

Name _____ Date _____ Period _____

You be the Engineer

Building an Earthquake Resistant Structure

Day 1

You and a friend have been hired to research, design, build, test, redesign, and retest a building that will keep families safe during an earthquake.

Part 1 – Research

Engineers always research information to help them with new construction. You need to research some basic information about parts of earthquake safe buildings and the movement of different seismic waves released during earthquakes to help.

Parts of earthquake safe buildings – look up 4 different things engineers incorporate into buildings to make them safe during earthquakes and record the information below.

Name of part	Purpose of the part	Draw and example of the part

Seismic waves – Go to the class website on weebly and click on the “Mighty Wave Maker” Button. Click on each arrow on the bottom right and observe the 4 different ground movements caused by seismic waves during an earthquake and record the information in the table below.

Direction of Seismic Wave (arrows)	Draw motion of the ground

Part 2 – Design

In the space below, design a building with 2 of the parts of earthquake safe buildings your team researched using the following guidelines that will withstand the different motions caused by seismic waves you observed.

- It must be at least three floors tall (bottom floor does not count as a floor)
- Each floor must be separated from other floors by a minimum of 10cm
- You must include a washer on one of your floors (both floors must be able to hold one; it cannot go on the bottom floor or base!)
- Allow rooms for clamps on the base.

Part 3 – Build a Prototype

You have a budget of **\$75** so be careful. Use the data table to figure out what materials you will need to build this prototype. Keep in mind, if the first test doesn’t work, you can redesign your building and add more materials only if you have money left over after building the original prototype.

Material	Quantity	Cost	Total
Stir Straw		\$4 each	
Toothpicks		\$2 each	
Marshmallows		\$1 Each	
Pipe Cleaners		\$7 Each	
1 Meter of Tape		\$20 Each meter	
Grand Total			