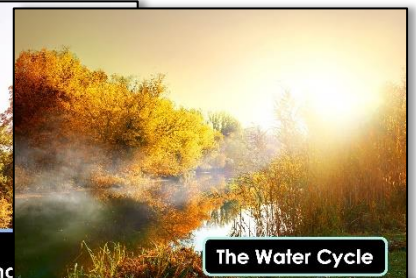


TEACHING POWERPOINT



5 IN-DEPTH TOPICS

- Water & Weather
- Weather Patterns
- Weather Instruments
- Natural Weather Hazards
- Climate Zones
- Climate Change



EACH LESSON INCLUDES:

- Detailed, scripted lesson plan
- PowerPoint lesson
- Science journal activity
- Related investigation
- Exit tickets in 2 formats
- Vocabulary posters
- Objectives display cards
- Turn & talk partner questions
- Read aloud & video links
- Science center activity

The collage features several educational materials:

- Lesson 1: Water and Weather** (TEACHER GUIDE): Includes objectives, guiding questions, and key concepts like condensation and precipitation.
- Investigation 1: TEMPERATURE AND WATER** (TEACHER GUIDE): Focuses on how water affects building materials, with a question: "How can water affect materials when it freezes?"
- How does water affect cities?**: A section discussing weather impacts on urban areas.
- The Water Cycle**: A diagram showing the process of water cycle, including evaporation, condensation, and precipitation.
- Earth's Water**: A section discussing the distribution of water on Earth, noting that most of the surface is covered in water.
- What is weather?**: A definition of weather as the atmosphere's state at a particular time and place.
- Meet an Architect**: A section featuring a photo of an architect and a "Hello!" greeting.
- Vocabulary**: A section with clouds containing the words "humidity", "weather", and "precipitation".
- LESSON 1 TALK ABOUT IT**: A section for evaluating materials, with a question: "Talk to your partner about the effects rain and high winds can have on a roof."
- LESSON 1 JOURNAL Write About It**: A section for writing in a science journal, with the instruction: "Complete Lesson 1 in your science journal."
- GUIDING QUESTION**: "How are weather and atmosphere related?"
- ESSENTIAL QUESTION**: "What are ways to reduce the impacts of..."
- LESSON 1 INVESTIGATE Water and Temperature**: Includes a question: "How can water and temperature damage a home?" and instructions to explore how temperature affects water.
- Activity 1.1 HOW FAST DOES WATER EVAPORATE?**: A hands-on activity with steps: 1. Fill a clear plastic cup 2/3 full of water. 2. Use a marker to draw a line at the top of the water level. 3. Place the cup in a sunny spot. 4. Observe and mark the water level every two days for two weeks.
- Lesson 1: Water and Weather**: A section with a background image of a snowy landscape.
- LESSON 1**: "I can explain how water affects weather" and "I can explain the movement of water on Earth."
- WEATHER AND CLIMATE**: A section with a background image of Earth from space.

SAMPLE LESSON

Aligned to
**Next Generation
Science Standards,
TEKS**
and
**Common Core
State Standards
for 3rd Grade**



ESSENTIAL QUESTION

How can you explain what climate is like in



GUIDING QUESTION

How are weather and atmosphere related?



I can explain how water affects weather.

Weather & Climate

STANDARDS-ALIGNED

TEACHER GUIDE

Scripted lesson plans
Lesson objectives
Performance tasks
Teacher's notes
Management tips
Lab procedures
Extension activities
Assessments

22-Day Pacing Guide

MODEL EARTH'S SUNLIGHT
Guided Lab Directions
Investigation 4

BUILD A BAROMETER
Directions
Activity 2.3
Key Concepts:
• Weather scientists use tools and technologies to gather data and take accurate measurements.
• Barometers are a weather tool used to measure air pressure.
• Scientists use patterns to help them predict weather. Patterns in air pressure can identify when precipitation is forming.

Measuring Rainfall
Lesson 2
QUESTION: How can you measure rainfall in a way that can be compared?
OBJECTIVE: Students will devise a tool to measure rainfall.
MATERIALS: For each group: 2 plastic cups, 9 oz.

3D PRECIPITATION GRAPHS
Directions
Activity 2.2
MATERIALS: Per student:
-Internet access
-connecting cubes or Lego bricks
-lab sheet

Design a hurricane-safe house
Lesson 3
QUESTION: How can people reduce the impact of a hurricane?
OBJECTIVE: Students will design and build a hurricane-proof house.
MATERIALS: Per student or pair:
-shallow pan
-3/4 ft. masking tape, glue
-craft sticks
-construction paper
-clay or Play Doh
-milkshake straws
-water
-lab sheet
-electric fan or hair dryer

STORM SAFETY GUIDE
Directions
Activity 3.2
OBJECTIVE: Students will research and write a hazardous weather safety guide.
MATERIALS:
-research materials:
-books, videos, websites
-booklet templates located in File 4.
Copy booklet templates 2-sided

Weather and Climate
Lesson 2
Seasonal Weather Changes
OBJECTIVES: I can describe weather conditions for each season and I can record and compare weather data.
GUIDING QUESTION: What causes seasons to change?
VOCABULARY: data, temperature, barometric pressure, predict, anemometer, hygrometer
KEY CONCEPTS:
• To compare weather data, it must be measured & recorded in the same way.
• Use numbers and degrees as the unit of measure when measuring temperature.
• Visualizing temperature helps us to understand the numbers better.
• By using the same tool, you can compare temperatures accurately.

