Curiosity Guide #606
Springs

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

Dual Springs

Investigation #8

Description

How can two springs work together?

Materials

- 16-pound bowling ball
- Screw eye
- Drill
- Drill bit
- 2 tension springs
- Rope
- 2 S-hooks

Procedure

1) Drill a small hole in the top of the bowling ball.
2) Screw an eye into the top of the ball.
3) Hang the tension springs from a tree limb, swing set, or some fixed rigid support.
4) Hook the two springs together in a series, using the S hooks.
5) Predict what will happen when you hang the ball from the bottom spring and pull it down in a bounce.
6) Try the experiment. What happens?
7) Now place the springs side by side, hanging from the support.
8) Predict what will happen when the ball is clipped to both springs.
9) How does pulling down on the bowling ball affect the period?

My Results

Explanation

When springs are connected in series and a weight is added, the tension or force from the weight of the ball is the same throughout the entire spring system. When the ball is hooked to both springs (in parallel), the ball hangs much higher. This is because there is twice as much force pulling against gravity, and the springs are sharing the load. When the ball is pulled down, the bounce period is shorter because each spring is stiffer, and the spring constant is increased.

Explore further. There are many examples of springs, and they have been around a long time. The English longbow is an example of a spring, since the yew wood would flex when the string was drawn and then would spring back to launch the arrow. That same bow shape was used as a leaf spring on carriages in the 1700s to make the ride less bumpy. Leaf springs are still used in vehicles and trailers today. Engineers continue to think of new ways to use spring technology to make our lives better and more enjoyable!

Parents and Educators: use #CuriousCrew #CuriosityGuide to share what your Curious Crew learned!