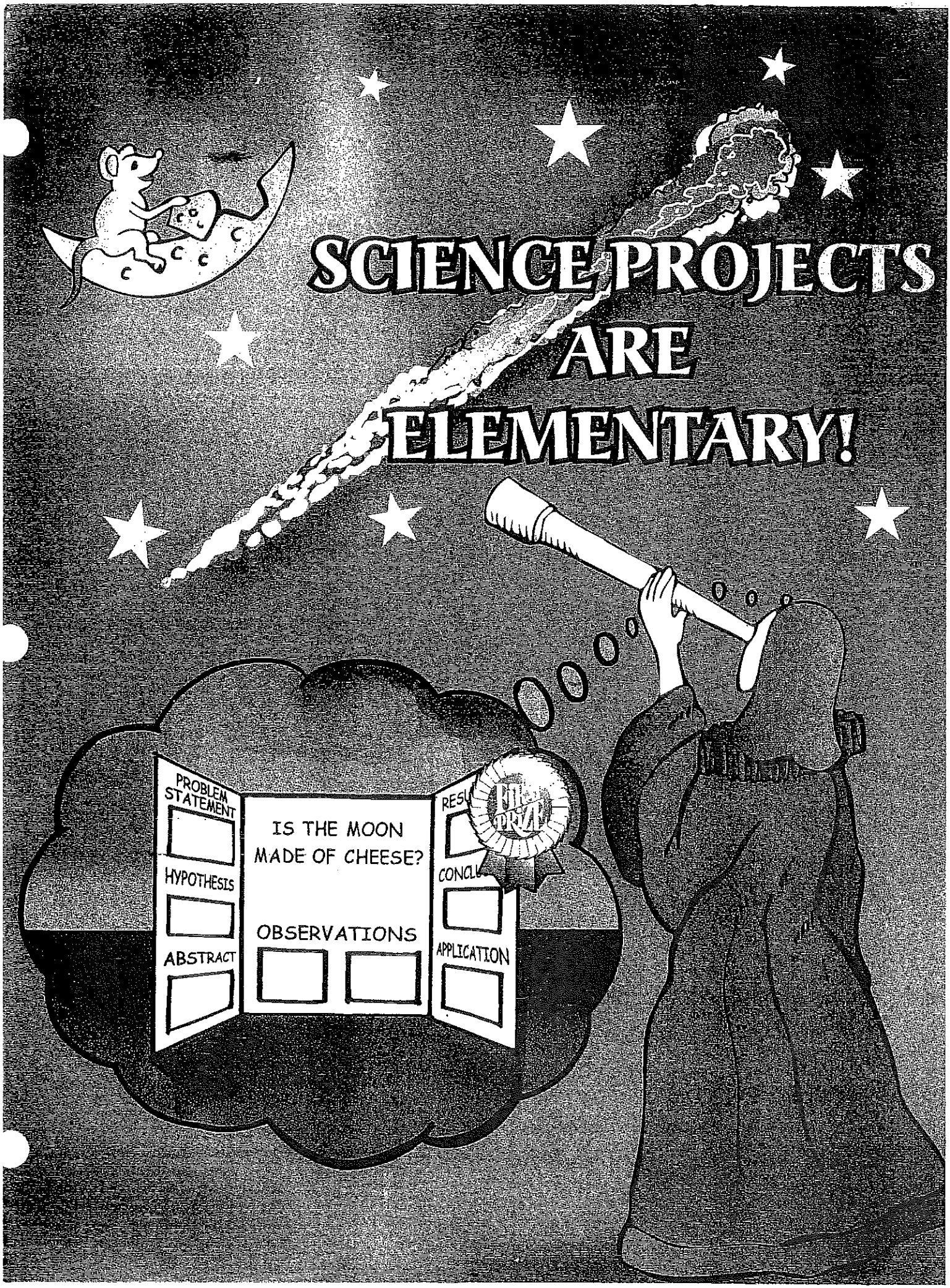
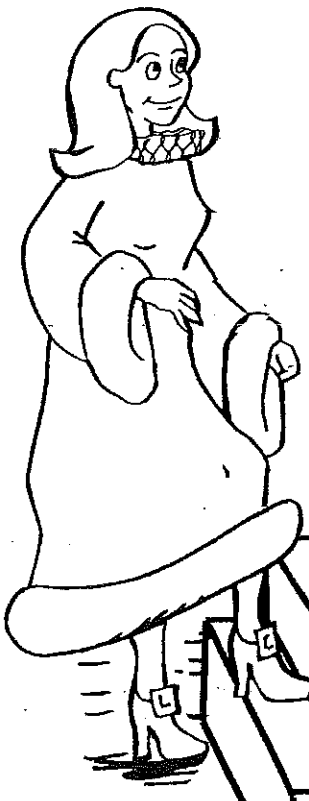