Investigation 1: Temperature and Water
Lesson 1
How can water affect building materials?
3-ESS3-1 3-ESS2-2 SEP.2 SEP.8 CCC.1 CCC.2
MATERIALS:
-Teaching Power Point
-Science journals
-Vocabulary cards
-Objective cards
-Lesson 3 Quick Check
-Activity 3.1 and 3.2
-Lesson 3 Investigation
pages for lab and activity materials

Unit Pacing
TEACHER GUIDE
Day Lesson
1 Lesson 1.1 Water and Weather
2 Lesson 1.2 Impacts of Weather
3 Lesson 1 Lab: How can water and temperature
4 Lesson 1 Quick Check
5 Lesson 2.1 Seasonal Weather Changes
6 Lesson 2.2 Weather Instruments

Weather & Climate Unit Overview
TEACHER GUIDE
KEY CONCEPTS:
• Water moves on Earth through the stages of the water cycle.
• Water in the atmosphere forms clouds and results in precipitation.
• Weather is measured in the same way each time.
• The annual pattern of repeating seasons allows a place over time.
• Global weather patterns allow climates to be predicted.
• Temperature and degrees as the unit of measurement helps us to understand it in the same tool, you can compare temperatures in design solutions to lessen the impact of weather.
• Different weather patterns allow climates to be predicted.

Next Generation Science Standards Alignment
TEACHER GUIDE
Lesson 1
Next Generation Science Standards
3-ESS2-4 Represent data in tables and graphical displays to describe typical weather conditions observed during a particular season.
SEP.4 Students analyze and use data to represent patterns.
CCC.4 Patterns Identify patterns that relate to time and cycles in time and using these patterns to make predictions.
CCC.2 Cause and Effect Using cause and effect relationships to recognize

Weather & Climate Related Book List
TEACHER GUIDE
Water Cycle
Tornadoes
Natural Disasters
Climate
Extreme Weather

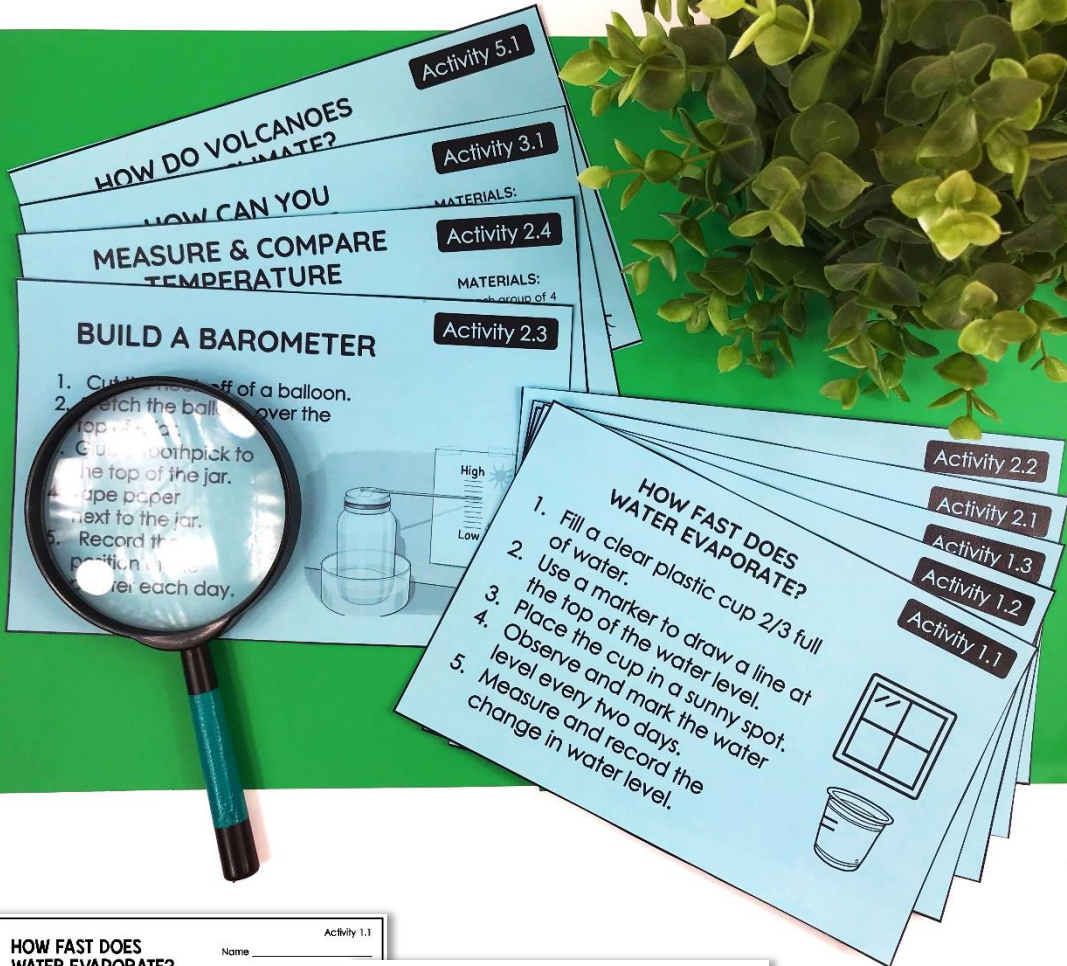
Weather & Climate Videos
TEACHER GUIDE
Lesson 1
Lesson 1
Lesson 1
Lesson 1

Weather & Climate Unit Materials
TEACHER GUIDE
The following materials are needed to do all of the labs. Please see the teacher notes for each lab as some of the materials are optional or can be replaced with items you may already have.
Most materials can be found at the dollar store.
9 oz. clear plastic cups
12 oz. clear plastic cups
thermometers (Amazon)
jar with metal lid
jar without lid
Sharpees
balloons
rubber bands
toothpicks
hairpin
ice cube
glue
a few sandwich bags
sandpaper
rubber mesh shelf liner
craft felt
rulers
Play Doh or clay
milkshake straws
construction paper

DETAILED LESSON PLANS

LESSON ACTIVITIES

Engaging partner activities reinforce each lesson



Record the temperatures on a thermometer.

