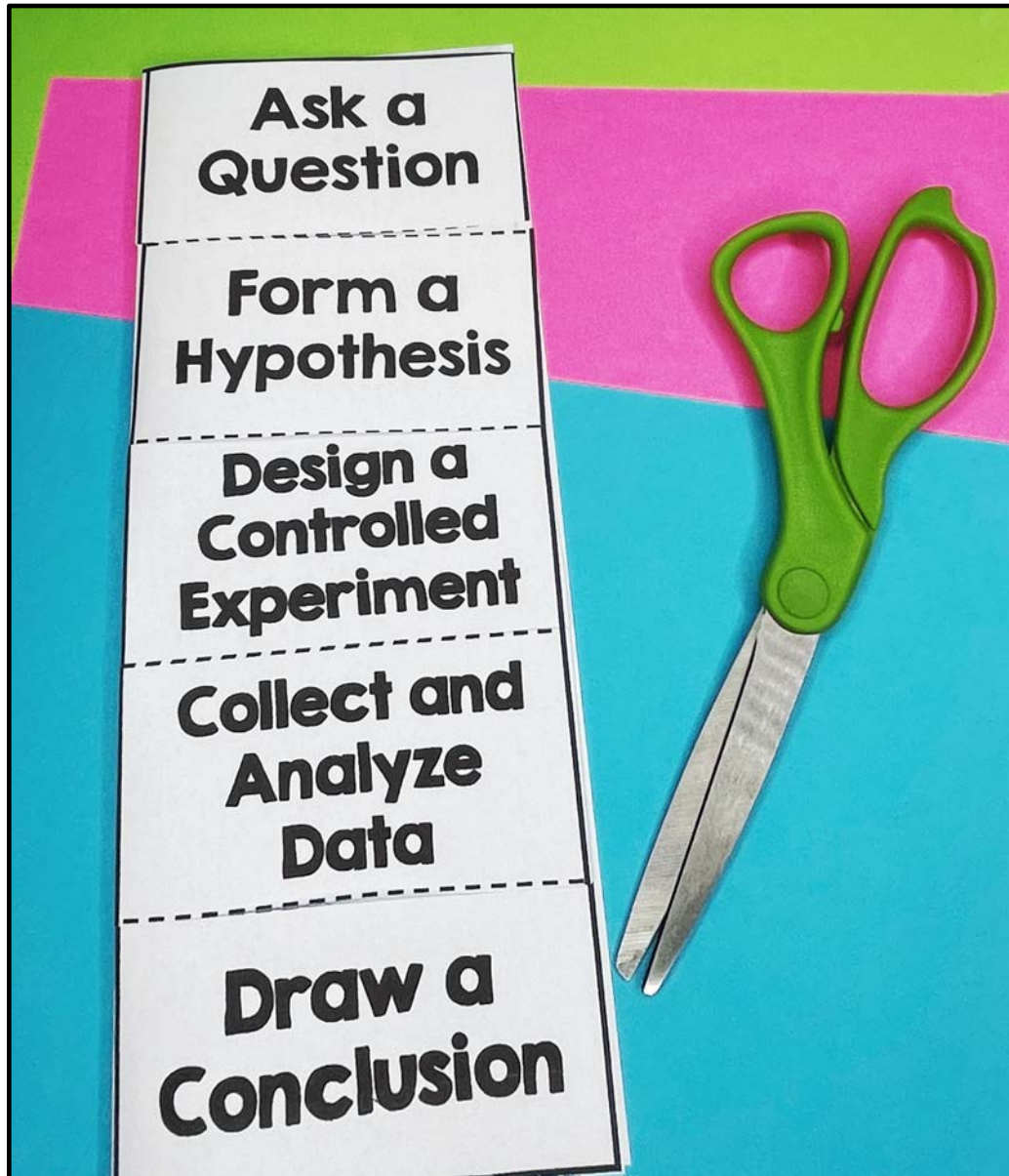


# Struggling to find a hands-on way to teach the scientific method?



Don't spend any more time planning, searching, or brainstorming. Everything you need is in this easy to use download!

