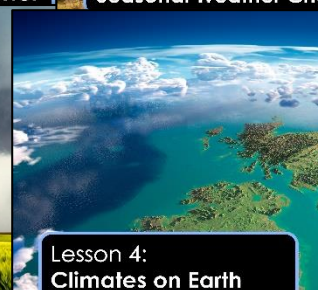


TEACHING POWERPOINT



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 a variety of educational resources for a weather and climate unit. At the top left, there's a 'Weather & Climate Videos' section with a 'Lesson 1 Quick' card. Below it is a 'Lesson 1 Water and Weather' page with a 'TEACHER GUIDE' and 'GUIDING QUESTION: How are weather and atmosphere related?'. To the right is another 'Lesson 1 Water and Weather' page with a 'TEACHER GUIDE' and 'GUIDING QUESTION: How can water affect building materials?'. In the center, there's a 'TEMPERATURE AND WATER' section with a 'QUESTION: How can water affect materials when it freezes?' and a 'Predict' activity. Below this is a 'How does water affect cities?' card with a photo of a city. To the right is 'The Water Cycle' diagram and 'Earth's Water' section. At the bottom left, there's a 'Meet an Architect' card, a 'Vocabulary' card with words like 'humidity', 'weather', and 'precipitation', and a 'LESSON 1 TALK ABOUT IT' card. In the bottom center, there's a 'LESSON 1 INVESTIGATE' card with a 'QUESTION: How can water and temperature damage a home?' and a 'LESSON 1 JOURNAL' card. At the bottom right, there's a 'GUIDING QUESTION' card, an 'ESSENTIAL QUESTION' card, and two 'Lesson 1' objective cards. The collage also includes a 'Weather & Climate' book cover and a globe.

SAMPLE LESSON

**WEATHER
AND CLIMATE**

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.

Investigation 2 **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
MATERIALS: Per student: -Internet access -connecting cubes or Lego bricks -lab sheet

Investigation 3 **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

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.

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?**
OBJECTIVE: Students will research and write a hazardous weather safety guide.
MATERIALS: -Teaching Power Point -Science journals -Vocabulary cards -Objective cards -Lesson 3 Quick Check -Activity 3.1 and 3.2 -Lesson 3 Investigation 3 pages for lab and activity materials

Weather & Climate Lesson 1: **Temperature and Water**
OBJECTIVE: Students will research and write a hazardous weather safety guide.
MATERIALS: -Teaching Power Point -Science journals -Vocabulary cards -Objective cards -Lesson 3 Quick Check -Activity 3.1 and 3.2 -Lesson 3 Investigation 3 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 accurately.
• Visualizing temperature helps us to understand the numbers better.
• By using the same tool, you can compare temperatures accurately.

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 use these patterns to make predictions.
CCC.2 Cause and Effect Using cause and effect relationships to recognize

Weather & Climate Related Book List TEACHER GUIDE

Weather & Climate Videos TEACHER GUIDE
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

Activity 5.1: HOW DO VOLCANOES AFFECT CLIMATE?

Activity 3.1: HOW CAN YOU MEASURE & COMPARE TEMPERATURE

Activity 2.4: BUILD A BAROMETER

Activity 2.3: HOW FAST DOES WATER EVAPORATE?

Activity 2.2: HOW FAST DOES WATER EVAPORATE?

Activity 2.1: HOW FAST DOES WATER EVAPORATE?

Activity 1.3: HOW FAST DOES WATER EVAPORATE?

Activity 1.2: HOW FAST DOES WATER EVAPORATE?

Activity 1.1: HOW FAST DOES WATER EVAPORATE?

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.

Which represent mountains? Did you drop your cotton balls?

