Name: _____ Date: _____

Increasing Stability

In our last investigation we discovered that short structures are more stable than tall structures. However, tall structures are found all over the world. How do engineers design these structures to remain stable?

For today's experiment, you will be provided with some supplies that may be used to make the cardboard tubes more stable. You will not be told what to do with the supplies, so you will need to plan your investigation. You are not allowed to damage the tube in anyway.

Equipment:

- Tray
- Cardboard Tubes
- Tissue paper
- Elastic
- Dried Beans
- Cardboard
- Tape

Procedure:

In the space below, write out the steps that you will follow to make your structure more stable, and how you will test to see if it worked. You can include a drawing at the top of the back of the page. Don't forget that a procedure is a numbered list of the steps you need to take.

Option 1:

1. Put tissue paper on the base of the tube and hold it in place with the elastic.
2. Put beans in the tube to fill the bottom .
3. Follow the testing procedure from the last experiment (tilt on the tray).

Option 2:

1. Tape a piece of cardboard to the bottom of the tube.
2. Follow the testing procedure from the last experiment (tilt on the tray).

Observations:

Trial Number	When did it fall?		Other Observations
	Normal Tube	Altered Tube	
1			
2			
3			

1. What are some of the things other groups did?

Discussion:

1. How can a tall structure be made more stable? Use your observations from your and your classmates' experiments to explain.

Putting more weight at the bottom of the structure (the base) will make it more stable.

Making the bottom of the structure (the base) wider will make it more stable.