
## Bible Story

**Midnight Praise with Paul and Silas**
Acts 16:16-40

## Castle Callout

Armor Up with Salvation!

## Materials

- 2 flat, firm surfaces of the same size, at least 12" x 12" (options include thin wooden boards, plastic cutting boards, cookie sheets, or the covers from an unwanted hardback book, etc.)
- 4 bouncy balls or tennis balls
- a ruler or paint stirrer
- 2 large rubber bands
- 2 large binder clips
- tape
- nondrying modeling clay
- paper straws cut in half or coffee stirrers
- sheets of card stock
- scissors

# Experiment 2
# Earthquake Engineering

## I. Preparation

Build the earthquake shake table before Knights arrive. Sandwich the four balls between the two surfaces, arranging them in two pairs to support the top board. Wrap the sandwich with a rubber band on both sides. Glue or tape the ruler to the bottom of the top board. This will be the handle for moving the shake table.

## II. Introduction

Say Something Like: **God protected Paul and Silas through an earthquake in jail. God helps people protect themselves from earthquakes by giving us the ability to build safely. Today, we're going to try to build a castle that can survive an earthquake.**

Ask: **What happens during an earthquake?** (the ground moves and shifts, shaking everything on top)

Ask: (Demonstrate shake table) **How could this help us practice building something that can survive an earthquake?**

## III. Experiment

Step 1. Build a basic cube structure with 12 stirrers or straws. Use the clay to anchor your "castle" to a sheet of card stock and to connect the stirrers.

Step 2. Place the card stock, with the castle on top, on the shake table. Use the binder clips to hold the card stock in place.

Step 3. Pull or push on the handle several times to shake the building. It is likely that your castle will collapse after several shakes.

Step 4: Challenge your Knights to build a castle that will be more successful on the shake table. Give each group 20 or more coffee stirrers or straws, a sheet of card stock, and a golf-ball-sized lump of modeling clay. Make scissors available in case they want to cut their stirrers or straws.

Step 5: Invite Knights to take turns testing their creations on the shake table. If their castles collapse, suggest adding triangular supports to their structures.

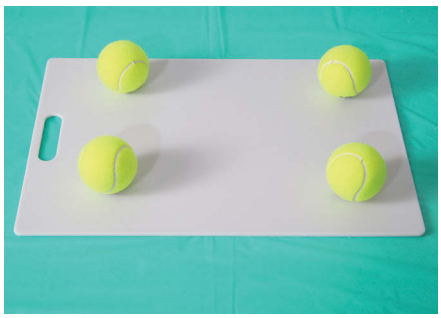
## IV. How does it work?

The outer layer of the Earth is broken into large tectonic plates that move slowly around the surface of the Earth. As those plates move, they push and rub against one another. Earthquakes result from the friction and collisions between the plates. Engineers have found that including triangle shapes in building structures helps them stay strong during earthquakes. This is because force is distributed more evenly over a triangle. Engineers use more sophisticated versions of shake plates to test new ideas for designs before they build.

## V. Bible Tie-in

Paul and Silas didn't run away after the earthquake because they knew the guard or jailer would get in trouble if they escaped. But they also knew that the guard's deepest need wasn't physical safety, just like our deepest need isn't physical safety, even during an earthquake. God wants us to know that we are known and loved and that we are invited into a relationship with this God who loves us.

**Steps 1**



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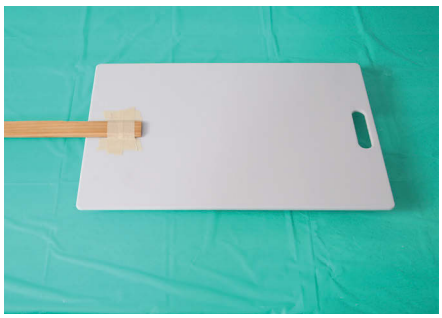

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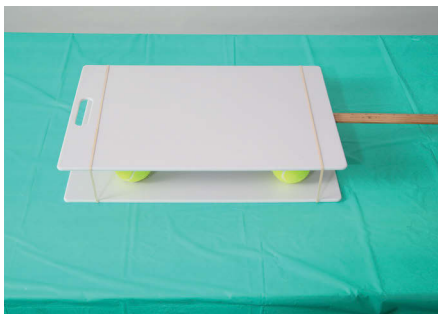

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