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

droug, hurric, tornad, floods, wildfir

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: _____

Month	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Rainfall												
Bar graph												

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

CAUSE & 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

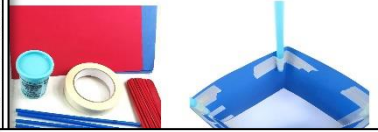
MODEL EARTH'S SUNLIGHT Guided Lab Directions

Investigation 4



HURRICANE-SAFE HOUSE Directions

Investigation 3



STORM SAFETY GUIDE Directions

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 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



Investigation 3 Design a hurricane-safe house

TEACHER GUIDE

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

MATERIALS:
-cardboard box
-tape
-string
-glue



HOW CAN YOU STOP A FLOOD? Guided Lab Directions

Activity 3.1



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 MEASURING RAINFALL

Guided Lab Directions



Investigation 2 Lesson 2 Measuring Rainfall

TEACHER GUIDE

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

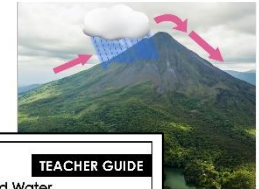


HOW DO MOUNTAINS AFFECT CLIMATE? Guided Lab Directions

Activity 4.1

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



Investigation 1 HOW CAN WATER AFFECT MAT



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

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

TEACHER GUIDE

Lesson 1

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."

clouds (cotton balls being blown). The cotton balls

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

do not have internet access, prefill with 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

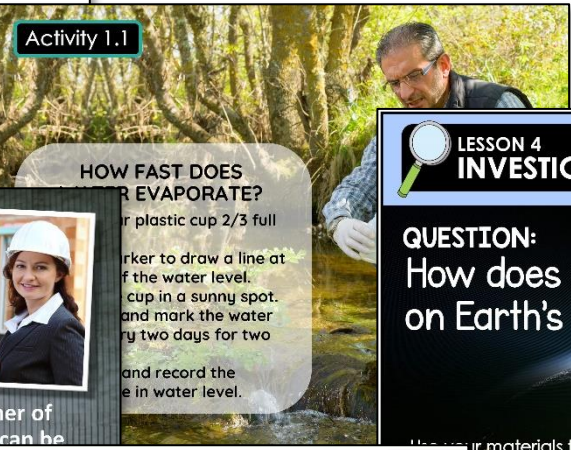
MAKE A BAROMETER

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

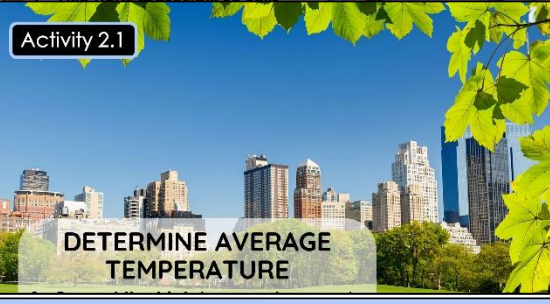
HOW FAST DOES WATER EVAPORATE?

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.



Activity 2.1

DETERMINE AVERAGE TEMPERATURE



Meet an Architect

Hello!

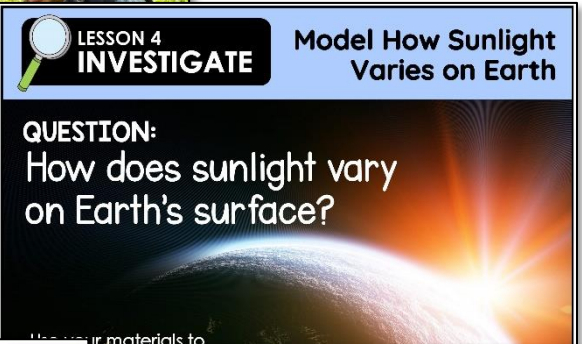
My name is Daria. I am an architect. My job is to design buildings. Before designing a building, I think about the weather of the area. I consider potential problems that can be...



LESSON 4 INVESTIGATE

Model How Sunlight Varies on Earth

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



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 places?

How do you measure rainfall? How can you create a rain gauge to measure rainfall.

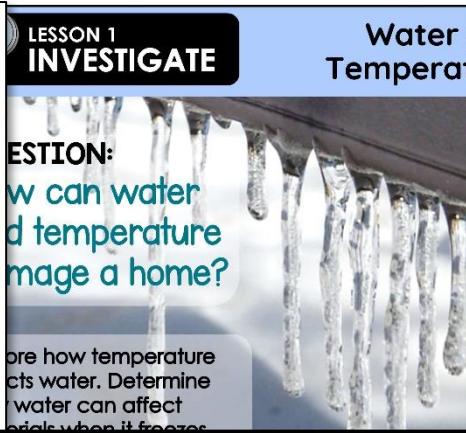


LESSON 1 INVESTIGATE

Water Temperature


QUESTION: How can water temperature change a home?