# Nature of Science & Scientific Method

## BUNDLE

### NATURE OF SCIENCE UNIT

#### Steps in the Scientific Method

- Teacher Direction Page
- Foldable
- Blank Recording Sheet
- Which Brand of Paper Towels Will Absorb the Most Water? Experiment Recording Sheet
- Exit Slip

#### Scientific Method: Observations

- Teacher Direction Page
- Foldable Personal Opinion vs. Verified Observations
- 3 Images
- Recording Sheet
- Foldable: Quantitative vs. Qualitative
- Candy Bar: Qualitative vs. Quantitative
- 3 Items: Qualitative vs. Quantitative
- Exit Slip (3 choices)

#### Scientific Method: Variables

- Teacher Direction Page
- Foldable
- What Will Make Ice Melt the Fastest? Experiment Recording Sheet
- Exit Slip

#### Investigation vs. Experiment

- Teacher Direction Pages
- Foldable
- Sorting Page into Investigations or Experiments
- Venn Diagram Sorting Activity
- Paper Airplane Investigation Recording Sheet
- Paper Airplane Experiment Recording Sheet
- Exit Slip

#### Repeated Trials

- Teacher Direction Page
- "What Surface Will Make the Tennis Ball Bounce the Highest?" Experiment Recording Sheet
- Exit Slip

#### Control Group

- Teacher Direction Page
- Foldable
- Which Bread Will Show Mold First? Experiment Recording Sheet
- Exit Slip

#### Scientific Method Not Always Used by Scientists

- Teacher Direction Page
- Index Card Tower Recording Sheet
- Exit Slip

#### Replicable By Others

- Teacher Direction page
- Directions Activity
- How Far will the Ball Roll Down the Ramp? Experiment Recording Sheet
- Exit Slip



# NATURE OF SCIENCE UNIT

- Steps in the Scientific Method
  - Teacher Direction Page
  - Foldable
  - Blank Recording Sheet
  - Which Brand of Paper Towels Will Absorb the Most Water? Experiment Recording Sheet
  - Exit Slip
- Scientific Method: Observations

## Next Generation Science Standards (NGSS)

3-5-ETS1-1 Define a simple design problem reflecting a need or a want that includes specific criteria for success and a constraint.

3-5-ETS1-2

## Florida Standards

1 Define a problem, use appropriate reference materials to support understanding, plan and carry out scientific investigations of types such as: systematic observations, experiments requiring the manipulation of variables, collecting and organizing data, interpreting data in tables, and graphics, analyze information, make predictions, and conclusions.

2 Explain the difference between an experiment and other types of scientific investigation.

3 Recognize and explain the need for repeated experiments.

4 Identify a control group and explain its importance.

5 Recognize and explain that authentic scientific investigations do not parallel the steps of "the scientific method."

6 Explain the difference between qualitative and quantitative data.

## Texas Essential Knowledge & Skills (TEKS)

SCI.5.1.A Scientific investigation and reasoning. The student conducts classroom and outdoor investigations following home and school safety procedures and environmentally appropriate practices. The student is expected to: demonstrate safe practices and the use of safety equipment outlined in Texas Education Agency-approved safety standards during classroom and outdoor investigations using safety equipment, including safety goggles or chemical splash goggles, appropriate, and gloves, as appropriate.

SCI.5.2.A Scientific investigation and reasoning. The student uses scientific practices and reasoning to: describe, plan, and implement investigations. The student is expected to: testing one variable.

SCI.5.2.B Scientific investigation and reasoning. The student uses scientific practices and reasoning to: ask well defined questions, use appropriate equipment and technology.

SCI.5.2.C Scientific investigation and reasoning. The student uses scientific practices and reasoning to: collect and record information.

SCI.5.2.D Scientific investigation and reasoning. The student uses scientific practices and reasoning to: analyze and interpret information.

SCI.5.2.E Scientific investigation and reasoning. The student uses scientific practices and reasoning to: demonstrate that repeated investigations increase the reliability of results.

SCI.5.2.F Scientific investigation and reasoning. The student uses scientific practices and reasoning to: demonstrate that repeated investigations increase the reliability of results.



