

Science Practices

Next Generation Science Standards

Ask Questions



- What am I observing?
- What does this evidence mean?
- What is the relationship between these variables?
- How can I make my model more accurate?
- What evidence do I need to answer my question?
- What hypothesis can I state based on my observations?
- Is the data used correctly in the argument?

Investigate



- Use the Process of Science.
- State the goal of the investigation.
- Predict outcomes.
- Plan a course of action that will provide the best evidence to support conclusions.
- Use scientific ideas to show why data can be considered evidence.
- Reduce error in procedures.

Use Math



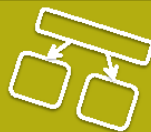
- Use computers to analyze very large data sets for patterns and trends.
- Use mathematical representations to support scientific conclusions.
- Create algorithms (a series of ordered steps) to solve a problem.
- Use digital laboratory tools to observe, measure, record, and process data.
- Make quantitative predictions.

Communicate



- Be a critical consumer of information about science
- Critically read scientific texts to determine the central ideas and obtain scientific information to describe patterns in evidence.
- Use multiple sources to obtain information used to evaluate the validity of claims and methods.
- Communicate ideas by using tables, diagrams, graphs, models, interactive displays, and equations as well as orally, in writing, and discussion.

Design a Model



- Models include diagrams, physical replicas, mathematical representations, analogies, and computer simulations.
- Models highlight some ideas and simplify others.
- Models are used to help find questions and explanations, to get data to predict, and to communicate ideas.
- Models are based upon evidence. New evidence, changes the model.

Analyze Data



- Construct and interpret graphical displays of data.
- Use computers to tabulate, graphically represent data, visualize, and statistically analyze.
- Use math to represent relationships between variables and identify patterns.
- Take into account sources of error.
- Is one variable the cause (causal), or do both just happen at the same time (correlational)?

Explain



- An explanation includes qualitative or quantitative relationships between variables that predict and describe phenomena.
- Design investigations that generate data to determine explanations to questions.
- Apply scientific reasoning to show why the data or evidence is adequate for the explanation or claim.
- Construct an explanation using models or representations.

Argue



- Argue when investigating a phenomenon, resolving questions about measurements, building data models, and using evidence to evaluate claims.
- Arguing happens when listening, comparing, and evaluating competing ideas and methods.
- Respectfully provide and receive critiques about one's explanations, procedures, models, and questions by citing relevant evidence and posing and responding to questions.