

Spring Factors Lab



What factors affect the **frequency** of the oscillations of a spring and mass system? (In other words, what things affect the cycles per second?) Suspend a mass from one end of the spring. Pull the mass a few centimeters further down, and let it go. If the spring does not come clear back to its fully compressed state, it should continue to oscillate at a steady frequency.

Do you think mass will affect the frequency?

Do you think amplitude will affect the frequency? (Amplitude is the distance that the cycle goes past the equilibrium point. Equilibrium point is the stretch distance when not bouncing)

One thing you should do first is to time the same experimental setup for 10 cycles twice without changing anything and see how much variation there is in the timing.

Try the small mass, and the large mass, measure the time for one cycle (the **period**). Comparing the two times, and two masses, what math function would you predict the equation that describes this motion contains?

Try with a small **amplitude** (small stretch), and a large amplitude (longer stretch). Does amplitude affect the period? Please do not overstretch the springs.

Write-up Instructions

This write-up should have 4 paragraphs

1. Conclusion - (key points of this lab)
2. Predictions of what factors affect frequency.
3. Clear procedures - So someone else could repeat your experiment.
4. Discussion of predictions and measurements