How does water temperature affect a home? How can you measure water temperature? How can you determine how temperature affects water. Determine how water can affect a home when it freezes.



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 and worksheets. The pages include:

- Science Vocabulary**: A list of weather-related terms like weather, atmosphere, precipitation, humidity, condense, evaporate, anemometer, hygrometer, polar, temperate, and barometer.
- Lesson 1 Water and Weather**: A page with a question "What is the atmosphere?" and a "Word Bank" section.
- Lesson 2 Seasonal Weather Changes**: A page with a question "What is temperature?" and a table for recording temperature data over a week.
- Lesson 3 Severe Weather**: A page with questions about extreme weather and a "Write T for true and F for false" section.
- Lesson 4 Climates on Earth**: A page with questions about tropical climates and the sun's effect on climate.
- Weather & Climate Science Journal**: A central page with a city skyline illustration and a "NAME" field.
- Other pages**: Several pages with various weather-related questions, diagrams, and data tables.

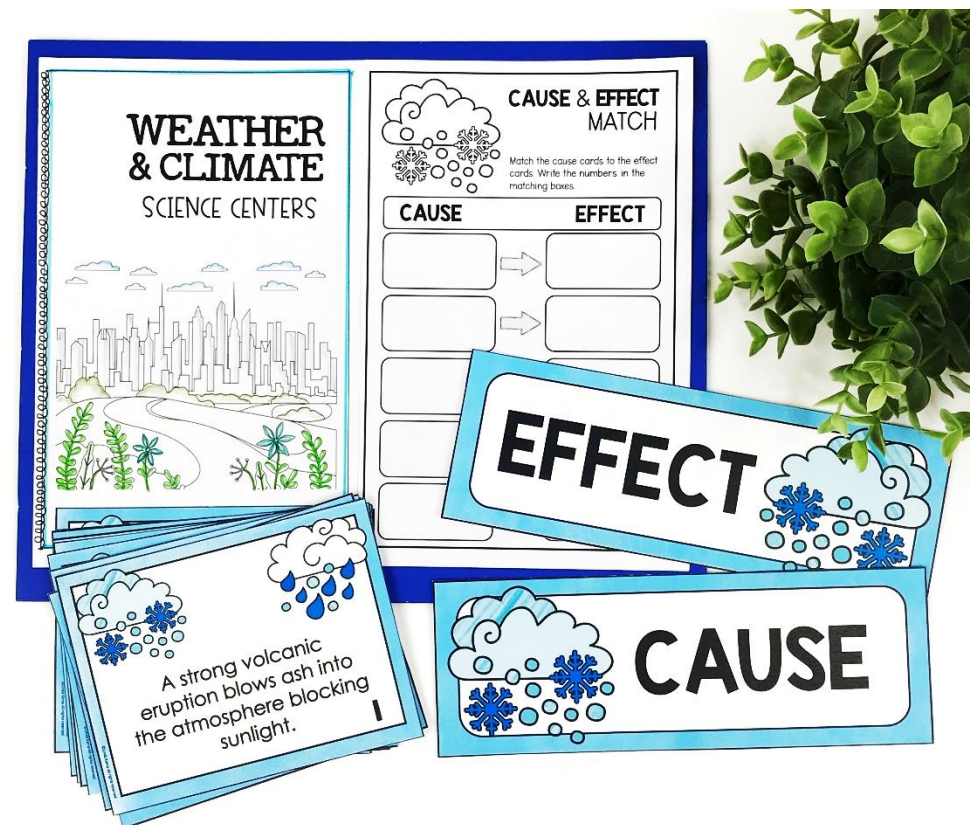
LESSON RESPONSE JOURNAL

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

Vocabulary cards


storm

precipitation

climate

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


Lesson 1

 **GUIDING QUESTION**

Lesson 1
Weather & Climate

How are weather and atmosphere related?