7. Color the center area with a crayon.
8. Write the temperature in °F below each thermometer.

Cup 1 Cup 2 Cup 3

Activity 4.1

HOW DO MOUNTAINS AFFECT CLIMATE?

Draw a plan. Make a model to observe what happens when clouds move toward a mountain.

Materials: -small electric fan
-cotton balls
-objects for obstacles: books, chair, cardboard box, stacked tins
-lab sheet

TEST your model and record your observations.

Activity 3.2

STORM SAFETY GUIDE

Planning Checklist

QUESTIONS TO RESEARCH

- When does this weather occur?
- How can people prepare for this weather?
- What can people do to prevent this weather?

TYPES OF WEATHER

NAME _____

Investigation 2

MEASURING RAINFALL

Cup A Cup B

Activity 2.3

AIR PRESSURE PATTERNS

Compare the pointer position each day to the starting mark. Record the daily temperature and the type of weather outside.

Date	Pointer position	Temperature	Type of weather
	higher		Cloudy

Analyze and Interpret Data

Describe what happened to the size of the water when you froze it.

Activity 1.1

HOW FAST DOES WATER EVAPORATE?

Procedure:

- Fill a clear plastic cup 2/3 full of water. Use a marker to draw a line at the top of the water level.
- Place the cup outdoors or in a sunny spot indoors.
- Observe and mark the new water level every other day for two weeks.
- Measure in cm. the difference between the marks and record them in the chart.

Day 3	Day 5	Day 7	Day 9	Day 11	Day

Materials: clear plastic water marker ruler

About how much water evaporates every two days? _____ cm.

How do you think the amount of heat from the sun affects the water in your cup?

Investigation 1

TEMPERATURE AND WATER

QUESTION: How can water affect materials when it freezes?

Predict: What do you think will happen to the amount of space the water takes up if you freeze it?

Explore:

- Fill a cup half full of water. Mark the water line.
- Place the cup in a freezer overnight.
- Take the cup out of the freezer and mark the frozen water line.
- Let the water thaw. Mark the thawed water line on the cup.

Activity 2.2

Research & Build A 3-D PRECIPITATION GRAPH

City name: _____

of the rainfall.

Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec

bar graph.

Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec

Activity 2.4

MEASURE & COMPARE TEMPERATURE

Circle your assigned cup (1 or 3).
Place your finger into the water in the cup.

Wait for one minute.
Circle the word that describes the temperature of the water in your cup.

very hot
hot
warm
cool
cold
very cold

very hot
hot
warm
cool

CAUSE EFFECT

What might happen to a home's water pipes if the water freezes? Use date from your lab to support your answer.

USE & EFFECT: What caused the water to expand?

CAUSE EFFECT

8 HANDS-ON INVESTIGATIONS

STUDENTS EXPLORE:

- Identifying weather patterns
- Comparing weather data
- Modeling Earth's sunlight
- Reducing the impacts of weather hazards
- Measuring rainfall
- The water cycle
- Simulating a flood
- How mountains affect climate
- Designing solutions to weather-related problems

MODEL EARTH'S SUNLIGHT Guided Lab Directions



Investigation 4

HURRICANE-SAFE HOUSE Directions



Investigation 3

STORM SAFETY GUIDE Directions

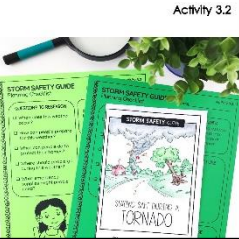
OBJECTIVE: Students will research and write a hazardous weather safety guide.

MATERIALS:
-research materials:
-books, videos, websites
-booklet templates located in File 4.
Copy the templates 2-sided

INTRODUCE:
Explain to students choosing a type and then write

PROCEDURE:
1. After introductory page checklists notes. Guide student booklets.

2. Call student used to draw a cover or draw it without heading



Activity 3.2

Investigation 3 Design a hurricane-safe house

How can people protect a house from a hurricane?
Students will design a hurricane-proof house.

MATERIALS:
-cardboard box
-tape
-glue



TEACHER GUIDE

HOW CAN YOU STOP A FLOOD? Guided Lab Directions



Activity 3.1

Investigation 2 MEASURING RAINFALL

Guided Lab Directions



HOW CAN YOU STOP A FLOOD?

Activity 3.1

Key Concept:
• Engineers test properties of materials to decide which are best for certain jobs.
• Engineers identify and control variables when they investigate.

MATERIALS:
For each group:
-jug or pitcher of water
-ruler
-masking tape
-sheet of craft felt
-wire mesh, screen, or shelf liner



Investigation 2 Lesson 2 Measuring Rainfall

QUESTION:
How can you measure rainfall in a way that can be compared?

TEACHER GUIDE

Investigation 1 HOW CAN WATER AFFECT MATERIALS?



Fill a plastic cup about half full. Add 1-2 drops of food coloring (optional) but it helps to make the level more visible. Using a marker, draw a line to mark the water level.



HOW DO MOUNTAINS AFFECT CLIMATE? Guided Lab Directions

OBJECTIVE: Students will develop a model to show how climates are affected by mountains.

