

# Playground Physics

## Collect

- Stopwatch
- Variety of fabric squares (denim, corduroy, cotton, spandex, etc.) cut large enough to sit on
- Permission to visit your local playground, one with a swing set and a sliding chute

## The swing

1. Sit on the swing and get it moving as fast as you can without moving from an upright position—leaning back will affect the swing.
2. Time how long it takes to complete one swing—back, forward, and back is one swing. This is the period of the swing.
3. Shorten the chain by moving the seat or wrapping the sing around the top bar a few times, and repeat the first two steps. Make sure to time each swing. How did the shorter chain affect swing time?
4. Return the seat to it's normal position when you are finished experimenting.

## The slide

1. Choose a piece of fabric to test. Sit on the fabric at the top of the slide and time how long it takes you get reach the bottom. Make sure you allow yourself to just slide. Don't push.
2. Select another type of fabric and repeat the experiment. Continue in this fashion until you have tested all the fabric types that you brought to the park.

## What's happening?

A swing is a great example of a pendulum and periodic motion. A swing, like a pendulum, hangs from a fixed point and swings back and forth with the help of gravity. The period (length of time) of one swing is related to the length of the chain. The longer the chain, the longer it will take for the swing to complete one full swing.

The slide is a perfect tool for testing the force of friction. The rougher textured fabrics that you tested may have increased your body's friction and slowed you down while the smoother fabrics may have made you move down the slide's surface faster.