

# Like Clockwork

## Try It Out

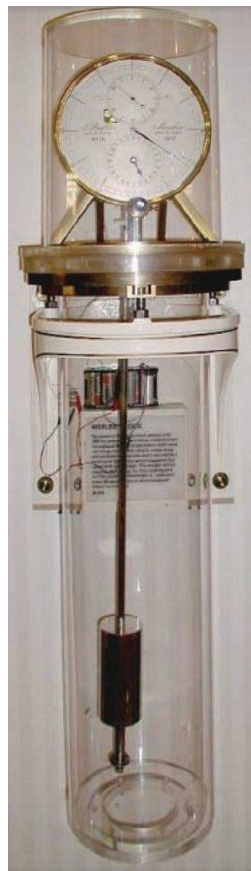
Gently pull the metal piece at the end of the cable to the side of the sand and let it go. Watch the pendulum move back and forth for awhile and observe the patterns it makes in the sand. Try it again, but pull the metal piece in a different direction.

## What's going on?

A **pendulum** is a relatively massive object hung by a string from a fixed support. When it is pushed, it moves back and forth in a regular, or periodic, motion. The time it takes for a pendulum to complete one period (one back-and-forth movement) depends on the length of the string, and not how big of a swing the pendulum travels through.

## What's the big deal?

Because the time of a pendulum's period is so regular, pendulums have been used in clocks to help keep accurate time since the mid 17<sup>th</sup> century. The pendulum in this experiment has two different support points, allowing it to move in all directions and produce the patterns you saw in the sand.



(left) Riefler clock used as the US time standard from 1904 to 1929.



(right) Shortt-Synchronome clock, the most accurate pendulum clock ever manufactured. (Source: Wikipedia)

## Wonder While You Walk...

What are some reasons a pendulum clock would not keep time accurately?



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