

## FREE RESPONSE

Practice Response  
2004 AP Exam

NAME: \_\_\_\_\_

BLOCK: \_\_\_\_\_

1. Design an experiment to determine whether a new drug that is supposed to reduce hyperactivity in children actually does. Your response should include an identification and description of all of the components of your experimental design, including sampling, independent and dependent variables, controls, and the method that you would employ to evaluate the outcome.  
(10 Marks)

# AP Free Response

## Sample Student Responses

### Student Response 1 (Excellent)

## "Experiment Q"

An experiment to determine whether a new drug actually reduces hyperactivity in children would begin by randomly sampling within a group of children with certified hyperactivity to control for unknown confounding variables. Then the children would be randomly assigned to either the control or experimental groups. The experimental group is the group receiving the new drug while the control group would not. The independent variable would be the drug and ~~the~~ the dependent variable would be the hyperactive behavior. ~~The control group, however, will receive a placebo to ensure that the administration of any substance is not the determining factor in behavior altering. A double blind will be used - the experimenter will not know which children were given the placebo or the actual drug to ensure no biasing in his/her evaluation. The children will also be uniformed of the nature of whatever substance is being administered so that their actions will not governed by knowing the effects of the substance. The evaluator will observe the children through naturalistic observation using unobtrusive measures to ensure that his presence does not affect the subjects' behavior. The ~~results~~ outcome would be evaluated by~~

the experimenters comparing the behaviors of the control and experimental groups to determine if the drug was correlated with a decrease in hyperactivity. Inferential statistics would then be used to determine if the results occurred by chance.

*Comment:* This essay, which earned 10 points, shows a clear grasp of experimental design and methodology. The faculty consultants were particularly impressed by the student's awareness of the need for experimental controls. The student also has excellent writing skills and expresses himself or herself in a clear and organized fashion.

The student's opening sentence gains 2 points on the issue of sampling. The student recognizes that this study should be done on hyperactive children (not all essayists did). The student also knows that the subjects in this experiment should be selected by sampling to control for "unknown confounding variables." The student proposes a solid experimental design, dividing the subjects into two groups: an experimental group which receives the new drug, and a control group which does not. The student shows awareness of the need to assign the subjects to the two groups on a random basis — one of several indications of this student's grasp of experimental control. The independent variable is explicitly identified as the drug and the dependent variable as the hyperactive behavior. The student recognizes the critical need for a placebo control in this type of research and is able to state why such a control is necessary. The student also recognizes the need for a double-blind design as a further control and clearly describes such a procedure. The student describes a way of measuring the dependent variable "through naturalistic observation using unobtrusive measures." This excellent essay could have been made even better if the student had described some means of objectifying or operationally defining these measurements. The student recognizes the need to compare the two groups to determine the effectiveness of the medication and that statistical treatment would be necessary to evaluate the outcome.