

CONTROLLED EXPERIMENT PROPOSAL

Name _____

1. If you are doing a **controlled experiment** (changing a single variable to test a hypothesis), what is the very specific question you are investigating? Remember that your question **MUST** state the specific independent variable (what you are changing) and dependent variable (what you are measuring).

Example Question: Does soil depth (10 cm, 20 cm and 30 cm) affect the length of the main stem of a lima bean plant over a four-week period?

Clearly there is an independent variable – soil depth and an independent variable – length of the main stem of the lima bean plant. One variable is changed (soil depth) and all other variables can be carefully controlled.

2. Formal Hypothesis (If dependent variable is related to the independent variable, then...). Remember – you must propose that your independent variable will in some specific way affect the dependent variable.

If stem length of a lima bean plant grown for four weeks is related to soil depth, then the stem will (on average) be longer for plants grown in the deepest soil (30 cm).

3.

Do you have time to run three trials of your experiment before the due date of the project?	Yes / No
Is your experiment safe to perform	Yes / No
Do you have, or will you be able to get all the supplies you will need to complete this experiment? List the supplies:	Yes / No

I have discussed the project topic and the checklist with my parent(s) and I am willing to commit to following through on this project. Signature _____

SCIENCE PROJECT PROPOSAL FORM

Name _____

1. If you are doing an **investigation project** (systematic study) - investigating the claims of a DIY model of a scientific instrument, online experiment or commercial science kit - then write a question that specifically states exactly what you will be investigating.

Example: Does Education.com's "Fruit Battery" science project actually result in a measurable electrical current that will light up an LED and produce a current that can be measured in milliamps with a multi-meter?

How is this different from a controlled experiment or engineering project? It has similarities to both, but in this case I am investigating "does it work" rather than setting up an experiment in which I am determining the effect of changing a single variable. Also, I am not proposing a problem and testing possible solutions as would happen in an engineering project. Rather, I'm investigating whether someone else's design/model/science kit works as they claim.

2. Website address or other project source: https://www.education.com/science-fair/article/which-fruit-produce-electricity/?source=related_materials&order=2

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SCIENCE PROJECT PROPOSAL FORM

Name _____

1. If you are doing an **engineering project** in which you design, test and redesign a model to solve a particular problem, then state the problem and describe your initial ideas regarding the model you will design to solve the problem ([Who] needs [what] because [why]?).

Example:

Problem: *It's nearly time for my friends to come over, but the soda cans that I forgot about are at room temperature; what is the fastest practical way I can cool down the sodas? The most common way is to put the cans in the refrigerator, but if time is tight, is there a faster method?*

Proposed solutions: *I will compare four ways of cooling a soda to 4°C (about 40 °F): in a refrigerator set a 4°C, in a refrigerator freezer set at -1°C, in a cooler filled with ice water, in a cooler filled with ice and salt water.*

Why would this classify as an engineering project? I'm not changing a single variable; in fact, many variables are changed. I'm stating a problem for which I am investigating some possible solutions, rather than asking a question in which a single variable will be changed to test a hypothesis.

2. Website addresses or other project source:

3.

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Is your experiment safe to perform	Yes / No
Do you have, or will you be able to get all the supplies you will need to complete this project? List the supplies:	Yes / No

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