Focus Wall Cards

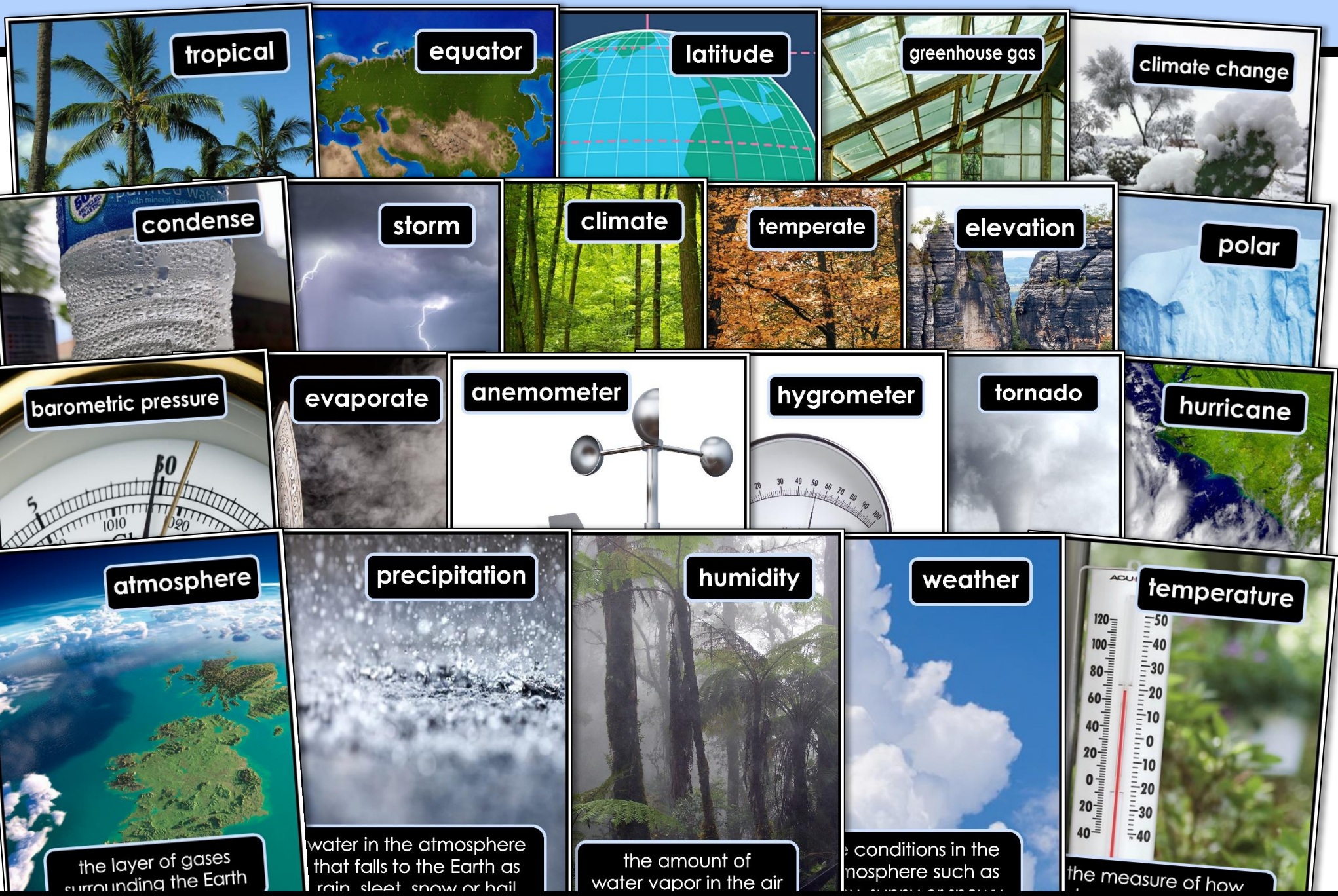
 **Lesson 1**

I can explain how water affects weather.