SCIENCE PROJECTS
ARE
ELEMENTARY!
PROBLEM STATEMENT
HYPOTHESIS
ABSTRACT
IS THE MOON MADE OF CHEESE?
OBSERVATIONS
APPLICATION

THE SCIENTIFIC METHOD

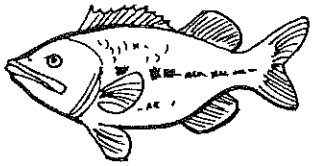
When doing a science fair project, you should always follow the easy steps of the scientific method. Scientists use the scientific method to help find the answers to questions.

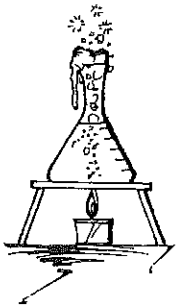


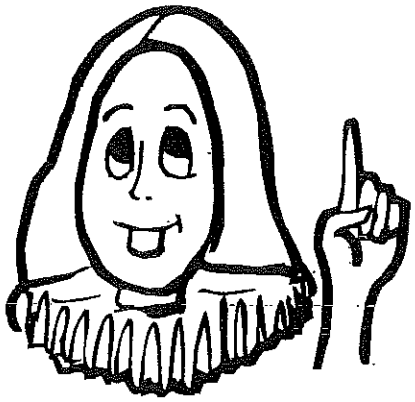
10. Discuss applications
9. Draw conclusions from the data
8. Analyze data and state results
7. Repeat the experiment
6. Perform the experiment
5. Design an experiment
4. Form a hypothesis
3. Develop a problem statement
2. Collect background information
1. Identify the problem

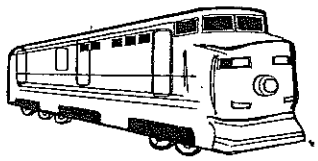
STEP 1: CHOOSE A PROJECT IDEA

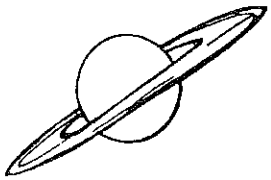
The first step in creating a science fair project is to choose an idea for your project. In other words, what are you going to experiment on? It helps to pick an idea that you are interested in or want to know more about. That way, your project will be much more fun!

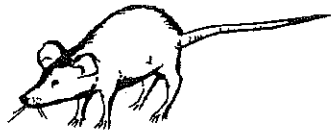


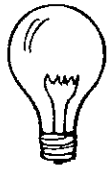






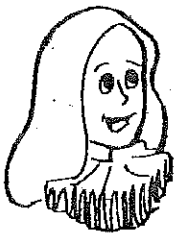






$E=mc^2$

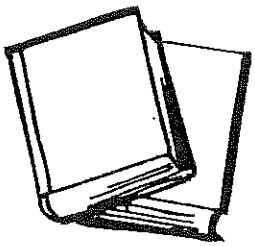
STEP 2: BACKGROUND RESEARCH



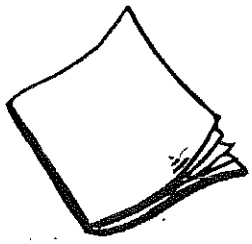
Once you have an idea for your project, you will need to learn more about it. Collect and read as much information as you can about your idea. Take good notes and keep a list of the resources you use. You can place this information in your project notebook.

