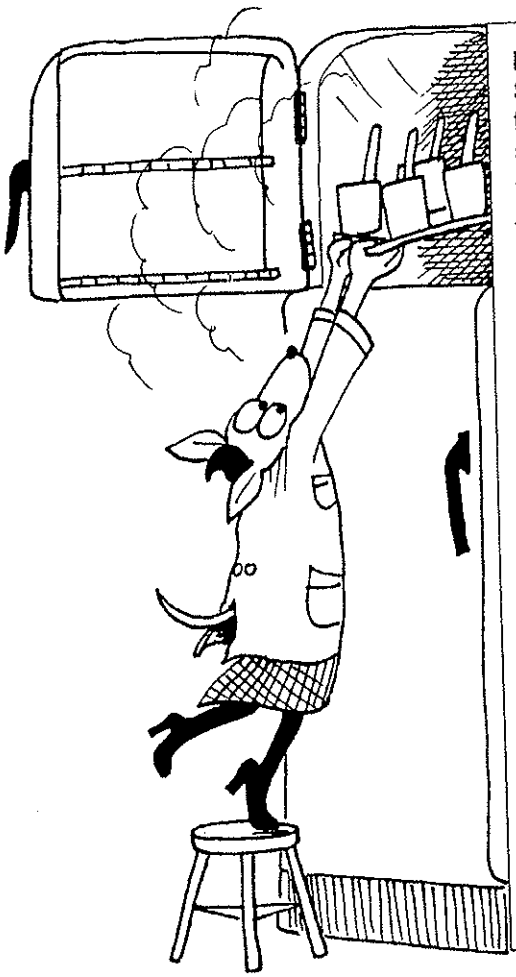
IN PURSUIT OF ANSWERS

To DESIGN AN EXPERIMENT
is to make a plan to find an answer for a question or to test a hypothesis.
The plan includes all the steps to take and equipment to be used in the process.



Dr. Igneous wants to make frozen juice pops for her picnic. She is curious about how long it will take for the pops to freeze. She knows that juice is a solution—not a pure substance. So, she wonders how the freezing time will compare to the freezing time of water. She assumes that the juice (a solution) will take longer to freeze than water.

Agnes makes a plan to answer her question about the freezing time of juice pops. She gets five small paper cups and five wooden sticks for "handles" for her frozen pops. She finds a measuring cup and measuring spoons, and a bigger spoon for stirring. Then, she opens a bottle of grape juice. She also has a pitcher of water handy, and a pen for writing on the cups.

On one cup, she writes ***water***, and fills the cup with water. On the next cup, she writes ***pure juice***. She fills this with juice. On the third cup, she writes ***one-half juice***. She fills the measuring cup to the ½ cup mark with juice, and adds water to the 1-cup mark. After mixing this, she pours some into the third cup to fill it. On the fourth cup, she writes ***one-fourth juice***. After emptying the measuring cup, she fills it to the ¼ cup mark with juice, then to the 1-cup mark with water. She stirs this and pours some in to fill the cup. She writes ***one-eighth juice*** on the last cup. In the empty measuring cup, she measures two tablespoons of juice. She fills the cup to the 1-cup mark and stirs. Then, she pours this mixture into the last cup.

All the cups are placed in the freezer. Every 10 minutes, she will check the pops to see how the freezing is coming along. She will keep a record of what happens for each of the five cups.

1. What is her hypothesis? _____
2. What are the variables in the experiment? _____
3. What variable is controlled? _____
4. What measurement tools does she use? _____
5. How does her plan include the use of numbers? _____

Use with page 51.

Name _____