# NATURE OF SCIENCE UNIT

## Steps in the Scientific Method

- Teacher Direction Page
- Foldable
- Blank Recording Sheet
- Which Brand of Paper Towels Will Absorb the Most Water? Experiment Recording Sheet
- Exit Slip

## Scientific Method: Observations

- Teacher Direction Page
- Foldable Personal Opinion v
- 3 Images
- Recording Sheet
- Foldable Quantitative vs. (
- Candy Bar Qualitative
- 3 Items

## MATERIALS

### Materials Needed

- Foldable (1 per student)
- 1 recording sheet (1 per student, pick one of the two options provided)
- Scissors
- 3 Brands of Paper Towels
- 1 Cup of Water
- 1 Plate or Container
- Measuring Cups
- Exit Slip (6 per page)

- Foldable (1 per student)
- Foldable #2 (1 per student)
- 8 pictures printed in color or displayed on precut
- Opinion vs. Observation Recording Sheet (2 per student)
- Candy Bar Observations (2 per page)
- Items Observations (2 per page)
- 3 candy bars per student OR 3 supplies
- Rulers, Balances, Scales, etc.
- Scissors
- Exit Slip (6 per page)

## MATERIALS

### Materials Needed

#### Investigation vs Experiment

- Foldable (1 per student)
- Sorting Page (1 per student)
- Construction paper or notebook to glue in final sort
- Venn Diagram (1 per student)
- Venn Diagram Sorting Labels (2 per page)
- 12 pieces of paper per student
- Ruler
- Paper Airplane (2 per page)
- Paper Airplanes (1 per student)
- Exit Slip (6 per page)
- Scissors
- Glue

#### Repeated Trials

- Experiment Recording Sheet (1 per student)
- Tennis Balls
- 2 surfaces for the ball to bounce on
- Meter or yard stick
- Exit Slip (6 per page)