Resources for Background Information

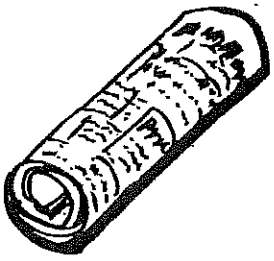
Books



Magazines



Newspapers

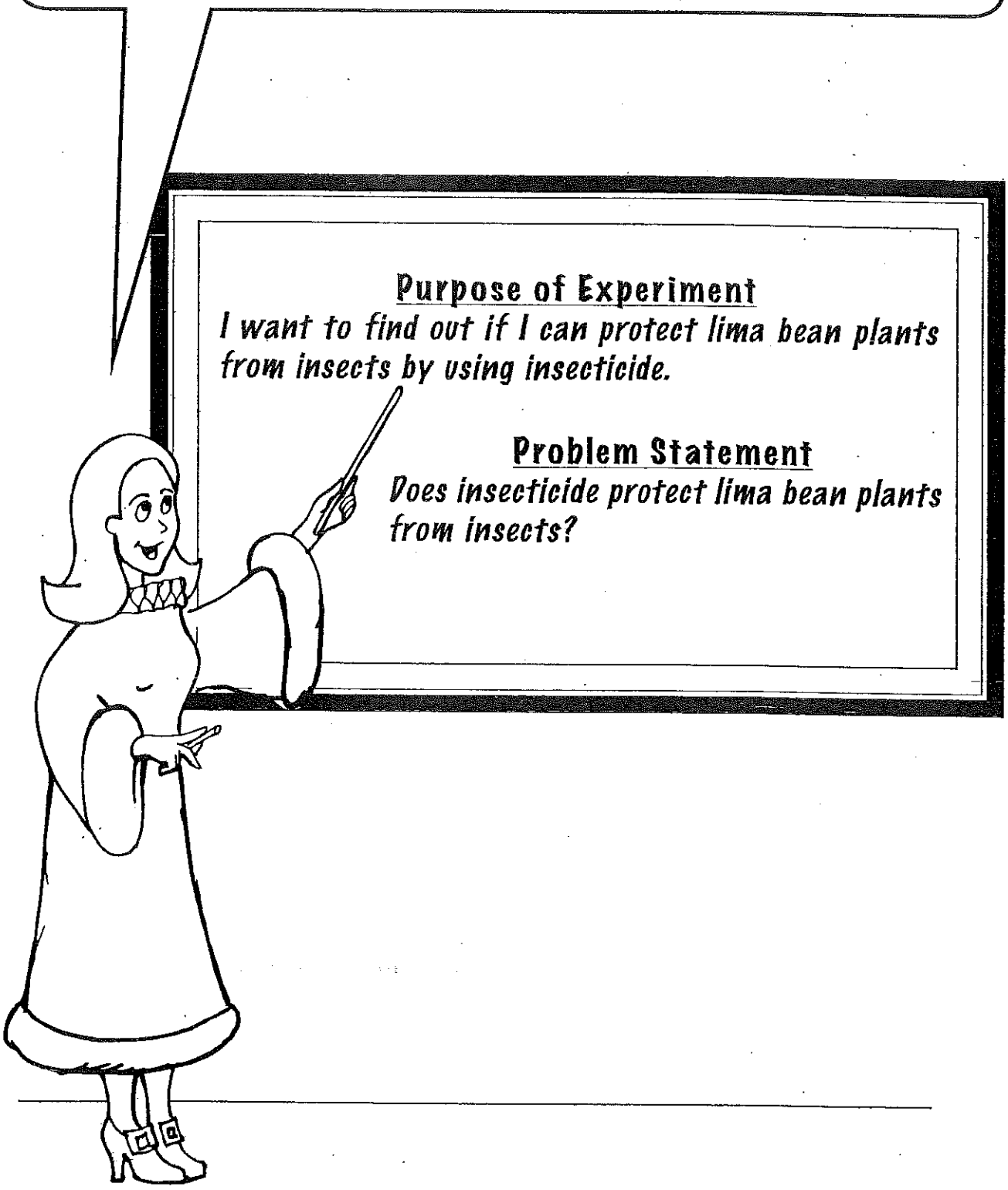


Interviews

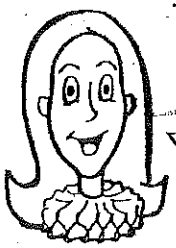
Internet

STEP 3: PROBLEM STATEMENT

The next step is to create your problem statement. A problem statement explains what you are trying to discover or find out in your project. It should be written in the form of a question. You can use your problem statement as the title of your science fair project.