Weather & Climate

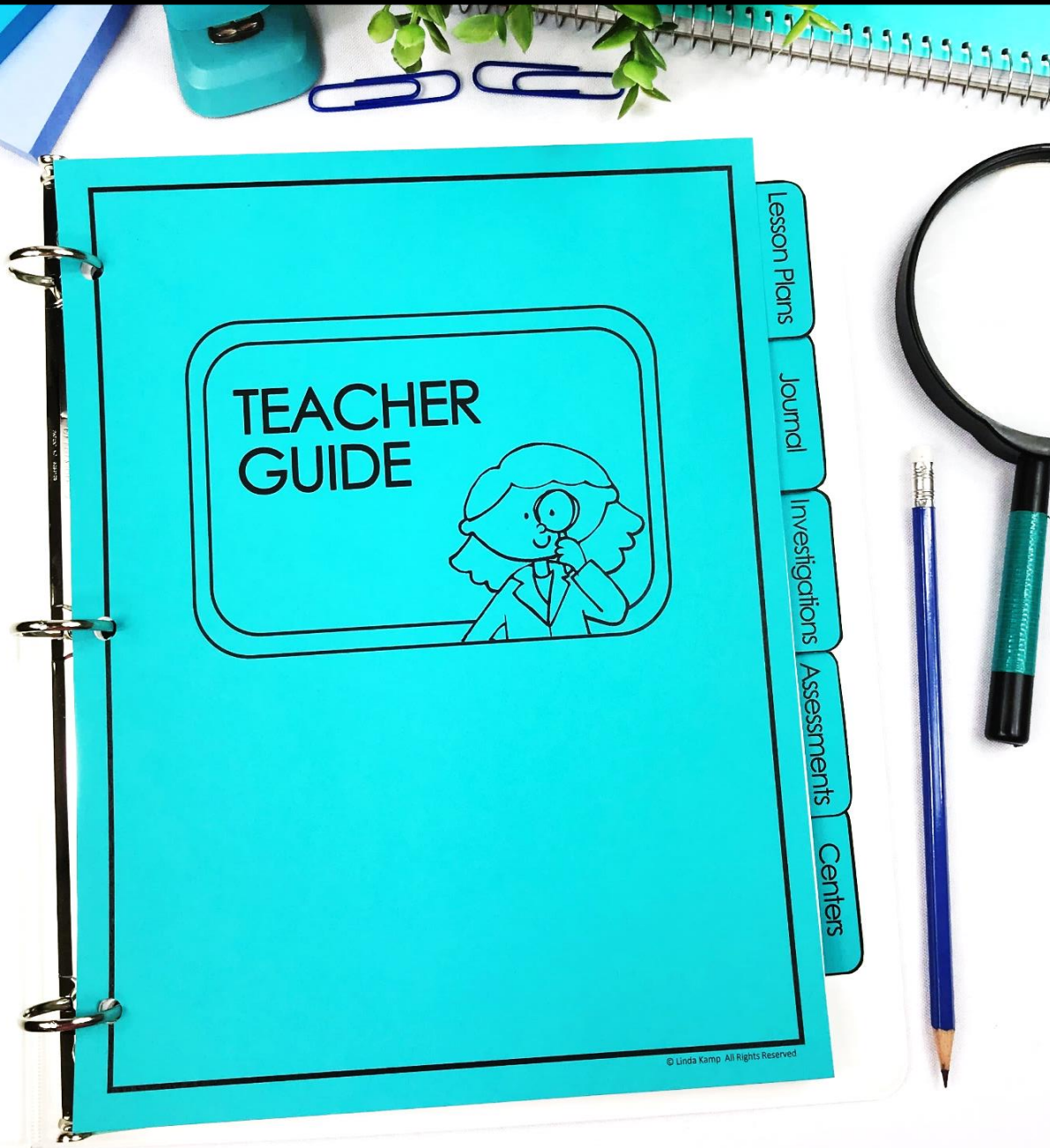
Weather & Climate

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



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



GOOGLE SLIDE LESSONS

LISTEN & LEARN



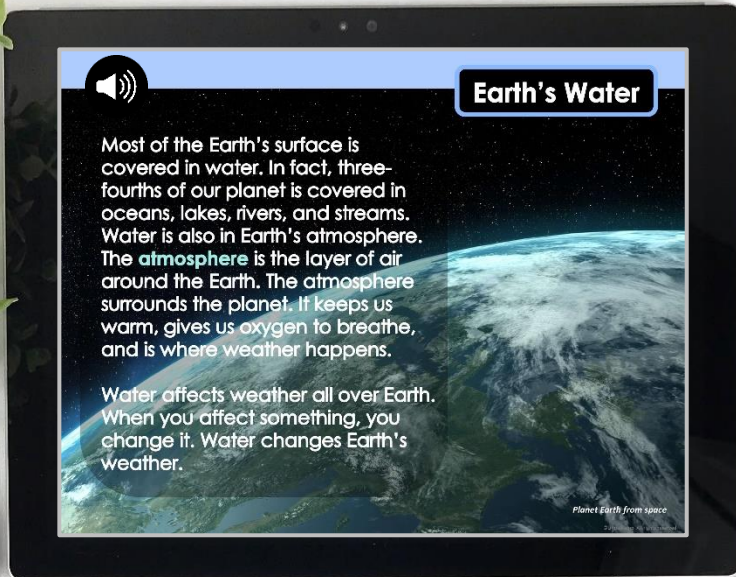
12 NARRATED LESSONS

Audio slides enable independent learning


- Water and weather
- Impacts of weather
- Seasonal weather changes
- Weather instruments
- Severe weather
- Natural weather hazards
- Elevation and climate
- Climates on earth
- Climate zones
- The greenhouse effect
- Climate change

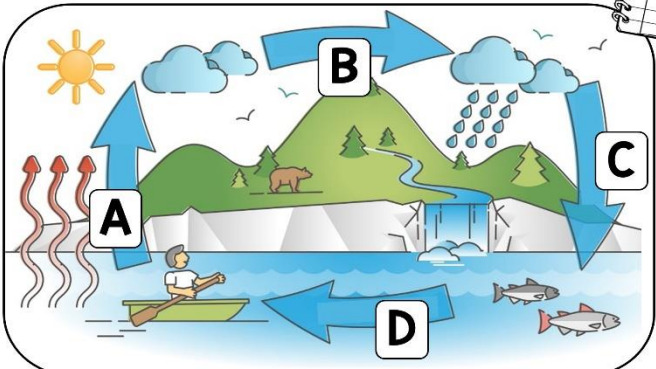
EACH DIGITAL LESSON INCLUDES:

- Narrated lesson slides
- Interactive vocabulary slide
- Digital response journal activity
- Self-checking quiz
- Interactive lesson activity
- Related lesson videos



LESSON RESPONSE ACTIVITIES


 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.




Word Bank
precipitation