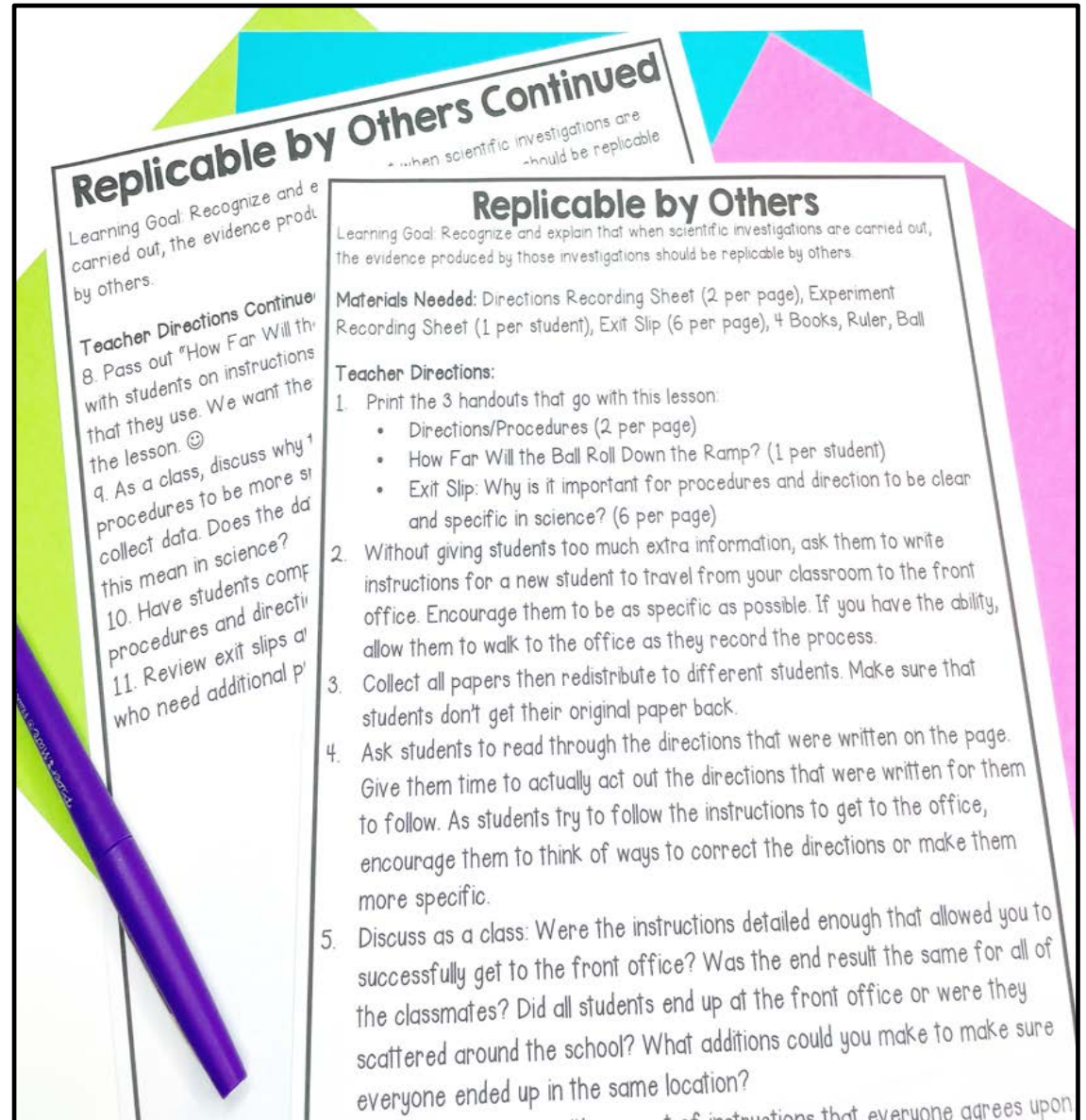
#### Control

- Foldable (1 per student)
- Experiment Recording Sheet (1 per student)
- Exit Slip (6 per page)
- Bread
- Baggies
- Permanent Markers
- Soap and Water
- Dirty Hands
- Paper Towels

- Index Card Tower
- 20 index cards
- Exit Slip

# Teacher Directions Page

- Learning Goals
- Materials Needed
- Specific Directions for All Parts of Lesson





# Experiments, Experiments, Experiments!

Name: \_\_\_\_\_

## How Far Will the Ball Roll Down the Ramp?

Materials:

- 4 books
- Ruler
- Ball

Procedures:

1. Create a ramp from the 4 books.
2. Roll the ball down the ramp.
3. Using the ruler, measure how far the ball rolls.

	Trial 1	Trial 2
Distance		

Name: \_\_\_\_\_

## PAPER AIRPLANE

Materials:

- Nine pieces of paper
- Ruler

Directions:

1. Create three different paper airplanes.
2. Stand in place and throw one paper airplane.
3. Using a ruler, measure the distance it traveled. Record it.
4. Throw the same airplane two more times and record the distance in the table.

Draw the airplane you created.

	Throw #1	Throw #2	Throw #3
Distance			

Was this an investigation or an experiment? Why? \_\_\_\_\_

Name: \_\_\_\_\_

## Step #1: Ask a Question

Which Brand of Paper Towels Will Absorb the Most Water?

## Step #2: Form a Hypothesis

I believe \_\_\_\_\_ will be absorb the most water because \_\_\_\_\_

## Step #3: Design a Controlled Experiment

Materials: 3 different brands of paper towels, 1 cup of water, plate or container for process

1. Take one sheet of paper towel from each brand and label them. Put the paper towel on top of a plate.
2. Gently pour 1/3 cup of water over the paper towel while it is on the plate.
3. Wait 30 seconds. Lift up the paper towel and discard it.
4. Pour the remaining water from the plate into an empty measuring cup.
5. Record the amount of water left on the plate.
6. Repeat the steps for each paper towel brand.

## Step #4: Collect and Analyze Data

Paper Towel Brand	Amount of Water Not Absorbed

Which brand had the least amount of water remaining?

Which brand had the most amount of water remaining?

## Step #5: Draw a Conclusion

After completing the experiment, I found that the brand that absorbed the most water was \_\_\_\_\_. The brand that absorbed the least amount of water was \_\_\_\_\_. In the future, I will use \_\_\_\_\_ paper towels because I know they absorb the most water.

# Quick Assessments

Use these simple exit ticket questions to measure your students' learning at the end of the lesson.



**BONUS:** Includes a Mastery Checklist. You can easily keep track of students who need extra practice and students who are ready to move on to the next lesson in one easy place!

A sample 'Exit Slip Tracking' form is shown, featuring a table with columns for Date, Exit Slip Topic, Students Who Have Shown Mastery, and Students Who Need Additional Review/Practice. A pink pen is resting on the form. A small slip of paper with a question is also visible, asking why it is important for procedures and directions to be clear and specific in science.

Date	Exit Slip Topic	Students Who Have Shown Mastery	Students Who Need Additional Review/Practice

Name: \_\_\_\_\_

Why is it important for procedures and directions to be clear and specific in science?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_