

## Vocabulary: Simple Harmonic Motion



### Vocabulary

- Controlled experiment – an experiment in which only one variable is changed at a time.
  - Generally, in a controlled experiment, all conditions are kept the same except for the variable being tested.
  - In some cases, it is impossible to perform a perfectly controlled experiment. For example, a scientist cannot perform a controlled experiment on animal behavior in the wild because there are too many uncontrollable variables, such as weather and the presence of other animals.
- Harmonic motion – a symmetrical back-and-forth or up-and-down motion.
  - Each full movement is called an *oscillation*.
- Oscillation – a single back-and-forth or up-and-down movement for an object in harmonic motion.
- Pendulum – a weight that can swing freely.
- Period – the amount of time required to complete a single oscillation.
  - The period of a pendulum is the time required for one full back-and-forth swing.
  - The period of a *spring* is the time required for one full up-and-down movement.
- Spring – a coiled device that returns to its original shape after it is stretched or compressed.
  - Springs usually are made of metal or plastic.
- Spring constant – a measure of how much force is needed to stretch or compress a spring.
  - The symbol for the spring constant is  $k$ .
  - For a given spring, the spring constant is equal to the ratio of the restoring force ( $F$ ) and the negative displacement ( $-\Delta x$ ) of the spring:  $k = F \div (-\Delta x)$ .