This experiment was designed to test how the amount of water that is mixed with concrete affects its strength. It is important to have strong concrete so that structures made of concrete do not collapse or fail. Concrete is made of approximately 41% gravel (aggregate), 26% sand, 16% water, 11% portland cement, and 6% air. I hypothesized that in comparing four different samples of concrete, each mixed with different amounts of water, the dry mix would be the strongest.

This experiment involved creating 12 Quikrete concrete cylinders, three for each water content; driest, dry, wet, and wettest. The concrete cured for 24 hours in a cooler at a constant temperature. The cylinders were then placed in a lime water bath at 72 degrees for 10 more days. The concrete was then tested in a compression machine. The amount of compression each cylinder withstood was recorded.

The data collected does not support my original hypothesis. The dry concrete was actually the third strongest with a compression strength of 880 psi. The strongest concrete was the wet with a compression strength of 2,200 psi. The second strongest was the wettest with a compression strength of 1,547 psi. The weakest was the driest concrete with a compression strength of 280 psi.

These findings lead me to believe that when using Quikrete, adding water on the upper end of the Quikrete range makes the concrete stronger. These results can be used to determine the amount of water used in concrete for the maximum strength.