Homework

Due at the beginning of next class. You are strongly encouraged to discuss these problems with other people in the class and the instructor. The work you turn in should represent your own understanding, however.

1. In your own words, explain the concept of dimension that we discussed in class. If you can, give an informal, yet operative definition of dimension. That is, state how one measures a dimension. Feel free to use pictures and diagrams if you wish.

   This is not intended to be a short essay that I'll grade for correctness. Rather, this should consist of notes in the style of a journal entry. Also, feel free to mention any points you might be confused about, and any aspects of dimension that are particularly interesting, surprising, or puzzling to you.

2. It costs \$130 to lay down lime green carpet in a room. How much will it cost to carpet a room that is 5 times as large?

3. How many cubic centimeters are in a cubic meter?

4. A small beaker can hold .75 liters of water. How much water can be held by a beaker that is 3 times as large?

5. What is the dimension of the shape on the back of this piece of paper?

6. (Do this one if we haven't discussed it in class yet.) Metabolism rate is a measure of the amount of energy an individual typically expends (while at rest) in 1 second. How would you expect the metabolism rate of mammals to scale with animal size? That is, if you double the linear dimensions of a mammal, what happens to its metabolic rate? **Clearly state the reason(s) for your answer(s). Getting the "correct" answer isn't important. The reasoning behind your answers is what I'm after.**

Solutions to questions 2 – 5 can be found at:

`http://leopard.ucdavis.edu/dave/COA/coa.class.html`