"R"BL, VRBL and GRBL

Requirements

No required CBL or other equipment.

We use three kinds of "laboratories" to study the real world.

- (•) Laboratories based, at least loosely, on **reality**. These laboratories may use observations of reality "in the field" or they may involve simplified experiments, for example, testing a model of a car in a wind tunnel.

- (•) **Virtual reality** -- often computer- or calculator-based simulations based on models.

- (•) Mental models, or **gedanken realities**, in which we manipulate our mental images.

In this module we discuss these three kinds of laboratories or "realities" and their interplay. We have already looked at several different "real" realities -- using the TI-CBL to collect data from experiments. In this module we use the **Internet** and the **World Wide Web** to obtain another kind of data from the real world -- population data from the United States Census Bureau. We have already seen several "virtual realities" using Java applets. In this module we look at another virtual reality -- a Java-based simulation of the spread of a cold. Gedanken reality and virtual reality are intimately related. A virtual reality is based on a gedanken reality (a mental model). In this module we discuss the gedanken model behind the virtual reality simulation of the spread of a cold.

Be sure to send your instructor email following the usual format.

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Questions

1. Visit the United States Census Butreau site following the links in this module. Extract some data that you find interesting. What data did you extract?

2. Suppose that you have been asked by your school board to collect some data that they can use to help make decisions about cold-related absences. Consider the following questions.

   a. How would you collect data about how many students have colds each day?

   b. You will need a definition of "have a cold." What definition would you use?

   c. What factors that are beyond your control might influence the spread of a cold and might affect your data?

   d. Do you think it is practical to actually try out alternative cold-fighting strategies like requiring all students with colds to stay home while they are contagious? Why or why not?

3. Write your observations about the course of the Java applet cold.

4. Answer the set of questions at the end of the module using your computer algebra system (most likely the TI-92) to experiment with simulated colds.