Planning Lab: Quantities in Chemical Reactions

A crucial part of being a scientist is planning experiments.
Sometimes data has to be acquired, while other experiments need to test hypotheses.
Whatever its purpose, a good experiment should provide the necessary information in an efficient, practical and safe way.

You have been studying the unit: Quantities in Chemical Reactions, your task is to design an experiment to **plan an experiment** to study any aspect of this unit that has initiated your interest.

You will not perform this experiment.

Your "lab report" for this planning lab will be an instruction sheet like the ones that you usually receive.
It should allow someone with a reasonable knowledge of chemistry to do the experiment.

Keep it **simple** but ensure that all of the necessary information is included.

You will submit your planned lab which should contain all the criteria necessary for a design lab, (e.g. formulating questions, identifying the problem, developing hypotheses, etc.).

See "Internal Assessment Criteria: Design)

Internal Assessment Criteria: Design

Level/Marks	Aspect 1: Defining the Problem and Selecting the variables	Checklist
Complete / 2	Formulates a focused problem/research question and identifies the relevant variables	Identify a focused problem or specific research question. Relates the hypothesis or prediction to the research question, and explains it, quantitatively (where appropriate). Explains the theory relating to the research question at the molecular level, including any relevant equations and formulae. Variables identified: manipulated (independent), dependent,(measured, responding),and controlled variables (constant).
Partial / 1	Formulates a problem/research question that is incomplete **or** identities only some relevant variables.	
Not at all / 0	Does not identify a problem/research question **and** does not identify any relevant variables.	
Level/Marks	Aspect 2: Controlling variables	Checklist
Complete / 2	Designs a method for the effective control of the variables.	A detailed list of appropriate apparatus and specific quantities of chemicals. Quantities of chemicals explained in terms of masses, concentrations, volumes, etc. Designs a procedure that controls the variables outlined above.
Partial / 1	Designs a method that makes some attempt to control the variables.	
Not at all / 0	Designs a method that does not control the variables.	
Level/Marks	Aspect 3: Developing a method for collection of sufficient relevant data	Checklist
Complete / 2	Develops a method that allows for the collection of sufficient relevant data.	Describes a method that allows for the collection of sufficient relevant data, and allows for random and systematic error, and allows for repeat trials and/or minimum five data points for graphs. Addresses the research question.
Partial / 1	Develops a method that allows for the collection of insufficient relevant data.	
Not at all / 0	Develops a method that does not allow for any relevant data to be collected.	