# **Building a Stronger (Sweeter) New Orleans Activity —Stress vs. Strain Worksheet**

**Directions**

Use the following graph to answer questions 1-7.



**Questions**

For each of the following questions, please use complete sentences and explain your answers.

1. Research and explain the difference between aggregate, concrete and cement.

1. Which of these is a composite material? Explain your answer.

1. Which material has the largest value of Young's modulus? Explain.

1. Which is the stiffer material? Explain.

1. Which of the three materials would you prefer to use for building? Explain.

1. The stress vs. strain curve for the cement flattens out at the end. Explain what this means.

1. The sample of cement that was used to generate data for the graph above was 5 mm wide and 5 mm long. Imagine that you are given a sample that is wider and longer. Will the graph of stress vs. strain be different for this sample? Explain.

1. You are given two unknown materials, labeled A and B. Material A has a Young's modulus of 1 N/cm2 and material B has a Young's modulus of 2 N/cm2. Each material is initially 4 cm long.
	* In the box below, sketch a graph of stress vs. strain for the two materials on the same set of axes.
* Which material compresses more if a pressure of 2 N/cm2 is applied to it? Explain in words or show calculations to support your answer.