



## Curiosity Guide #606

### Springs

Accompanies Curious Crew, Season 6, Episode 6 (#606)

#### Pogo Power

Investigation #3

#### Description

Hop to it! Let's learn more about how springs work!

#### Materials

- Pogo stick
- 3 friends
- Knee pads
- Helmet
- Tape measure
- Bathroom scale

#### Procedure

- 1) Assign two friends to steady the pogo stick. When no one is on the stick, measure the height of the pogo stick handles from the floor.
- 2) Weigh the third friend on the scale.
- 3) Have the third friend put on a helmet and pads.
- 4) Have the other two friends get in position to help this friend balance on the pogo stick.
- 5) Tell your friend to stand on the pogo stick with help.
- 6) Measure the distance from the floor to the handle bars again.
- 7) How much further down were the handle bars?
- 8) What would happen with a heavier friend?
- 9) Try jumping on the pogo stick while the friends spot.
- 10) Does the handle go down even further?

## My Results

### Explanation

Pogo sticks are made with compression springs. The jumping rider can take advantage of the energy in the compressed spring. Compression springs are usually made from heavy gauge material and are not wound as tightly as are tension springs.

Measuring the initial height establishes the spring's uncompressed height. The coils then compress or get closer together when a force acts on them. In this case, when your friend stands on the stick, his weight, caused by gravity, compresses the spring. The heavier the person, the more the spring is compressed. When your friend jumps on the stick, the spring compresses even further. The energy from the person is transferred into the spring as elastic potential energy. That energy transfers back into kinetic energy and lifts the rider. The bouncing rider provides a lot of the energy that becomes gravitational potential energy and further effects the spring's compression.

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