The firm of (insert teacher name) and Associates has offered you a chance to earn a contract to build them a new office building in Los Angeles!
Challenges for Building in Los Angeles

Northridge earthquake (1994)

http://www.youtube.com/watch?v=xA86X5Fd5xl

Tōhoku Tsunami (2011)

http://www.youtube.com/watch?v=Ppo3UxJs68s
Earthquakes

San Andreas Fault

Strike-Slip Fault

Strategies for Earthquake resistant building:

http://www.youtube.com/watch?v=iZoHoPFHAtw
Risk of Tsunamis in LA

**HOW A TSUNAMI FORMS**

1. An underwater earthquake occurs; the seafloor snaps up, lifting a column of water above it. Gravity pulls the water back down, fanning waves outward.

2. Individual waves in a tsunami are spread out. The distance between two wave peaks, called the *wavelength*, can be hundreds of kilometers long. Each wave's *amplitude*, or height, is rarely more than 0.9 meters (3 feet) at first.

3. As waves meet the continental slope and shallower water, wavelength decreases and wave amplitude rises.
Contract Details

Building Requirements

- Cost: $100 or less
- Height: 12 inches or taller
- Base: 36 inches square or larger
- Earthquake test: 10 seconds on shake table without falling
- Tsunami test: 1 tsunami without falling or getting water inside

Procedure

- Day 1
  - Design your building (use the “Design Template”)
  - Get approval from the client
- Day 2-3
  - Purchase building materials
  - Build your building
  - Begin preliminary testing for earthquakes and tsunamis (one time each).
- Day 4
  - Purchase additional materials
  - Improve building
- Day 5
  - Oral Presentations
  - Performance Competition
Performance Competition

- 30 year simulation (time permitting)
  - Each year:
    - An 8 sided die is rolled to select a group
    - A 6 sided die is rolled to select a disaster
      - 1-2 = Earthquake
      - 3-4 = Tsunami
      - 5-6 = No disaster
  - Clients may determine if additional testing is necessary
  - At the end of 30 years:
    - Buildings which have passed the test will be awarded contracts!