

# Do-It-Yourself Earthquake

Earthquakes are fascinating, but no one wants to get caught in one! Luckily, it's easy to learn about earthquakes without experiencing one firsthand. In this simple Earth science experiment, you and your child will observe the effect of lateral earthquake motion on a high-rise building from the safety of your own home. Your child will delight in shaking the slinky "building" back and forth to simulate the motion of an earthquake. At the end of the experiment, he'll learn about new construction techniques that help skyscrapers resist the destructive power of this type of movement.

## What You Need:

- Tabletop or desktop
- Slinky (a metal one works best)
- Piece of coarse sandpaper



## What You Do:

1. Put the sandpaper on the table or desk.
2. Place the slinky on its end on top of the sandpaper.
3. Have your child grab the sandpaper and jerk it toward him a few inches.
4. Ask your child to explain what he observed. How did the slinky move? Why didn't it topple over?
5. Have your child shake the sandpaper again, but this time ask him to use more force.
6. Have your child continue to shake the sandpaper and attempt to knock the slinky on its side.
7. Have your child imagine the slinky as a high-rise building and ask him how he thinks this kind of side-to-side, or lateral, earthquake movement would affect the building's infrastructure.

## What Happened?

While your child jerked the sandpaper back and forth, the bottom of the slinky should have stuck to the sandpaper while the top moved side to side. When the shaking stopped, the slinky should have moved back to its original position. In a real earthquake, this type of motion can occur as many as 100 times within a few seconds, easily putting enough strain on a building to make it collapse.

Fortunately, today's engineers are learning how to construct buildings that can resist and even withstand a major earthquake. They can even reinforce the soil at the building site prior to construction by compacting it and adding lime or cement to it to increase its density. Strengthening the soil under a building helps protect against liquefaction, a devastating side effect of major earthquakes that results when the shaking of the ground causes soil to become liquid-like and lose its ability to support a building.