STEP 4: HYPOTHESIS



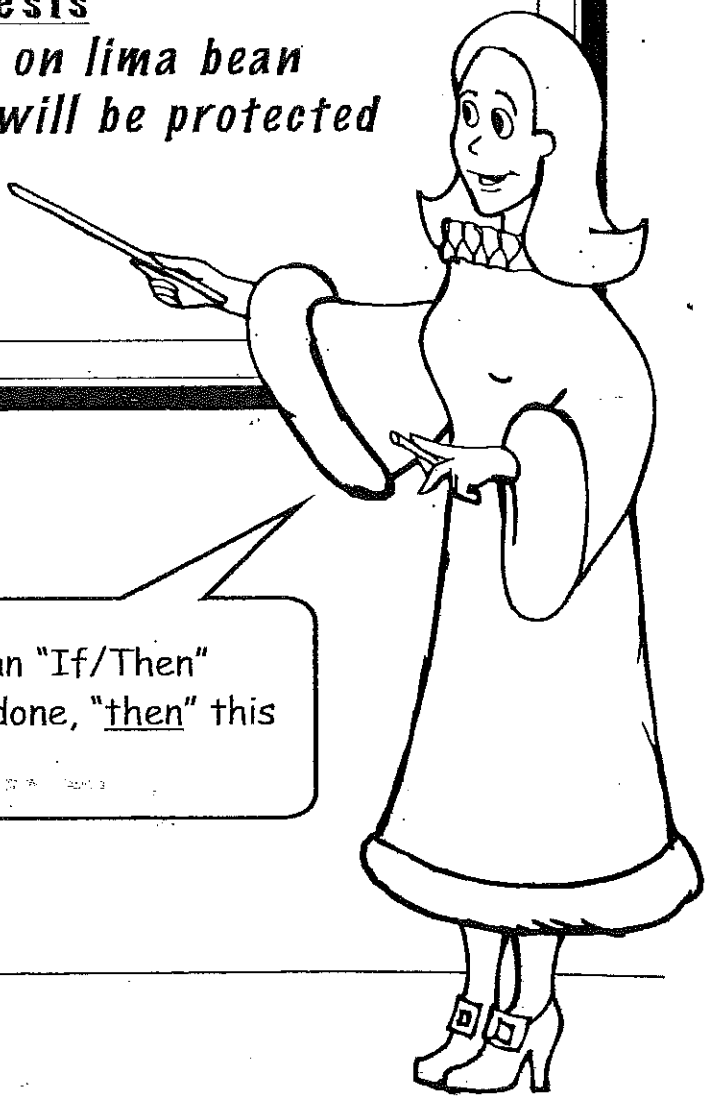
Now that you've written your problem statement as a question, you have to guess what the answer to that question will be. This is your hypothesis. A hypothesis is no ordinary guess. It is an "educated" guess, because you can use your background research to help you predict the results of your experiment before you actually perform it.

Problem Statement

Does insecticide protect lima bean plants from insects?

Hypothesis

If insecticide is sprayed on lima bean plants, then the plants will be protected from insects.



You should write your hypothesis as an "If/Then" statement. For example, "if" this is done, "then" this will happen.

STEP 5: DESIGN AN EXPERIMENT

Once you have created your hypothesis, you must design an experiment to test it. Spend some time planning your experiment. Then, write it down on paper. List the materials, procedure, controls, and variable you plan to use in your experiment.

MATERIALS:

List all the materials or items you plan to use in your experiment. Give the quantity (how much) and dimension (size) for each item. Use the metric system when possible.

PROCEDURE:

This section is very important. Starting with the number 1, list all the steps of your experiment in the exact order you plan on doing them. Be clear, but keep it simple. Other people should be able to repeat your experiment by following your procedure.