MATERIALS:
-small electric fan or hair dryer
-cotton balls
-googlies
-books, a box, chairs or other objects to make an obstacle



clouds (cotton balls being blown). The cotton balls

TEACHER GUIDE

Investigation 1: Temperature and Water Lesson 1 How can water affect building materials?

QUESTION: How can water affect materials when it freezes?
OBJECTIVE: Students will determine how temperature affects water.

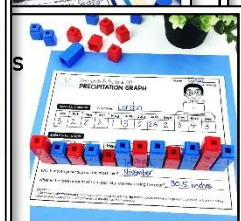
MATERIALS:
Prep per group:
-tall plastic cup
-water
-marker
-freezer
Optional: food coloring



PROCEDURE:
Explain to students: "Most substances contract, or get smaller, as they freeze. Frozen water is an exception. It expands. To demonstrate this, we will use water in a plastic cup."

to find weather data for that city on the board." (Students go online)

If students do not have internet access, prefill a table with weather data for 6 different cities around the world. Students choose a city to work with. Find at climate-data.org.



HIGH-ENGAGEMENT LABS

Students work with partners to discuss, write, and investigate.



Activity 4.1

HOW DO MOUNTAINS AFFECT CLIMATE?

1. Build a model. Make mountain with books and other objects.
2. Use cotton balls and small fan to demonstrate.

Activity 2.4

MEASURE & COMPARE TEMPERATURE

Activity 1.3

MAKE A CLOUD IN A JAR

Activity 3.1

HOW CAN YOU STOP A FLOOD?



Activity 2.3

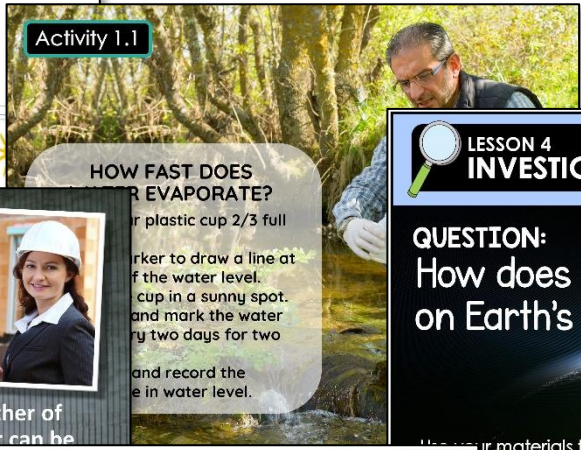
MAKE A BAROMETER

1. Cut the neck off a balloon.
2. Stretch the balloon over the top of a jar. Wrap a rubber band around it the balloon.
3. Glue a toothpick to the top of the balloon.

Activity 1.1

HOW FAST DOES WATER EVAPORATE?

Use a plastic cup 2/3 full of water. Draw a line at the water level. Place the cup in a sunny spot. Measure the water level every two days for two weeks. Record the change in water level.



LESSON 4 INVESTIGATE

Model How Sunlight Varies on Earth

QUESTION: How does sunlight vary on Earth's surface?



Activity 2.1

DETERMINE AVERAGE TEMPERATURE



Meet an Architect

Hello!

My name is Daria. I am an architect. My job is to design buildings. Before designing a building, I think about the weather of the area. I consider potential problems that can be...



LESSON 3 INVESTIGATE

Reduce the Impact of a Hurricane

QUESTION: How can you design a hurricane-safe home?



LESSON 2 INVESTIGATE

It's Raining, It's Pouring!

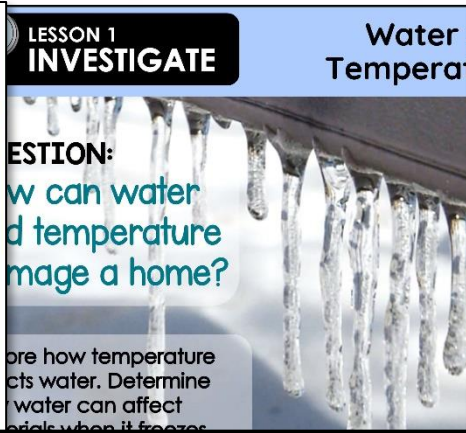
How do you measure precipitation? How can you compare precipitation in different ways?



LESSON 1 INVESTIGATE


Water Temperature

QUESTION: How can water temperature affect precipitation? How can water temperature affect precipitation in a home?



Activity 2.2

MAKE A 3-D PRECIPITATION GRAPH



1. Choose a city. Use the data in the table.
2. Make a 3-D bar graph that shows the average amount of precipitation each month.
3. Which season gets the most precipitation?

SKILLS INCLUDED:

- Applying vocabulary
- Writing to explain
- Labeling diagrams
- Comparing weather data
- Interpreting graphs



This block contains a collage of various science journal pages. The pages include:

- Science Vocabulary:** Lists terms like weather, atmosphere, precipitation, humidity, condense, evaporate, anemometer, hygrometer, polar, temperate, tropical, and barometer.
- Lesson 1 Water and Weather:** Includes a diagram of the water cycle and a question: "The process of water moving between land and air is called the water cycle. Label the part of the water cycle that each letter shows."
- What are greenhouse gases?:** Includes a question: "What are greenhouse gases?" and a "Write T for true, F for false" section with statements like "Trees and plants absorb carbon dioxide."
- What is a dust storm?:** Includes a question: "What is a dust storm?" and a "Word Bank" section.
- Use the data in the table to make a bar graph showing the average snowfall in Anchorage, Alaska over one year:** Includes a table with columns for months and snowfall amounts.
- Lesson 2 Seasonal Weather Changes:** Includes a question: "What is temperature?" and a section: "Why is it important for weather scientists to understand weather patterns?"
- Lesson 3 Severe Weather:** Includes a question: "Name three examples of extreme weather." and a "Write T for true and F for false" section with statements like "Storms carry large amounts of rain."
- Lesson 4 Climates on Earth:** Includes a question: "What is a tropical climate?" and a section: "How does the sun affect climate?"
- Climate Change:** Includes a question: "How does the Earth's climate change?" and a section: "Human Activities" with a diagram of a globe.

