if the system was miscalculated, the scale could be miscalibrated giving a false weight and false price. Also it’s just as necessary to keep the scale intact before, after, and during use.

The tuned mass damper system in the New York City Corp Building concerns the safety of thousands of lives every moment of every day. Built to counteract the wind, the smallest mistake could jeopardize the safety of thousands. Artillery also depends on a mass spring system, calculating the calibration needed for firing a mortar for example.

Everything in the world is made using math and depends on math. Nature itself follows a pattern that can be calculated, and without math many constructs of the world would be impossible or simply faulty.