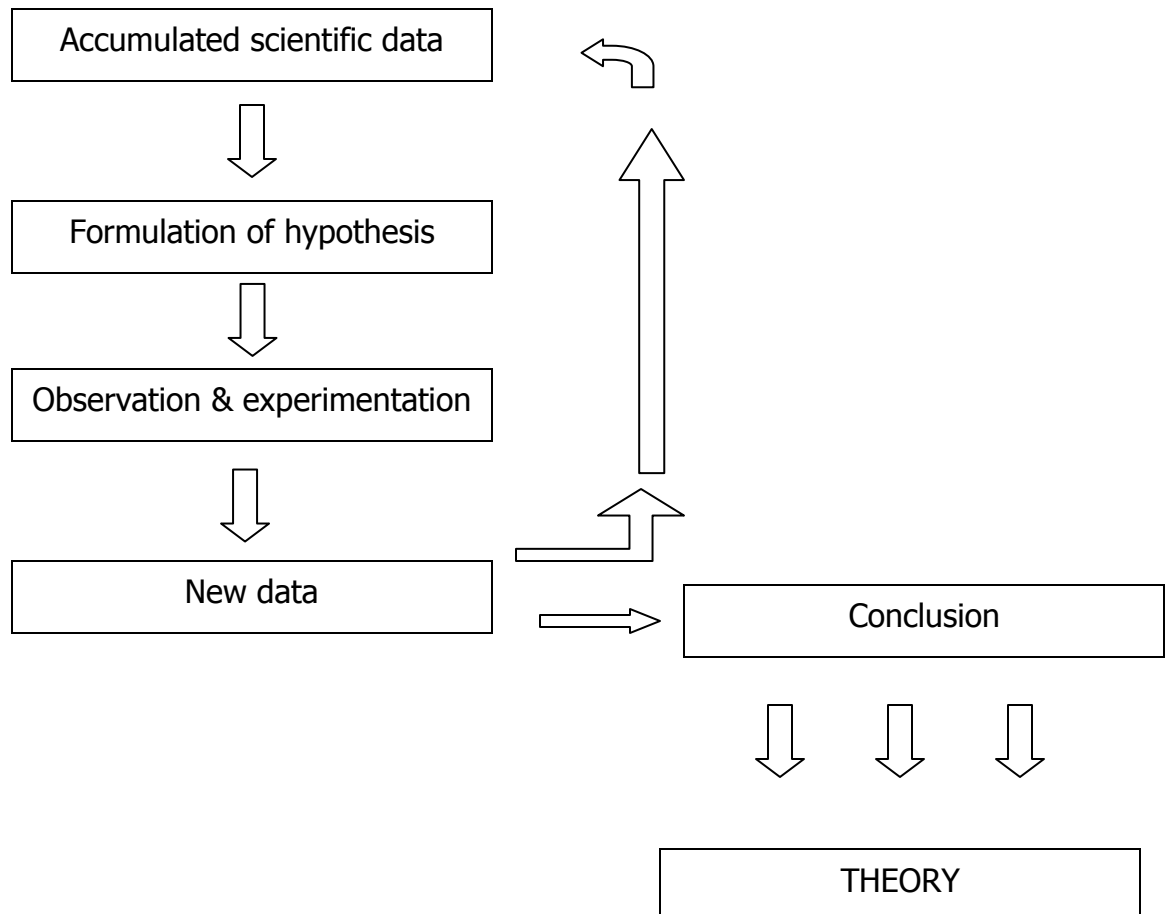


Bio 12 [Mazurkewich]
Text questions: Scientific Method.

Study questions 10 – 12, page 15 [polar bear]

10. The ultimate goal of science is to understand the natural world in terms of THEORIES [concepts based on the conclusions of experiments and observations].
11. Figure 1.8, page 12 redrawn below.
DEDUCTIVE reasoning: Occurs when you make an “If ..., then” statement. You state an explanation then test out your explanation.
INDUCTIVE reasoning: Occurs when you make observations and then invent an explanation for why they occur.



12. controlled experiment → An experiment having a “normal” group to compare to.
experimental variable: whatever is being tested.
dependent variable: The result or change being noted.

Objective questions 7 – 10, page 16 [Polar Bear] & 11 – 15 [Otter]

7. Scientists use **DEDUCTIVE** reasoning to formulate hypotheses.
8. Very often, the next step after formulation of the hypothesis is **EXPERIMENTING** a type of testing that usually includes a control.
9. Scientists try to be objective; therefore, they prefer **MATHEMATICAL** data.
10. .In science, the word **THEORY** is often used to stand for concepts based on many experiments and observations.
11. . In science, the word **THEORY** is often used to stand for concepts based on many experiments and observations.
12. Scientists use **DEDUCTIVE** reasoning to formulate hypotheses.
13. Very often, the next step after formulation of the hypothesis is **EXPERIMENTING** a type of testing that usually includes a control.
14. (a) Dyed bacteria live despite exposure to UV light [which normally kills that type of bacteria.
(b) If dye offers bacteria some protection from UV light, then dyed bacteria will not die when exposed to UV light.
(c) The bacteria in BOTH plates die when exposed to UV light.
(d) The dyed bacteria DID die, so it is NOT true that dye offers bacteria some protection from UV light.
15. Scientists try to be objective; therefore, they prefer **MATHEMATICAL** data.

Critical thinking questions 1.1 # 1 and 2 [Otter]

1. ...because it is not possible to actually test it out to see if it is false.
2. ...because one COULD design an experiment to see if the idea is false or not. It DOES depend on ones definition of “good health” however.