

Designing an Experiment

Physics

Building an experiment that can actually answer the question.

From question to method.

1

State the relationship to test

Which quantity depends on which, and what form is predicted.

2

Identify the variables

One independent, one dependent, everything else controlled.

3

Choose the range and interval

At least eight values spanning a wide enough range to see the trend.

4

Select instruments by resolution

Match the resolution to the precision the question needs.

5

Plan repeats

Enough to average out random error and spot anomalies.

6

Assess the risks

Identify hazards and the control for each before starting.

The commonest design fault is too narrow a range: the relationship looks linear over any small enough interval.