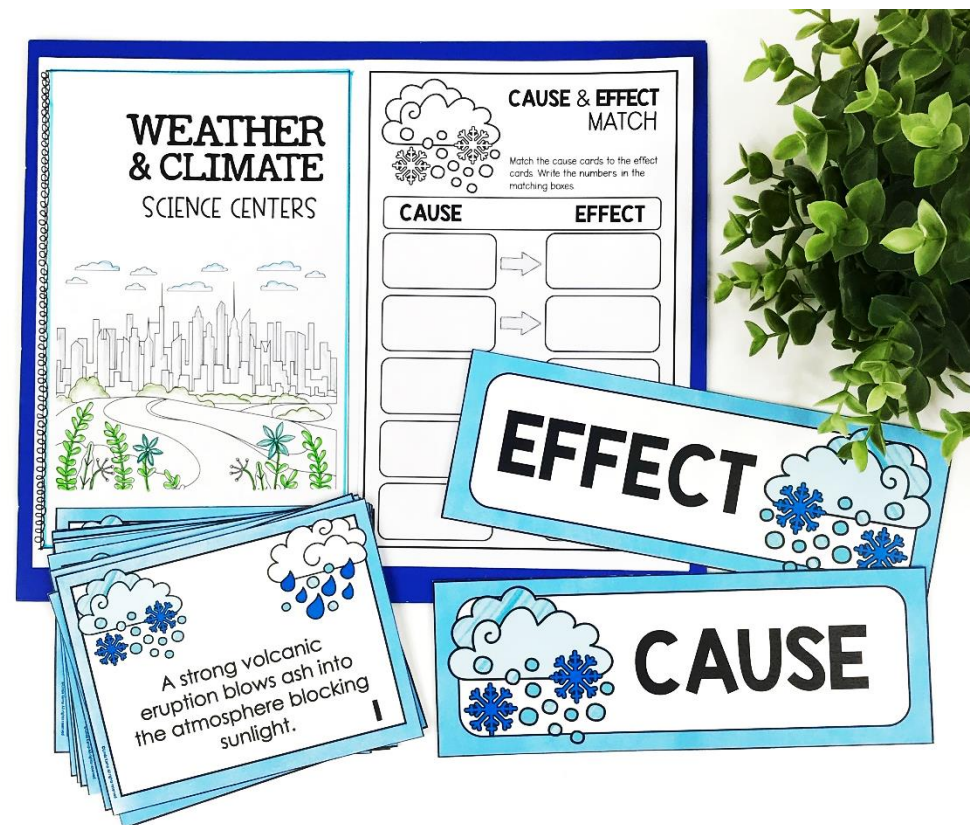
LESSON RESPONSE JOURNAL

LITERACY-BASED SCIENCE CENTERS



Integrate science in your reading centers

Use them as lesson extensions or for early finishers



Integrate science in your reading centers



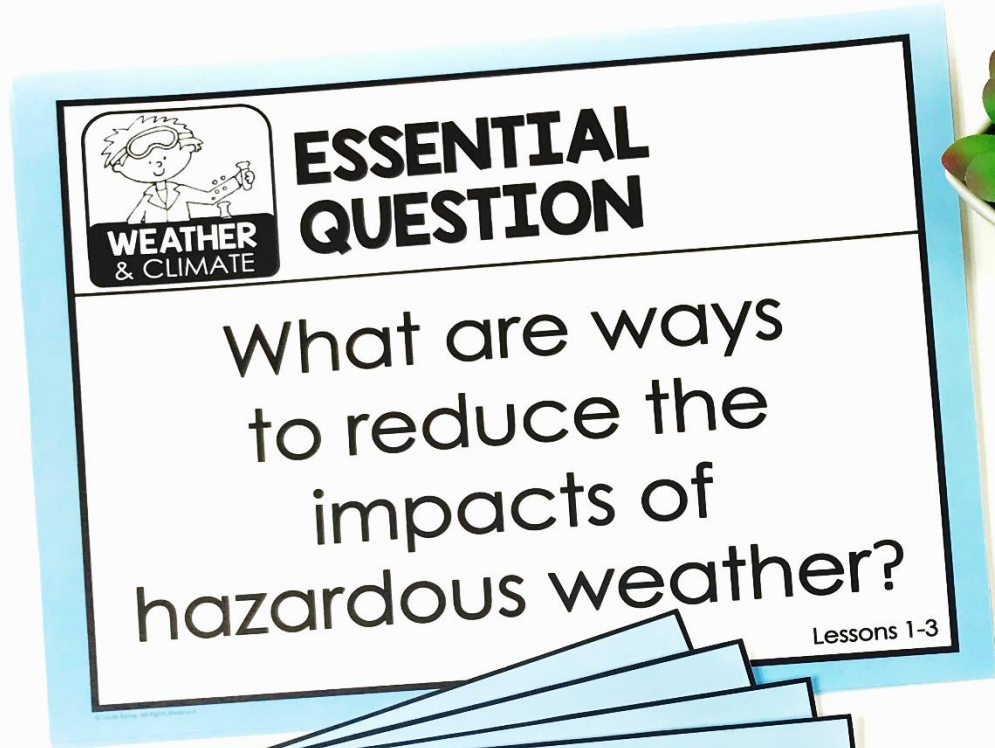
Reinforce SCIENCE CONTENT



