AP Biology
Good Controlled Experiment

The components required to adequately design a controlled experiment

Required Component	**Example**
1. State your hypothesis	I hypothesize that the application of gibberellin will cause elongation and increased height in dwarf pea plants.
2. Manipulate one variable	One group of 5 dwarf pea plants received a spray of 500 ppm gibberellin while the other group of 5 dwarf pea plants were sprayed with the solvent water.
3. Hold constant all other variables that could effect the experimental results. Two examples are required.	1. Both groups of plants (experimental and control groups) were exposed to the same intensity and duration of light. 2. Both groups of plants (experimental and control groups) were the same variety of pea plants. 3. Both groups of plants (experimental and control groups) were grown at the same temperature.
4. Identify the control group. It may help to think of the control group as a reference group.	The group of 5 dwarf pea plants, sprayed with the solvent water, served as the control group.
5. Make quantitative measurements	A ruler was used to measure the heights of both control and experimental plants at intervals of three days for one month following the spraying of both groups.
6. Verify the experimental results	This experiment was repeated five times to verify or confirm results.
7. Statistically analyze the results	The results from the five trials were averaged.
8. Relate the expected results to the hypothesis . . . an if then statement	If the plants sprayed with giberellin experienced greater growth over the thirty day experimental period then the hypothesis would be supported.