



# High Touch High Tech®

Science Experiences That Come To You™

## Shaker Table©

### Supplies:

- Lego or Lincoln Log blocks
- 2 x large textbooks of the same size
- 4 x golf balls
- 2 x large rubber bands

### Instructions:

1. Using the textbooks, golf balls, and rubber bands, build a structure to simulate the movements of an earthquake.
  - a. Stack the 2 large textbooks.
  - b. Put 2 large rubber bands around the books.
  - c. Place the 4 golf balls between the two books.
    - i. Place the golf balls toward the middle but spaced out evenly.
2. This platform is where you will be testing the block structure – it's your shaker table.
3. You can move the top book in any direction to simulate an earthquake.
4. Using your Lego or Lincoln Log blocks, build a structure that you think can withstand the force of the shaker table.
5. Place your structure on top of your shaker table.
  - a. Shake the top book gently.
  - b. Shake the top book moderately.
  - c. Shake the top book vigorously.
6. Make some observations and record your answers.
  - a. Why did you choose the specific design of your structure?
  - b. Why did you think it would withstand the force of the shaker table?
  - c. Did your structure collapse?
  - d. Why did your structure collapse?
  - e. What would you change about your structure to make it stronger?
7. Build another structure based on the lessons you have learned and test it on your shaker table.
  - a. Did you have better results on your second try?



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## **The Science Behind It:**

Earth consists of thick layers of solid rock, and underneath are liquid melted rocks we call molten rock.

The earth has many different layers. We live on the continental crust, which is like the crust on a loaf bread.

The layers of crust right underneath where we stand are called the lithosphere. The lithosphere has two parts, the continental crust where you are standing right now, and the oceanic crust, which is under the ocean.

The lithosphere up here is always sliding and shifting on a thin layer of melted, sticky, molten rock, called the mantle. Under the mantle, way down deep, are the outer core and the inner core. The outer core and inner core are mostly made of super-hot melted metal, getting as hot as almost 10,000 degrees in the center, hotter than the sun!

Because of the liquid nature of the inner earth, the earth is always moving and changing, even though it usually appears to be still. The continental drift from Pangea to what we know today is due to plate tectonics.

Broken places in the lithosphere, called faults, can build up and then release friction. This is how we get earthquakes. There are three main kinds of fault movements that cause earthquakes, normal, reverse, or strike-slip.

Earthquakes are devastating and dangerous because they cause buildings to fall. Large earthquakes can kill many people; therefore, scientists have created seismographs, devices that can measure activity in the earth.

Engineers and Scientists work together to study earthquakes and design buildings that will not fall in an earthquake. After many experiments and lots of study, it is possible to create a building that will not fall.

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