

Science Reasoning Terminology Checklist

1. *Purpose of the Study or Research*

- A. Experiment - An experiment is a test designed to evaluate a given hypothesis. An experiment includes manipulation of variables such that the end result of the experiment will typically indicate a cause and effect relationship, confirming or denying the respective hypothesis.
- B. Hypothesis - An hypothesis is a statement that is being tested by gathering empirical evidence or conducting experiments.
- C. Model - A model is a representation that reproduces a pattern of relationships gathered in data collection.

2. *Experimental Design*

- A. Variable - In an experiment, a variable is the parameter being manipulated (e.g., the independent variable) or the construct being measured as an outcome or result (e.g., the dependent variable).
- B. Factor - A factor is typically a variable that has some causal relationship with the variable being examined.
- C. Control - In an experiment, the control variable is the variable being held constant.
- D. Procedure - A procedure is the process or technique of controlling specific variables and manipulating others in order to examine a given hypothesis.
- E. Manipulation - Manipulation is the act of varying or changing a variable or variables within an experiment in order to examine the result.
- F. Assumption - An assumption is a supposition, typically for the sake of experimentation. An assumption is not necessarily a fact, but is generally deduced from a given set of information.

3. *Results*

- A. Graph - A graph is a plot of sets of points, often connected by line segments, that allows the plotting of one variable (such as weight) against another (such as weight).
- B. Table - A table is a collection of data arranged in rows and columns.
- C. Chart - A chart is a diagram or figural representation of an object or process.
- D. Relationship - A relationship is the connection between two variables such that change in one of the variables is accompanied by some change in another variable.
- E. Generalization - A generalization is a judgment or decision that applies to an entire category. A generalization involves induction and is derived from a limited number of observations.
- F. Conclusion - The conclusion is the final result or summary drawn from the experiment, based on the resulting data. For example, if the experiment were testing the hypothesized relationship between variables x and y , the conclusion may be that x increases as y increases or x increases as y decreases.
- G. Effect - Similar to a conclusion.
- H. Expectation - An expectation is the experimental outcome produced by changing variables.
- I. Prediction - Similar to an expectation.

4. *Types of Relationships*

- A. Positive linear or direct - A positive linear or direct relationship conveys that as one variable increases, the other variable also increases. This relationship can be depicted by a positively sloped, straight line.
- B. Negative linear or indirect - A negative linear or indirect relationship conveys that as one variable increases, the other variable decreases. This relationship is typically depicted as a negatively sloped, straight line.
- C. No linear relationship - When no linear relationship exists between two variables, the relationship between the two cannot be depicted with a straight line.