

SCIENTIFIC METHOD EXAMPLE

STEPS IN THE SCIENTIFIC METHOD:

1. **Determine the problem.**
What do you want to find out?

EX: Does sitting out in the sun cause a person to get a tan?

2. **Make a hypothesis.**
Write down an educated prediction to the problem.

EX: If a person sits out in the sun, then that person will get a tan.

3. **Test your hypothesis.**
Perform an experiment. Follow a procedure to see if your hypothesis is correct.

EX: Do an experiment:

- Send 10 people onto the beach for 10 hours without sunscreen.
- Send 10 other people into a basement for 10 hours without sunscreen.

4. **Analyze the results.**
Present the data using tables, charts, graphs, etc. Give your data table a clear and specific title. Interpret the data by describing what the data means.

EX: Data Table #1: Number of People Who Got a Bad Sunburn

	Total # of People	# of People with a Bad Sunburn
People at the Beach	10	9
People in the Basement	10	0

Most of the people at the beach got a bad sunburn, whereas the people in the basement did not.

5. **Draw conclusions.**
Explain the results of the experiment. State whether or not your hypothesis was correct.

EX: The hypothesis is correct. Sitting out in the sun causes a person to get a tan.

6. **Replicate the work.**
Your experiment is considered successful if other people can perform it and get the same results.)

EX: Another scientist will follow this procedure in order to replicate the results.

EXPERIMENTAL DESIGN COMPONENTS:

independent variable: What are you testing?
In other words, what is different between the two groups?
There can only ever be ONE independent variable.

EX: location (beach/basement)

dependent variable(s): What kind of result(s) or data will you record?
There can be ONE OR MORE dependent variables.

EX: number of people who got a bad sunburn

constants: What is the same between the two groups?
There should be MULTIPLE constants in an experiment.

EX: • 10 hours
• 10 people
• no sunscreen
• same skin types in each group

control group: What group is used for comparison?
The control group isn't really being tested but is used as a standard for comparison in an experiment.

EX: the 10 people in the basement

experimental group: What group is actually being tested in experiment?
The experimental group is manipulated by the one and only independent variable.

EX: the 10 people on the beach

ASSIGNMENT:

1. Make up your own silly question and get it approved by Mr. Zunick. Your question will become the "Determine the Problem" step. You are not actually going to perform the experiment, so it doesn't have to be realistic.
2. Go through the rest of the steps of the scientific method. Look at what is written in the example box for each step. For each step, write your own version of the example as it relates to your specific question.
3. Identify all of the experimental design components as they relate to your experiment. Refer to the list shown above. You can list your answers; this part does not require any explanations.