

**CONCEPT: SCIENTIFIC METHOD**

- A procedure used to \_\_\_\_\_ questions, \_\_\_\_\_ ideas, and \_\_\_\_\_ scientific knowledge.

**Components of the Scientific Method**

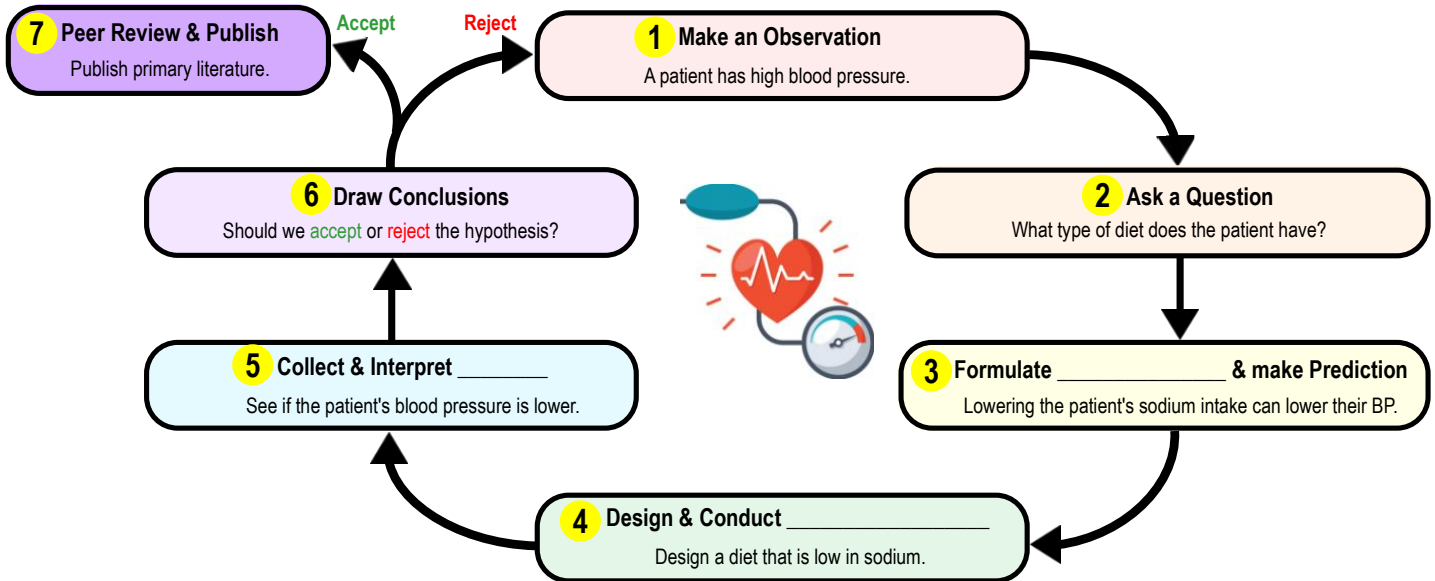
- \_\_\_\_\_: the collecting of information from a primary source by human or mechanical means.
  - *Quantitative*: ex. body temperature of over 38°C.
  - *Qualitative*: ex. patient looks flushed.
- \_\_\_\_\_: a proposed & testable explanation for an observation
  - Addresses the answers to “\_\_\_\_\_ will happen?” and “\_\_\_\_\_ it will happen?”
- \_\_\_\_\_: a testable & \_\_\_\_\_ hypothesis of many observations, supported by a large body of evidence.
- \_\_\_\_\_: a testable phenomenon that the scientific community has found to be provably \_\_\_\_\_.
  - Technically, hypotheses & theories can never be proven correct, but they can be \_\_\_\_\_ (proven incorrect).

**EXAMPLE:** Which component of the Scientific Method deals with the following statement: “Gravity is the reason that an object that is initially tossed into the air comes back down towards the ground.”

- a) Hypothesis                      b) Theory                      c) Observation                      d) Law

**Steps of the Scientific Method**

- The Scientific Method starts with a(n) \_\_\_\_\_ and a(n) \_\_\_\_\_.



**EXAMPLE:** A scientist observed a new phenomenon and wonders how it happens. Which of these steps comes next?

- a) Interpret data                      b) Design experiment                      c) Peer review                      d) Hypothesize

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**PRACTICE:** Which of the following shows the best order of steps of the scientific method?

- a) Observation → Data Analysis → Hypothesis → Conclusion → Peer Review & Publish → Experiment.
- b) Observation → Hypothesis → Experiment → Peer Review & Publish → Analysis → Conclusion.
- c) Observation → Hypothesis → Experiment → Data Analysis → Conclusion → Peer Review & Publish.
- d) Experiment → Hypothesis → Observation → Data Analysis → Conclusion → Peer Review & Publish.

**PRACTICE:** Which of the following statements represents an observation?

- a) Repeated studies show that lowering sodium in one's diet will lead to a decrease in blood pressure.
- b) During an assessment in the doctor's office, the nurse records that the patient's resting pulse as 32 beats per minute.
- c) A doctor believes that an incision during made during surgery that is red and pulsating is infected.
- d) A patient believes they are allergic to povidone-iodine and an alternate antiseptic must be used before surgery.

**PRACTICE:** Which of the following statements represents a hypothesis?

- a) Drinking coffee at night keeps me awake.
- b) I will drink coffee early each morning before I start my day.
- c) If I drink coffee early in the morning, I will be able to sleep at night.
- d) The days that I drank coffee I was more alert than the days I didn't drink coffee.