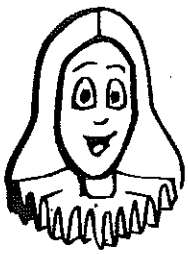
CONTROLS:

Every experiment has controls, or things that are "kept the same" throughout the experiment. List the parts of your experiment that you will keep the same.

VARIABLE:

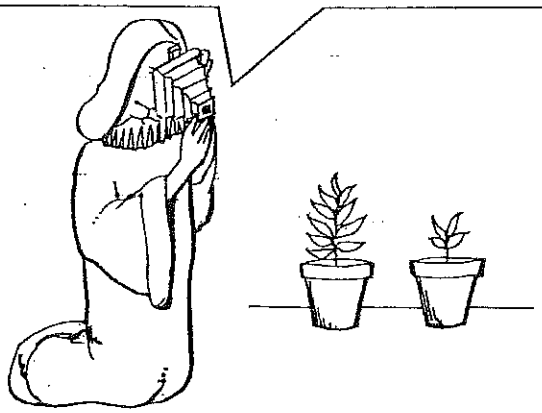
Every experiment has variables, or things that you "change" in order to test your hypothesis. Your experiment should have only one variable. List the part of your experiment that you will change.

After writing your experiment on paper, show it to your science teacher. If your teacher approves it, you are now ready to begin experimenting!



STEP 6: EXPERIMENT! OBSERVE AND RECORD DATA

The information you collect during your experiment is called data. Keep a record or "data log" of all the data you collect. Be sure to take careful notes on what you see happening throughout your experiment.



Use graphs, charts, and photographs to help show your data. Place your data log in your project notebook at the end of your experiment.

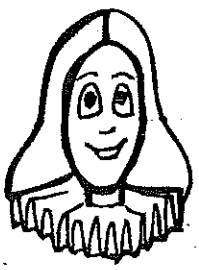
SAMPLE DATA LOG

INSECT DAMAGE LOG -- TRIAL 1

Total number of leaves with insect damage.

	Group A (Plants 1-5) No insecticide added	Group B (Plants 6-10) Insecticide added
Week 1	0	0
Week 2	0	0
Week 3	5	0
Week 4	19	0
Week 5	32	0
Week 6	47	0
Week 7	58	0
Total damaged leaves	58	0

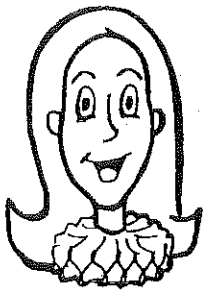
STEP 7: REPEAT YOUR EXPERIMENT



After you have finished your experiment, run it again. The more the tests are repeated, the more accurate your results will be.

STEP 8: ANALYZE DATA AND STATE RESULTS

When your experiment is over, carefully study (analyze) the data you collected. Then, write a brief sentence or two that explains what your data shows. These are your results.



