

CONCEPT: SCIENTIFIC METHOD

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

Components of the Scientific Method

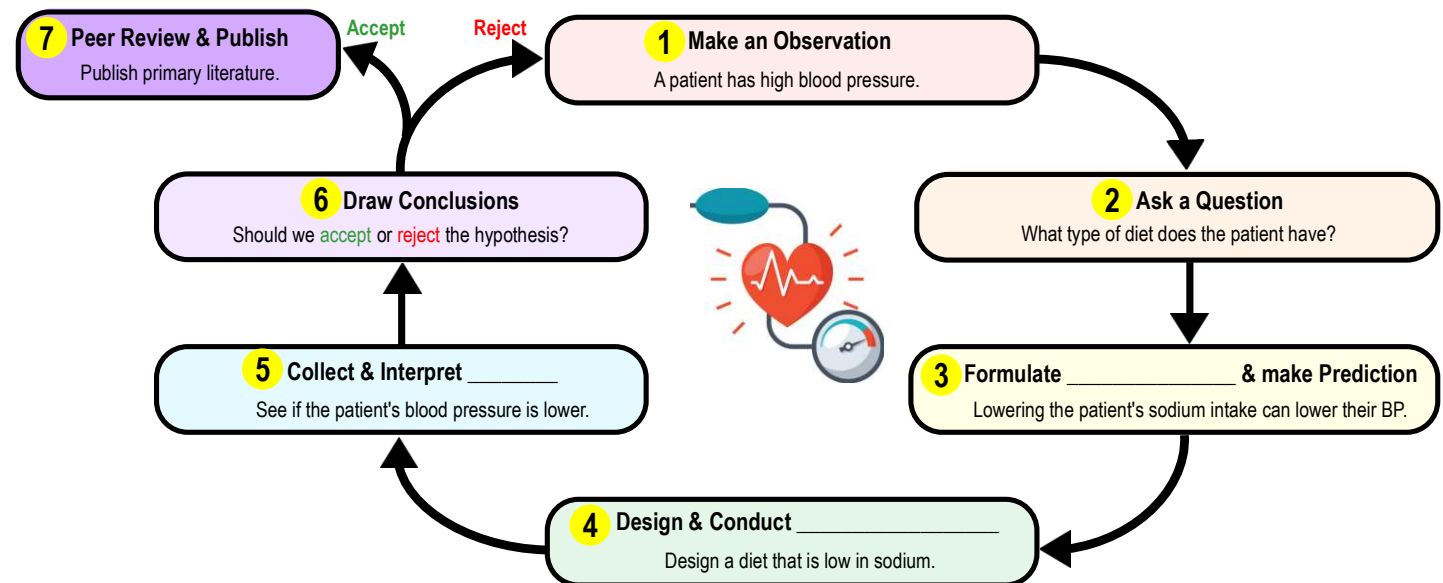
- _____: the collecting of information from a primary source by human or mechanical means.
 - *Quantitative*: ex. body temperature of over 38°C.
 - *Qualitative*: ex. patient looks flushed.
- _____: a proposed & testable explanation for an observation
 - Addresses the answers to “_____ will happen?” 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) I drink 2 cups of coffee a day to stay alert.