evaporation
collection
condensation

A Type here **C** Type here
B Type here **D** Type here

Explain It
What are some ways freezing temperatures and heavy snowfall can affect a city?
Type here








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Interactive
journal
activities on
Google Slides™
for each lesson

Lesson 4
Climates on Earth

 What is a tropical climate?


 How does the sun affect climate?

 Which climate do the characteristics describe? Match tropical, polar, or temperate.

- _____ Cool in the winter and very hot in the summer
- _____ The same warm temperature all year long
- _____ Very cold and dry

tropical temperate polar

What does latitude measure?



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DIGITAL CENTER ACTIVITIES

Reinforce SCIENCE CONTENT



The amount of water vapor in the air.

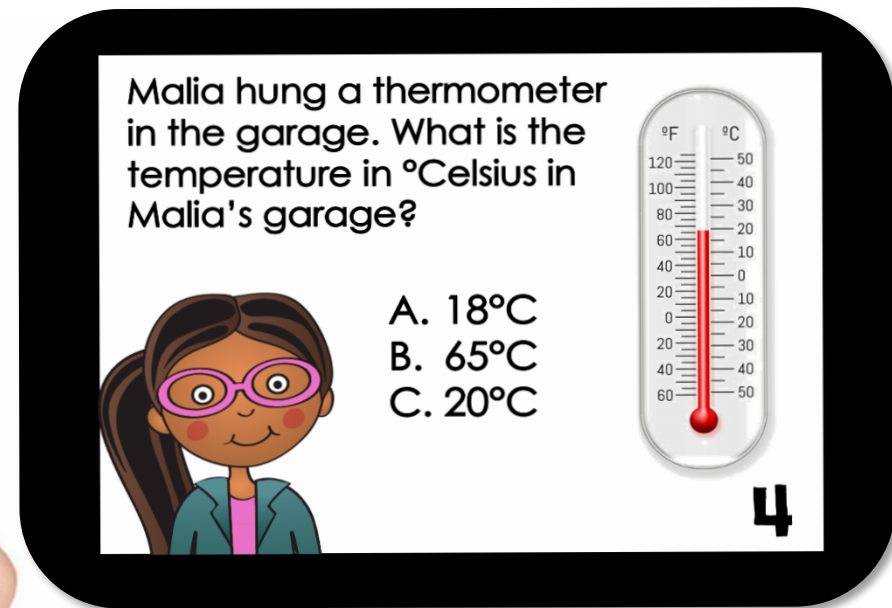
- A. evaporate
- B. condense
- C. humidity
- D. atmosphere