Practice MATH & LITERACY SKILLS

Centers included in color and black & white

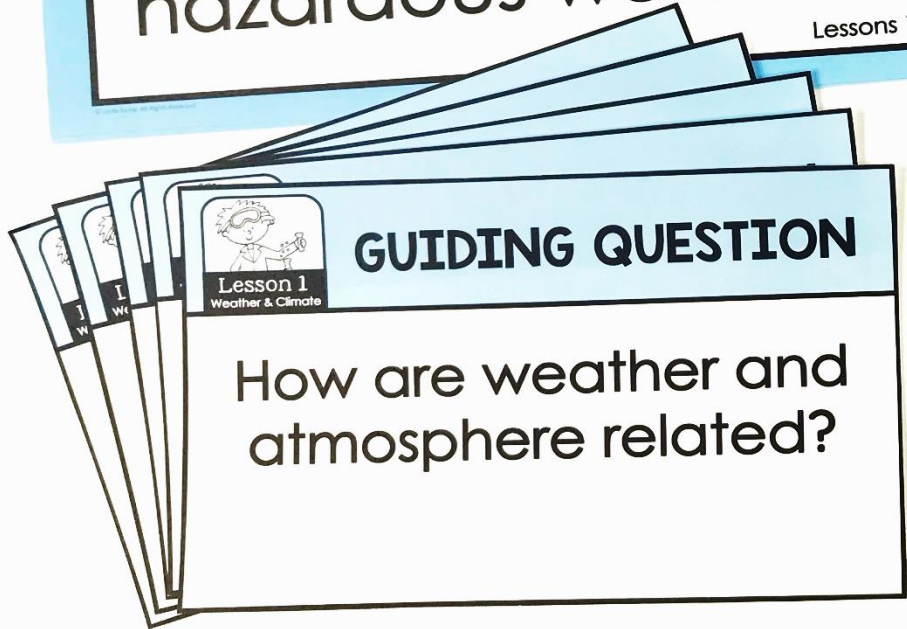
LESSON SUPPORT



ESSENTIAL QUESTION

What are ways to reduce the impacts of hazardous weather?

Lessons 1-3



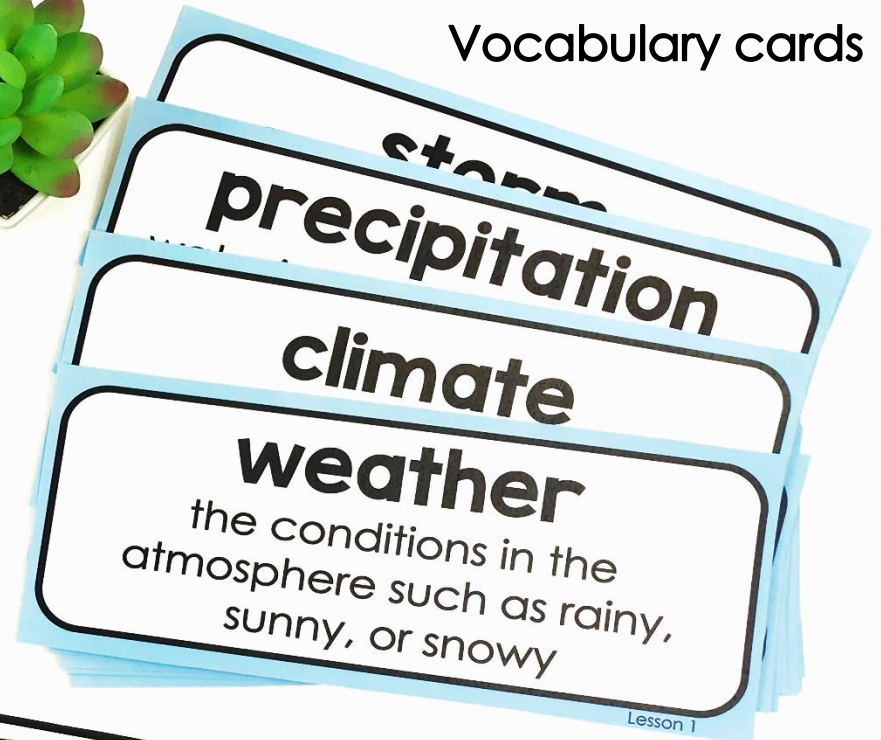
GUIDING QUESTION

How are weather and atmosphere related?

