

SCIENTIFIC METHOD AND EXPERIMENTAL DESIGN UNIT ORGANIZER

Prepared by Miss Dawn Dow

STATE AND DISTRICT STANDARDS

Standard 1

- *Use appropriate tools to measure.
- *Follow a plan to conduct a scientific investigation that involves: questions, hypothesis, controlling variables, collecting data, drawing conclusions, and making predictions.
- *Communicate with reports, orally, graphs, charts, spreadsheets, and art.
- *Establish relationships based on evidence and logical argument.

Standard 6

Identify variables and conditions related to change.

CORE KNOWLEDGE UNIT

This unit is not found in the Sixth grade Core Knowledge Series. It is a review unit needed to establish a foundation for the Core Knowledge Series that will be studied in sixth grade science this year.

IN THIS UNIT, YOU WILL:

1. Use the scientific method to solve problems.
2. Design and perform experiments.
3. Write lab reports using the correct format.
4. Achieve 70% or more mastery, or continue to work to do so.

HABITS OF MIND

- *Know why it is important in science to keep honest, clear, and accurate records.
- *Know that hypotheses are valuable, even if they turn out not to be true, if they lead to fruitful investigation
- *Know that often different explanations can be given for the same evidence, and it is not always possible to tell which one is correct.

STANDARDS FOR ACHIEVEMENT AND PERFORMANCE

- *Can you use appropriate tools to measure data?
- *Can you follow a plan to conduct a scientific investigation that involves: questions, hypothesis, controlling variables, collecting data, drawing conclusions, and making predictions?
- *Can you communicate with reports, orally, graphs, charts, spreadsheets, and art?
- *Can you establish relationships based on evidence and logical argument?
- *Can you identify variables and conditions related to change?

Previous Unit

None

Next Unit

Speed and Force

WORK SCHEDULE

1. Pretest on scientific method and experimental design.
2. Discuss the unit and expectations.
3. Read and answer the questions in Chapter 1 of The Nature of Science.
4. Read Alexander Fleming story and use to demonstrate scientific method.
5. Use “Dots and Seconds” activity to practice writing an excellent lab report.
6. Design and perform “The Paper Airplane Experiment”.
7. Evaluate experimental design of “The Paper Airplane Experiment” and repeat it.
8. Complete a correctly written laboratory report for “The Paper Airplane Experiment”.
9. Post test on scientific method and experimental design.

ASSESSMENTS

- | | |
|----------------------------------|-----------|
| 1. Chapter 1 questions | 10 points |
| 2. Dots and Seconds Lab write up | 15 points |
| 3. The Paper Airplane Experiment | 25 points |
| 4. Post Test | 40 points |