Check your answer

1

The image shows a hand holding a tablet. The screen displays a science question about humidity. The background of the question is a close-up of a glass pane covered in condensation. A cartoon girl with brown hair and a pink headband is on the right side of the screen. There is a 'Check your answer' button and a small number '1' in the bottom left corner.

Practice MATH & LITERACY SKILLS



Malia hung a thermometer in the garage. What is the temperature in °Celsius in Malia's garage?

- A. 18°C
- B. 65°C
- C. 20°C

4

The image shows a hand holding a tablet. The screen displays a math problem about temperature conversion. The background is white. A cartoon girl with brown hair and pink glasses is on the left side of the screen. A thermometer is on the right side of the screen. The thermometer has two scales: °F and °C. The red liquid is at the 65 mark on the °F scale and the 18 mark on the °C scale. There are three multiple-choice options: A. 18°C, B. 65°C, and C. 20°C. A small number '4' is in the bottom right corner.

on Google Forms & Slides



SELF-CHECKING

Google Forms unit test & quizzes

Google Slides centers

CAUSE

EFFECT

CAUSE & EFFECT MATCH

Slide cards to match causes to effects.

Check your answer

The climate of an area is described as average temperature and _____.*

- latitude
- precipitation
- elevation

_____ can impact rainfall by acting as a barrier to wind carrying moisture.*

- Latitude
- Oceans
- Mountains

Climate describes temperature and weather over _____.*

- months
- days



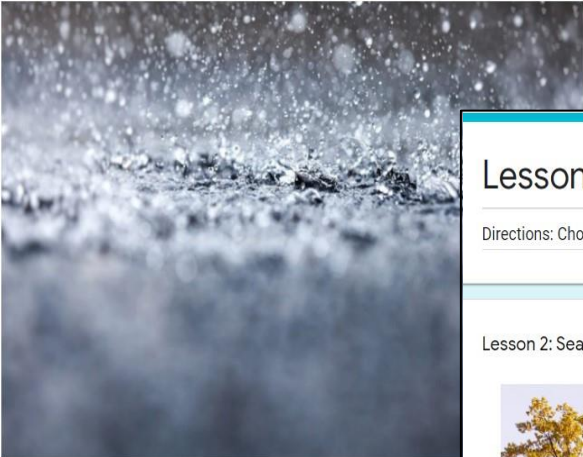
ASSESSMENT MADE EASY

Self-grading quizzes after each lesson

Lesson 1: Quick Check

Directions: Choose the correct answer to complete each sentence.

Lesson 1: Water and Weather




Weather is the condition of the _____.*

- oceans
- atmosphere
- Earth's surface

Lesson 2: Quick Check

Directions: Choose the correct answer to complete each sentence.


Lesson 2: Seasonal Weather Changes



Lesson 3: Quick Check

Directions: Choose the correct answer to complete each sentence.


Lesson 3: Severe Weather



Lesson 4: Quick Check

Directions: Choose the correct answer to complete each sentence.


Lesson 4: Seasons on Earth



Lesson 5: Quick Check

Directions: Choose the correct answer to complete each sentence.

Lesson 5: Climate Change



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



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WEATHER AND CLIMATE

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LISTEN & LEARN



DIGITAL SCIENCE
with NARRATED LESSON SLIDES