Focus Wall Cards



Vocabulary cards

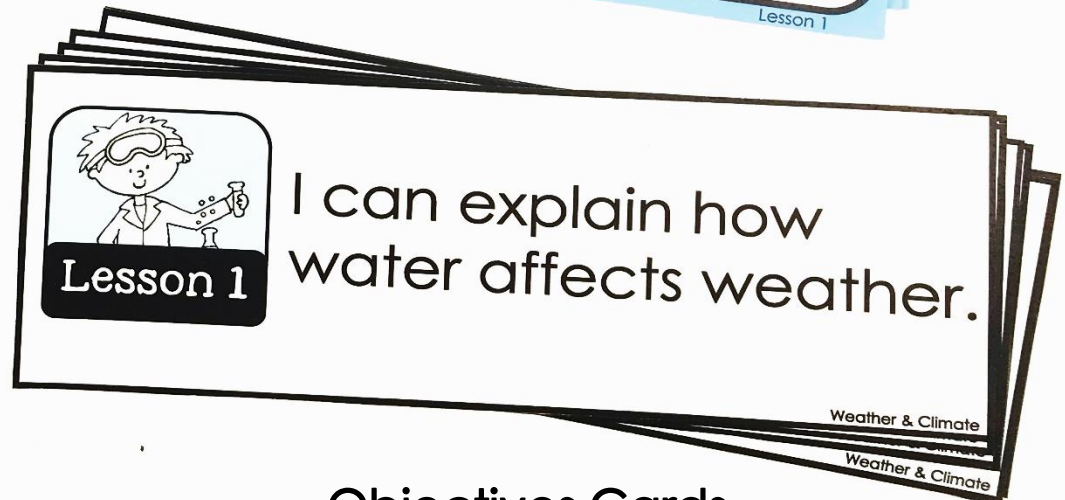


precipitation

climate

weather
the conditions in the atmosphere such as rainy, sunny, or snowy

Lesson 1

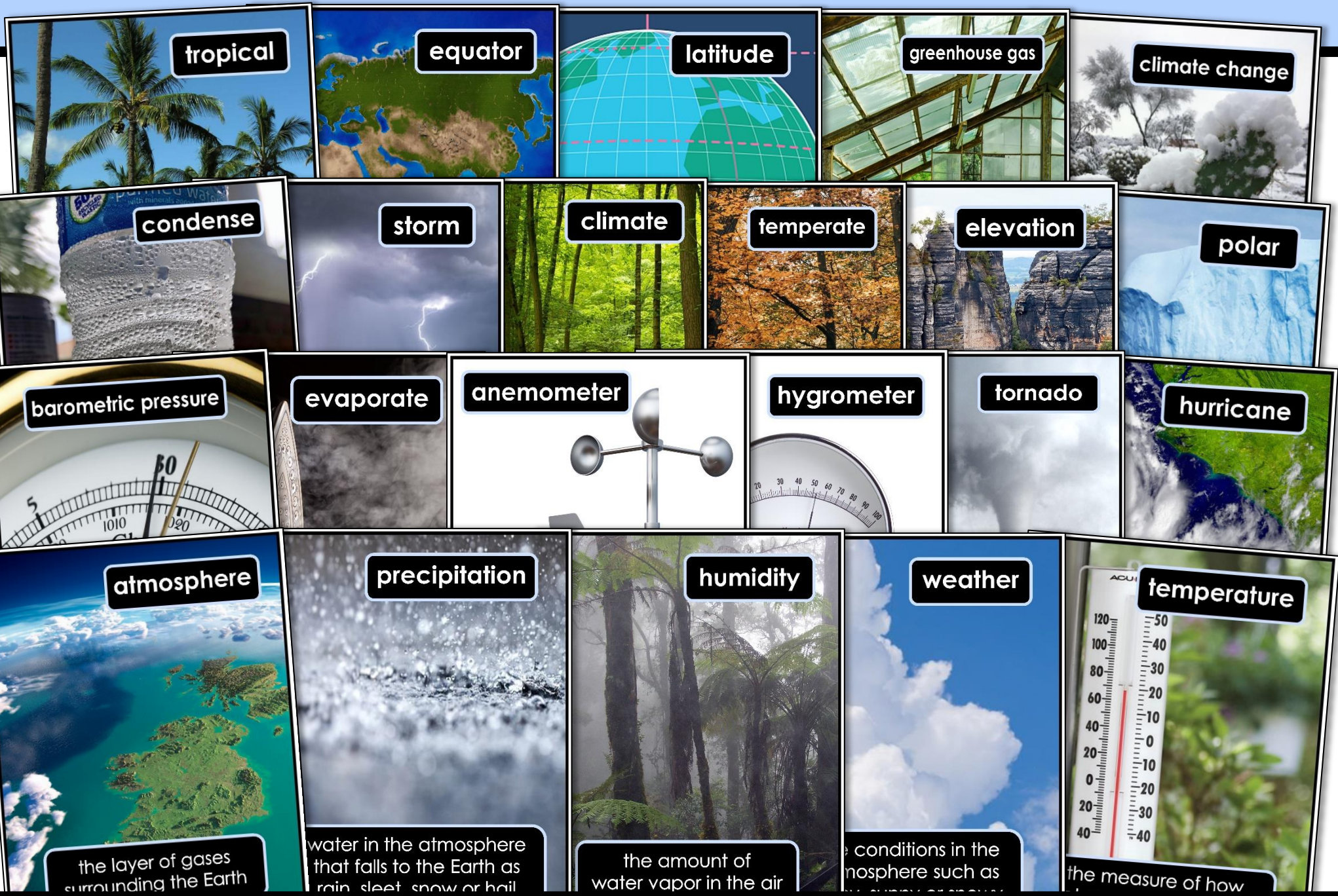


I can explain how water affects weather.

Weather & Climate

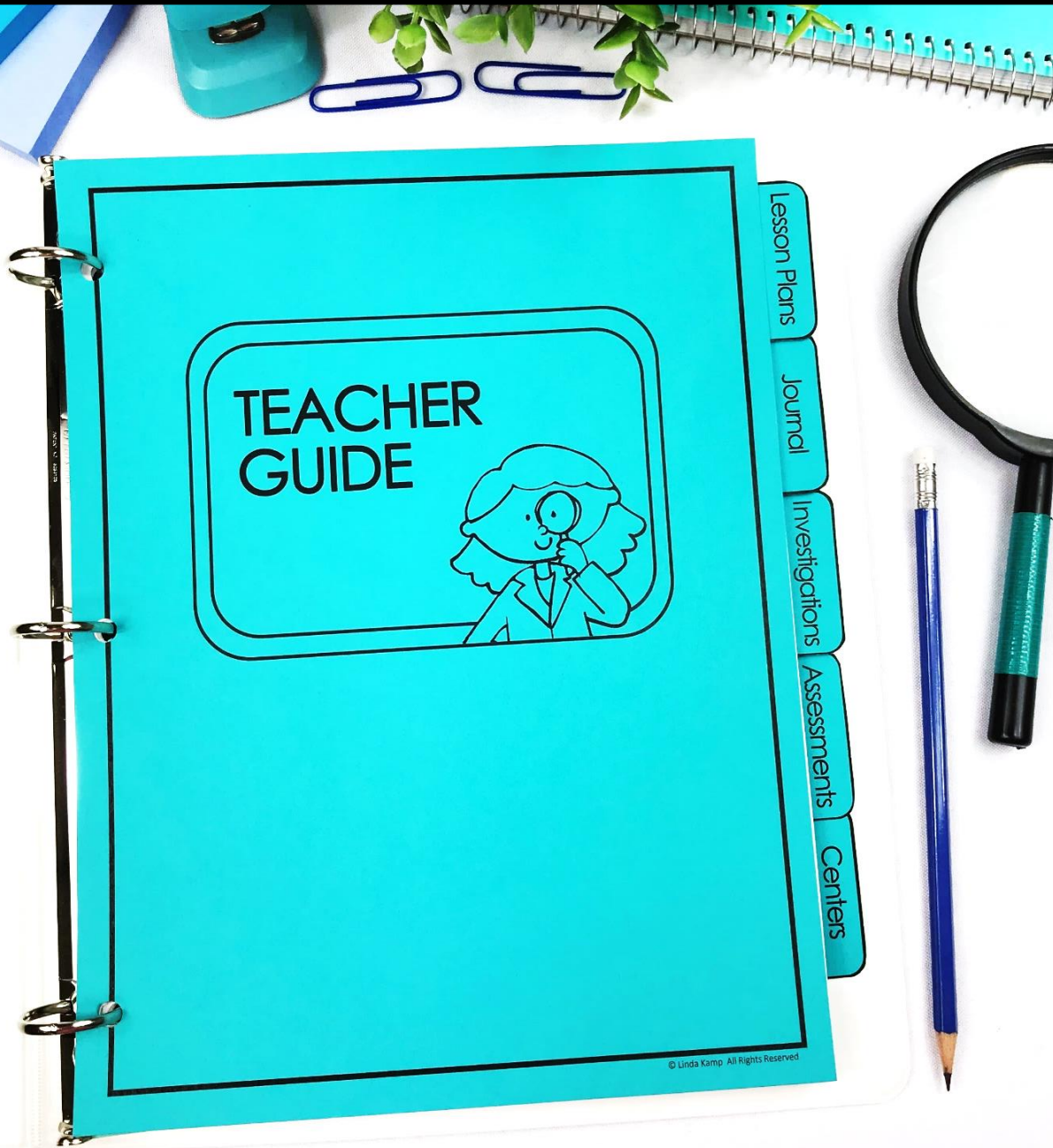
Weather & Climate

Objectives Cards



Full Page Vocabulary Posters

TEACHER GUIDE & UNIT BINDER

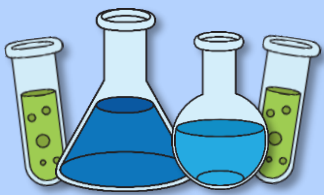


Organize your unit
in a handy
planning binder

Binder includes:

- cover & spines
- section dividers
- divider tabs

**PLAN, TEACH &
ASSESS** an in-depth
and effective unit



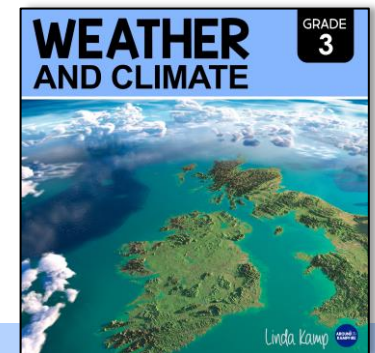
LAB MATERIALS PREVIEW

The following materials are needed to do the labs and experiments. Most items are available at the dollar store. This list is included in the unit.

9 oz. clear plastic cups
12 oz. clear plastic cups
thermometers (Amazon)
jar with metal lid
jar without lid
Sharpies
balloons
rubber bands
toothpicks
hairspray
connecting cubes or Legos
shallow aluminum pans
small paper cups
popsicle sticks
water
pitcher or jug for water
masking tape

ice
glue
a few sandwich bags
sandpaper
rubber mesh shelf liner
craft felt
rulers
Play Doh or clay
milkshake straws
construction paper
small electric fan or hair dryer
cotton balls
foam balls
wooden skewers (Walmart)
flashlight
plastic lunchmeat size containers

Optional:
blue food coloring
chenille sticks
colored beads





STUDENTS GAIN AN UNDERSTANDING OF:

- How water affects weather
- The water cycle
- Seasonal weather changes
- Reducing the impact of hazardous weather
- Comparing weather data
- Earth's climate zones
- Factors that affect climate
- Developing and testing models
- Drawing diagrams
- Using texts and other media to answer scientific questions

Save on the PRINT & DIGITAL BUNDLE


Print + Digital
WEATHER AND CLIMATE

GRADE 3

Narrated science lessons

Print + digital resources


Engaging lab investigations



Third Grade Science BUNDLE

WEATHER AND CLIMATE

GRADE 3



Linda Kamp

WEATHER AND CLIMATE

GRADE 3

Linda Kamp

LISTEN & LEARN



DIGITAL SCIENCE
with NARRATED LESSON SLIDES