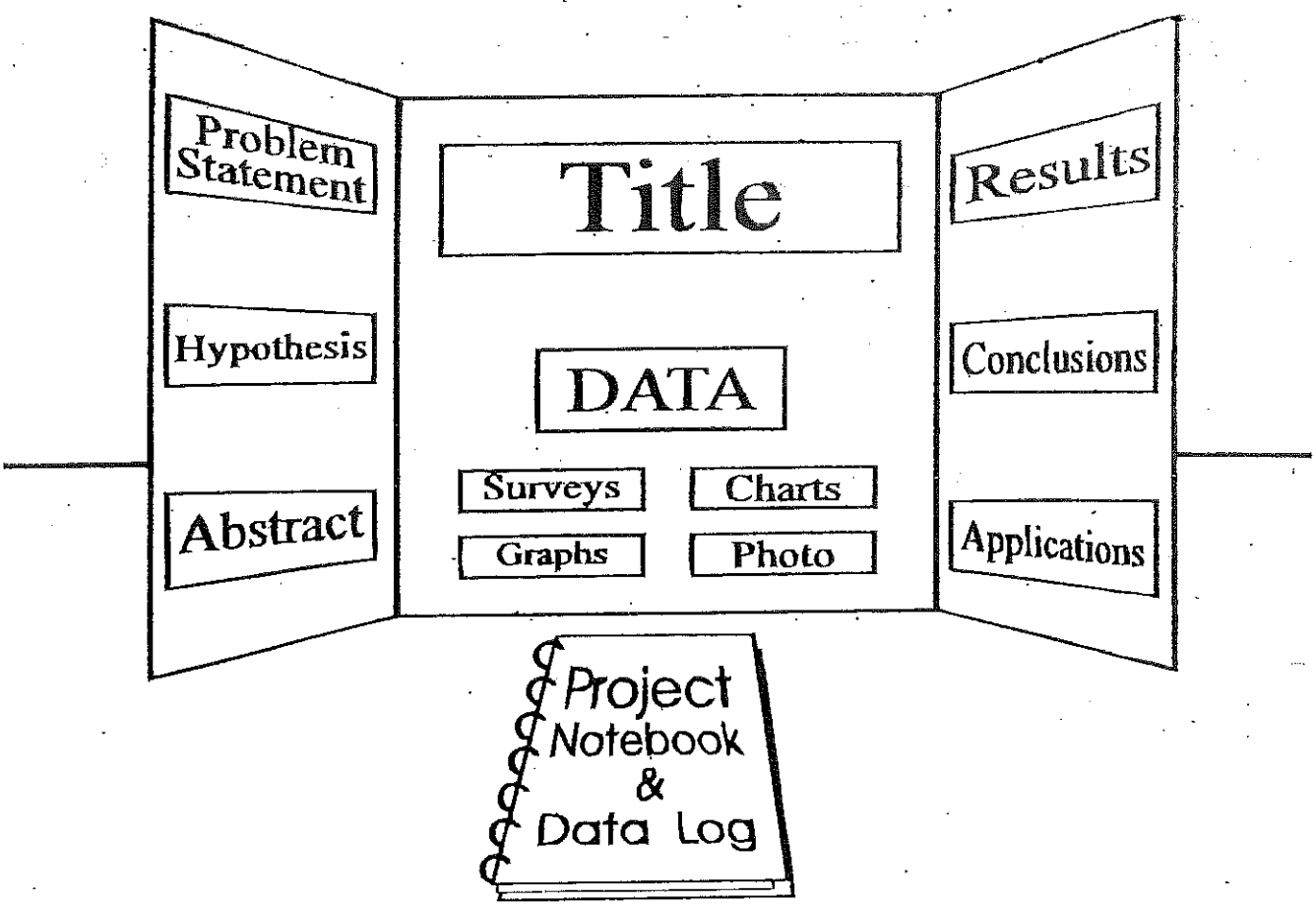
STEP 9: DISCUSS CONCLUSIONS

In the conclusion section, explain your experiment and results in detail. You should begin your conclusion by saying if your results agreed or disagreed with your hypothesis. Tell about any problems that happened during your experiment that may have affected the results. All other findings should be placed in this section.

STEP 10: APPLICATIONS

After your conclusion, write about how your project could be used to help in real-life situations. This is known as your application.

SAMPLE PROJECT DISPLAY BOARD



The display must be free-standing (able to stand on its own). The student's name must appear only on the back of the project.

SIZE: Elementary Fair

30" deep
48" wide
48" high

SUGGESTED DISPLAY BOARD MATERIALS:

Cardboard
Hardboard
Plywood
Corkboard
Paneling

Note: Each elementary school science fair has different display board rules. Please check with your teacher for your science fair's display board rules **before** you create your display.

STUDENT SCIENCE FAIR PLANNING FORM

Name:_____

Teacher:_____

Category:_____

Title:_____

My problem statement:

_____

_____

Resources I will use (books, magazines, newspaper articles, Internet, etc.):

_____

_____

_____

_____

My hypothesis - written as an IF/THEN statement:

_____

_____

Procedure - steps I will use to perform my investigation:

Steps:

1._____

2._____

3._____

4._____

5._____

6. _____

7. _____

8. _____

9. _____

10. _____

My control(s):

_____

_____

_____

My variable:

_____

Number of trials I will do:_____

List of materials I will use (quantity and dimension):

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

My results:

_____

_____

_____

_____

My conclusions:

Did my results support my hypothesis? Why or why not?

Describe any other conclusions:

Application - How my investigation can help others:

Project Notebook - What I am putting in my project notebook: