

Hurricane! Compacting Core Knowledge to Challenge

Grade Level: 2

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Length of Unit: 10 lessons

I. ABSTRACT

Every year Florida, the Caribbean Islands, and the Gulf of Mexico are threatened with the possibility of a hurricane. This unit allows 2nd graders to learn how to use report writing skills while studying the Caribbean islands. They also realize the importance of understanding how our weather works, and learn how to prepare for a hurricane. Watching Mother Nature at work is a memorable learning experience!

II. OVERVIEW

A. Identify Concept Objectives:

1. Recognize the importance of hurricane preparedness
2. Be able to predict conditions conducive for a hurricane and use tools to locate and track a storm system.
3. Practice report writing by researching an assigned Caribbean Island.
4. Through researching an island in the Caribbean, students will experience an active hurricane situation.

B. Core Knowledge Sequence

1. Draw and label the parts of the water cycle
2. Identify cloud types
3. Experiment with evaporation and condensation
4. Use the Beaufort wind scale to measure wind speed
5. Locate islands in the Caribbean Sea (West Indies, Cuba, Haiti, Dominican Republic, Puerto Rico, and some of the smaller islands) on a map
6. Explain what happens to the air pressure during weather changes
7. Make a barometer and use it to measure air pressure
8. Paragraphing
9. Report writing

C. Skills to be Taught

1. Using directional (N,S,E,W), tell where these islands are in relation to Florida.
2. Graph ordered pairs.
3. Use lines of longitude and latitude to graph hurricane coordinates.
4. Become familiar with what a hurricane is and how it forms.

III. BACKGROUND KNOWLEDGE

A. Teacher Resources:

1. *What Your Second Grader Needs to Know*, E. D. Hirsch, Jr.
2. *Science for the Elementary School*, Edward Victor
3. *A First Dictionary of Cultural Literacy*, E. D. Hirsch, Jr.

B. Student Resources:

1. Parts of a map

2. North, South, East, West
3. Measurement (using a thermometer, ruler)
4. Alphabetical order

IV. RESOURCES

Teacher Resources:

1. Class map of the world
2. Hurricane tracking maps
3. Overhead 100 count grid
4. Overhead hurricane tracking map
5. Ordered pairs filmstrip #26 Holt School Mathematics sound filmstrips
6. *The Magic School Bus Inside a Hurricane*, Joanna Cole
7. *Map Skills for Today*, Ann Cordes
8. *Water*, Karen Lee Siepak
9. *Weather & Climate*, Toni Albert, M. Ed.
10. World Library, INC. CD-ROM, SoftVideo
11. Class set of Encyclopedias (more than one if available)

V. LESSONS

A. Lesson One: Condensation

1. **Objective Goal:** Students will
 - a. become familiar with the process of condensation.
 - b. observe the process through experimentation.
 - c. recognize condensation.
2. **Materials:**
 - a. glass or beaker of ice water for each group
 - b. 9x12 sheet of blue construction paper
 - c. paper towels
3. **Key Vocabulary:**
 - a. Condensation
4. **Procedures/Activities:**
 - a. Assign students to cooperative groups.
 - b. Give each group a glass of ice water.
 - c. Have each group towel dry the outside of the glass and set it on a blue sheet of construction paper.
 - d. As a group, students should make predictions about what will happen.
 - e. Students observe condensation forming on the glass.
 - f. Discuss with students where the water is coming from.
 - g. Introduce the term "condensation" and explain its function in the water cycle.
5. **Evaluation/Assessment**
 - a. Students should be able to explain that when a cold glass sweats, it is due to condensation, not the glass leaking.

B. Lesson Two: Evaporation

1. **Objective/Goal:** Students will
 - a. become familiar with the process of evaporation.
 - b. over a two day period, observe the process of evaporation through experimentation.
 - c. recognize evaporation.
2. **Materials:**
 - a. one sheet of blue construction paper per child
 - b. crayons
 - c. paintbrushes
 - d. hot water
 - e. Epsom salt
3. **Vocabulary:**
 - a. island
 - b. evaporation
4. **Procedures/Activities:**
 - a. Have students draw an island using crayons on blue construction paper.
 - b. Mix Epsom salt and hot water (add the salt to the water until it will no longer dissolve; the hotter the water, the more salt you can add).
 - c. Paint the entire paper with the water mixture.
 - d. Observe the process over two days.
 - e. Discuss with students what happened to their pictures.
 - f. Introduce the term "evaporation" and explain its function in the water cycle.
5. **Evaluation/Assessment**
 - a. Students should be able to explain what happened to the water on the paper, and that this happens to all of the water on the earth.

C. Lesson Three: Clouds

1. **Objective/Goals:** Students will
 - a. become familiar with the process of cloud formation.
 - b. observe the process through experimentation.
 - c. recognize/define precipitation.
2. **Materials:**
 - a. one clean, clear bottle with a small mouth
 - b. small amount of hot water
 - c. 1 large ice cube
 - d. page 33, *Weather & Climate*
3. **Key Vocabulary:**
 - a. clouds
 - b. precipitation
4. **Procedures/Activities:**
 - a. Brainstorm definitions for a cloud.
 - b. Follow procedures for "Make a Cloud in a Bottle" activity.
 - c. Students observe how a cloud forms.
 - d. Discuss.
5. **Evaluation/Assessment:**
 - a. Students should be able to explain how a cloud forms.

D. Lesson Four: Cloud Types**1. Objective/Goals:** Students will

- a. become familiar with the five common cloud types.
- b. identify various cloud types on a given day.
- c. be able to label and describe the characteristics of the five cloud types discussed.

2. Materials:

- a. cloud information sheet (page 35, *Weather & Climate*)
- b. cloud tally sheet (Appendix A)
- c. clipboards
- d. cloud assessment sheet (Appendix B)

3. Key Vocabulary

- a. cumulonimbus
- b. stratus
- c. cirrus
- d. nimbus
- e. cumulus

4. Procedures/Activities:

- a. Discuss/Review definition of a cloud and how it forms.
- b. Using reproducible from page 35, inform students of how clouds are classified and the three basic categories.
- c. Give short, easy descriptions of each cloud type.
- d. Find a nice, grassy spot outside and "cloud watch."
 - (1) Using cloud tally sheet (Appendix A), students keep track the various cloud types they observe with tallies.
 - (2) Students draw pictures of what they see in the clouds on the sketch section of their tally sheet.
 - (3) Discuss/Share observations.

5. Evaluation/Assessment

- a. Students label a blank diagram of the five clouds (Appendix B).

E. Lesson Five: The Water Cycle**1. Objective/Goals:** Students will

- a. become familiar with the parts of the water cycle.
- b. understand that there is no "new" water on the planet; it is recycled.

2. Materials:

- a. reproducible pages from *Water*, pgs. 22, 23, 24.
- b. handwriting story paper
- c. glue sticks
- d. crayons

3. Key Vocabulary:

- a. condensation
- b. precipitation
- c. evaporation
- d. water cycle

4. Procedures/Activities:

- a. Discuss/Review
 - (1) condensation
 - (2) precipitation
 - (3) evaporation
- b. Ask questions that lead students into the parts of the water cycle (ex. Where does the water in the lakes come from?).
- c. Draw a diagram on chart paper as students answer.
- d. When all elements are displayed, explain that all of the parts make up the water cycle.
- e. Use pg. 23 as a visual aid, and have students color.

5. Evaluation/Assessment:

- a. teacher observation
- b. student participation

6. Follow-Up Activity:

- a. Using page 24, "How the Water Cycle Works,"
 - (1) students color the pictures of the various stages of the water cycle
 - (2) cut out the pictures
 - (3) glue the pictures in order on the illustration area of the story paper
 - (4) Use the pictures to help write a story explaining the water cycle.

F. Lesson 6: Wind Speed**1. Objective/Goals:** Students will

- a. become familiar with the Beaufort Wind Scale.
- b. be able to use the wind scale to estimate wind speed.
- c. recognize that wind can be dangerous and destructive.

2. Materials:

- a. pg. 25, *Weather & Climate*, "The Beaufort Wind Scale,"
- b. Weather observation chart (Appendix C)
- c. plastic thermometers (one for each child)
- d. video, "Weather Whys"

3. Procedures/Activities:

- a. Discuss visual clues that indicate that the wind is blowing.
- b. Pass out/discuss the Beaufort Wind Scale, pg. 25.
- c. Using the scale, have students estimate the wind speed during a trip around campus.

4. Evaluation/Assessment:

- a. student participation

5. Follow-Up Activity

- a. Using the Weather observation chart (Appendix C), students chart wind speed, cloud types, and temperature for five days. Students will take the plastic thermometers home for the week to check the temperature. They should do their weather checks at the same time every day.

G. Lesson 7: Barometric Pressure**1. Objective/Goals:** Students will

- a. experiment with Bernoulli's Law.

2. Materials:

- a. 2 liter plastic soda bottle (1 per child)

- b. 1 liter plastic soda bottle (1 per child)
- c. plastic ruler
- d. water
- e. rubber bands (at least 2 per child)
- f. paper ruler strips (Appendix D), it is helpful to laminate them.

3. Procedures/Activities:

- a. air pressure experiment (Appendix E)
- b. barometer activity (Appendix F)

4. Evaluation/Assessment:

- a. Students should be able to explain air pressure.
- b. Students will record barometric pressure for one week, using the barometers they made.

H. Lesson 8: Hurricanes**1. Objective/Goals:** Students will

- a. become familiar with the definition of a hurricane.
 - (1) a storm with strong winds of 74 mph or more, that rotate around a low pressure center called an eye.
- b. observe examples of hurricanes and their effects on land, structures, and people.

2. Materials:

- a. pg. 40, "How Hurricanes Are Formed," (*The Magic School Bus Inside a Hurricane*)
- b. "Weekend with Elena" video, "Hurricane Andrew" video
- c. Hurricane Preparedness chart (Appendix G)

3. Procedures/Activities:

- a. Review/Discuss wind speed and air pressure.
- b. Use page 40 to introduce steps involving the formation of a hurricane.
- c. Watch clips from both videos.
- d. Discuss/chart student observations gathered from the videos dealing with weather conditions, destruction, etc.
- e. Lead students into making suggestions for limiting damage and injuries.

4. Evaluation/Assessment:

- a. Students complete Hurricane Preparedness chart (Appendix G).

I. Lesson 9: Ordered Pairs**1. Objective/Goals:** Students will

- a. locate and name ordered pairs on a graph.

2. Materials

- a. Filmstrip #26, *Ordered Pairs*, Holt School Mathematics
- b. 100 count grid transparency
- c. overhead projector
- d. ordered pair practice sheet (Appendix H)

3. Procedures/Activities:

- a. Using the grid transparency, label the grid vertically and horizontally.
- b. Explain to the students how to read an ordered pair (first number counts to the right, second number counts up).
- c. Watch the filmstrip "Graphing Ordered Pairs."
- d. Divide class into two teams and play the ordered pair game:

- (1) each team takes a turn calling out an ordered pair and putting it on the grid.
- (2) the object of the game is to get 5 coordinates in a row to win the game, along the same lines as "Connect Four."

4. Evaluation/Assessment:

- a. Students complete the ordered pair activity sheet (Appendix H)

J. Lesson 10: Map Skills**1. Objective/Goals:** Students will

- a. be able to use north, south, east, and west directionals to explain where a particular place is in relation to Florida.
- b. use lines of longitude and latitude to locate items on a map.
- c. locate the Caribbean Sea and the islands of the West Indies, Cuba, Haiti, Puerto Rico and some of the smaller islands.

2. Materials:

- a. wall map of the world
- b. maps of the Caribbean Sea (Appendix I)
- c. yardstick (optional)
- d. ruler (optional)

3. Procedures/Activities:

- a. Review N-S-E-W.
- b. Review ordered pairs.
- c. Show students the world map.
- d. Have students find Florida.
- e. Using N-S-E-W, have students locate various places on the map.
- f. Explain how ordered pairs work on a map (longitude, latitude lines).
- g. Write Caribbean Sea on the board and have them locate it on the map.
- h. To practice using longitude and latitude, have students work in pairs (a long. and lat. person) to locate islands listed on the practice map (Appendix I).
- I. Go over answers by groups on the class map

4. Evaluation/Assessment:

- a. Students complete map activity.

VI. CULMINATING ACTIVITY

Students will...

1. complete a research project on an assigned Caribbean Island (Appendices J, K, L).
2. plot coordinates for a hurricane and track its path (Appendix M).
3. Write a diary entry of all of the measures the family took to prepare for the hurricane.

VII. HANDOUTS/WORKSHEETS

Appendices A-M

VIII. BIBLIOGRAPHY

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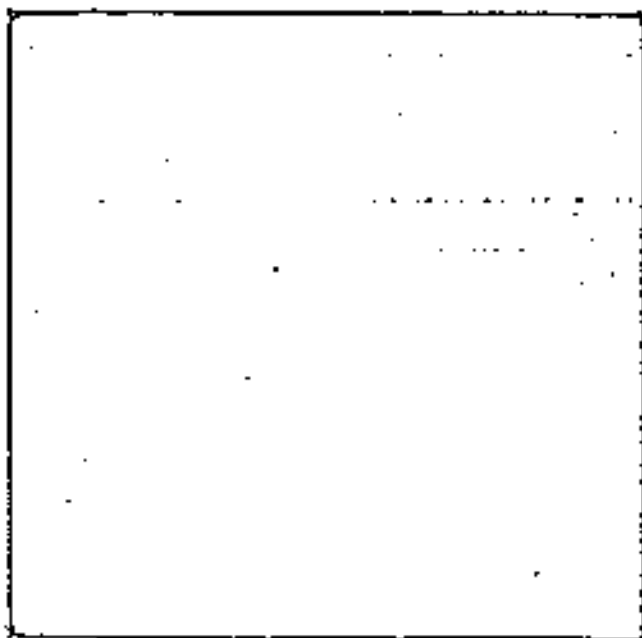
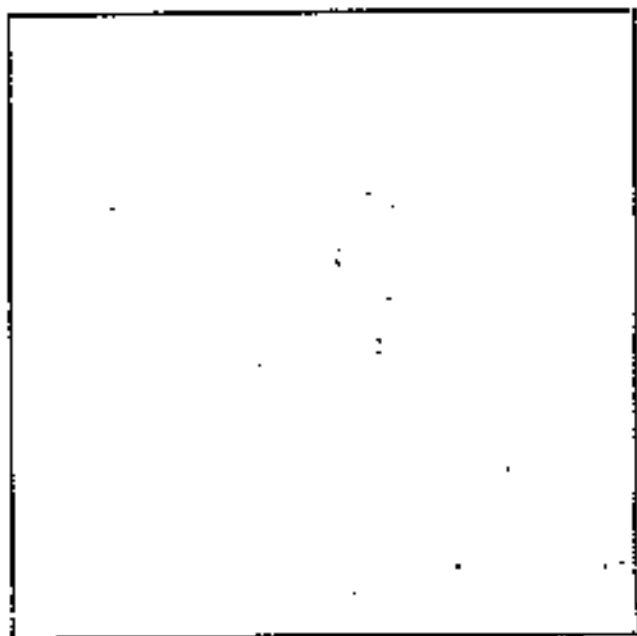
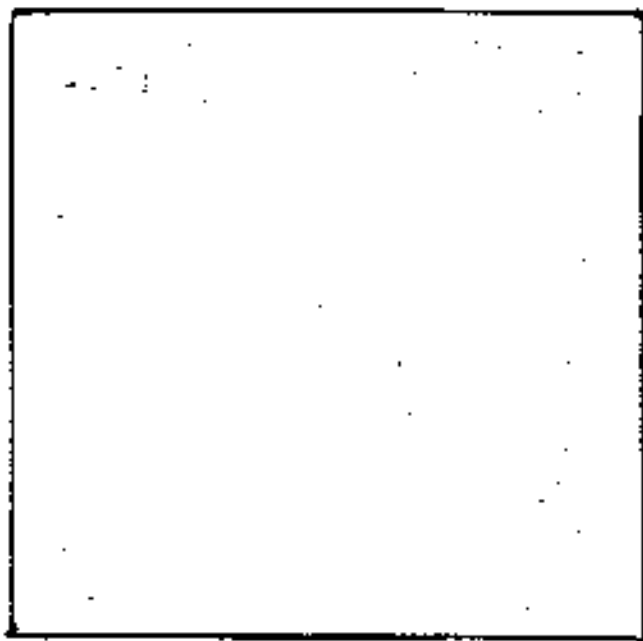
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Cloud Tally Sheet

Tally the clouds you observe. Draw pictures of the shapes

that you see in the clouds.

Cloud Types	Tallies
Cirrus	
Stratus	
Cumulonimbus	
nimbus	
Cumulus	



Cloud Quiz

Use the words below to label the cloud types with the correct name.

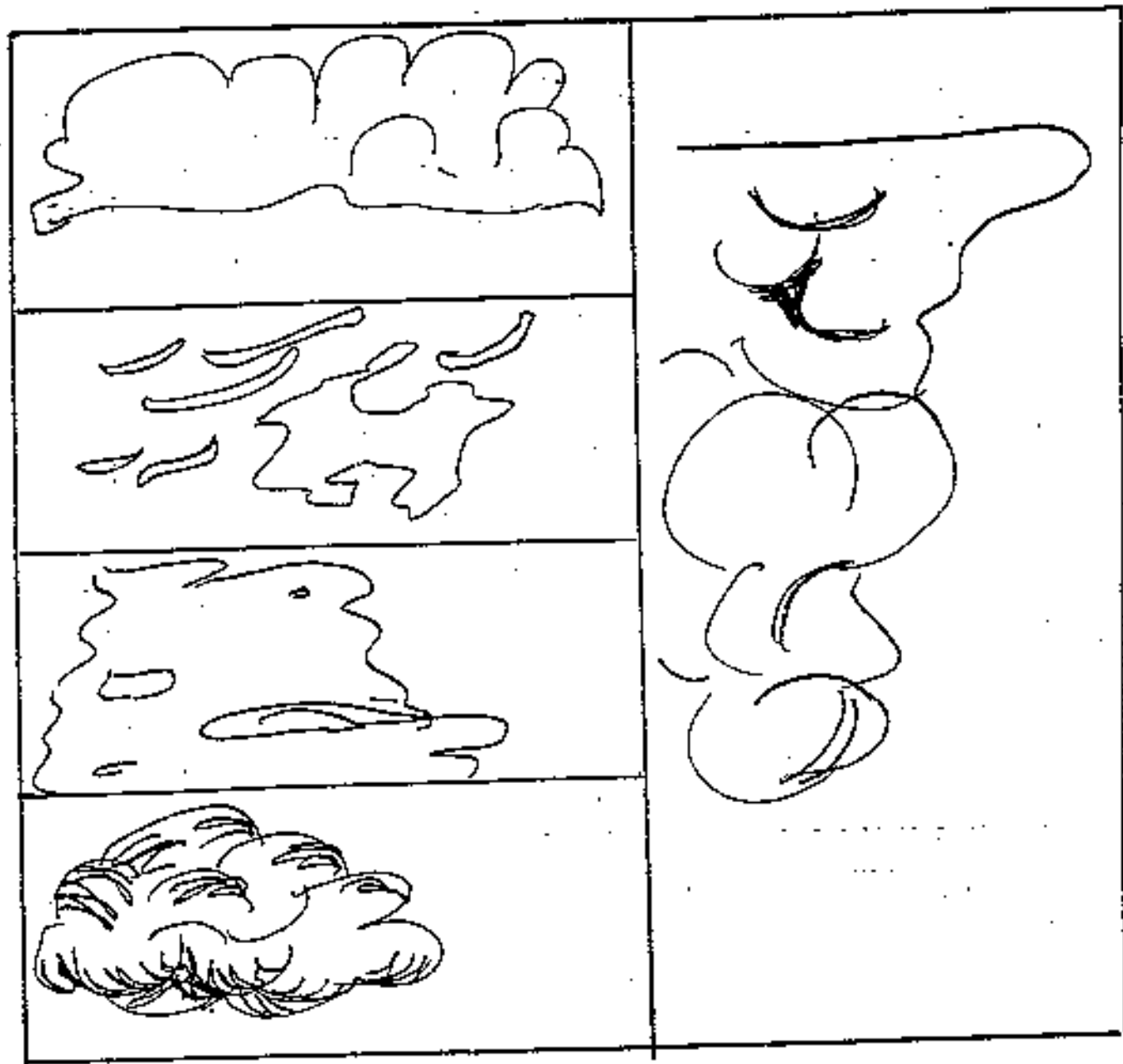
stratus

cumulonimbus

cirrus

nimbus

cumulus



Weather Observations for the Week of _____

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Wind Speed					
Clouds Observed					
Temperature and Time Observed					

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27

01 6 8 4 9 5 7 2 10 3 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27

2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27

2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27

01 6 8 4 9 5 7 2 10 3 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27

01 6 8 4 9 5 7 2 10 3 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27

2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27

11 01 6 8 4 9 5 7 2 10 3 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27

Appendix D

Appendix F

Goal:

To make a barometer and use it to measure air pressure.

Materials:

2 liter plastic bottle
1 liter plastic bottle
water
rubber bands
ruler
modeling clay

Procedures:

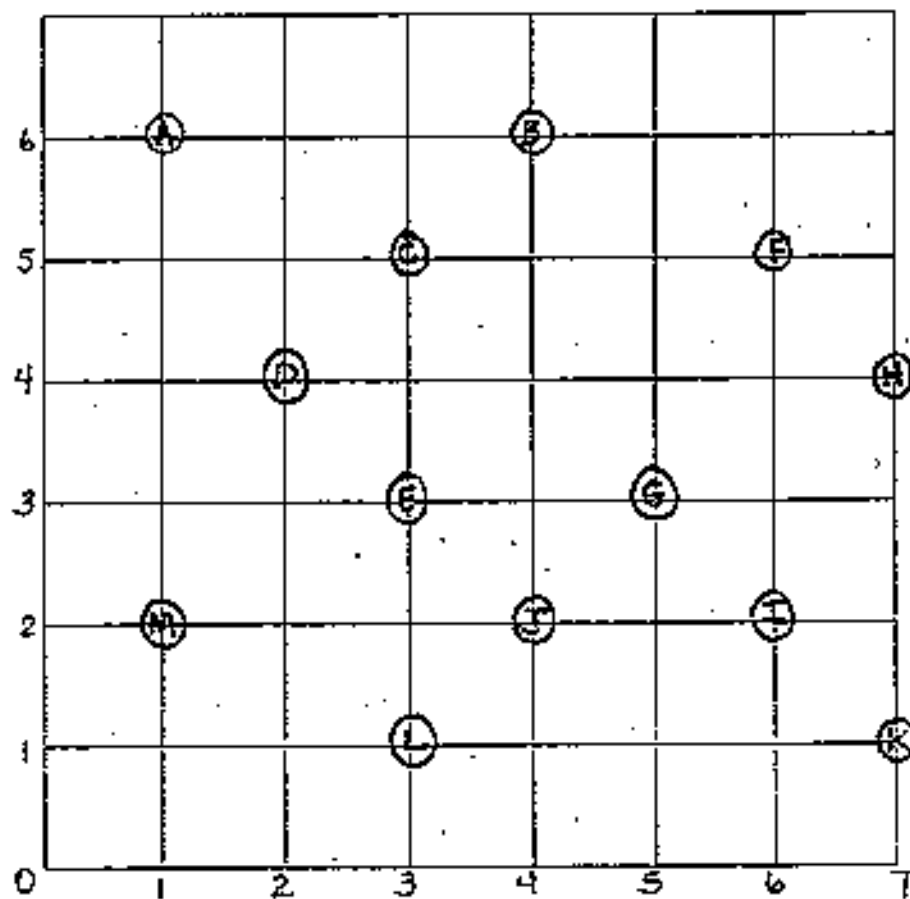
1. Put a lump of clay in the bottom of the 2 liter bottle
2. Place the ruler in the clay, standing straight up.
3. tape the paper ruler to the side of the 1 liter bottle, starting at the bottom of the bottle.
4. Fill both of the bottles so that they are half full of water.
5. Covering the opening of the 1 liter bottle with your hand, turn the bottle upside down and place it in the water.
6. Secure the bottle to the ruler with the rubber bands.
7. Mark the level of the water in the bottle on the paper ruler
8. Use this barometer to track the air pressure for the week.

LET'S PREPARE FOR A HURRICANE!

List the things that you would need to do in case a hurricane was coming.

house	pets	you/family	vehicles	yard

Ordered Pairs



What ordered pair tells the location of the point?

1. A ()

5. E ()

9. I ()

2. B ()

6. F ()

10. J ()

3. C ()

7. G ()

11. K ()

4. D ()

8. H ()

12. L ()



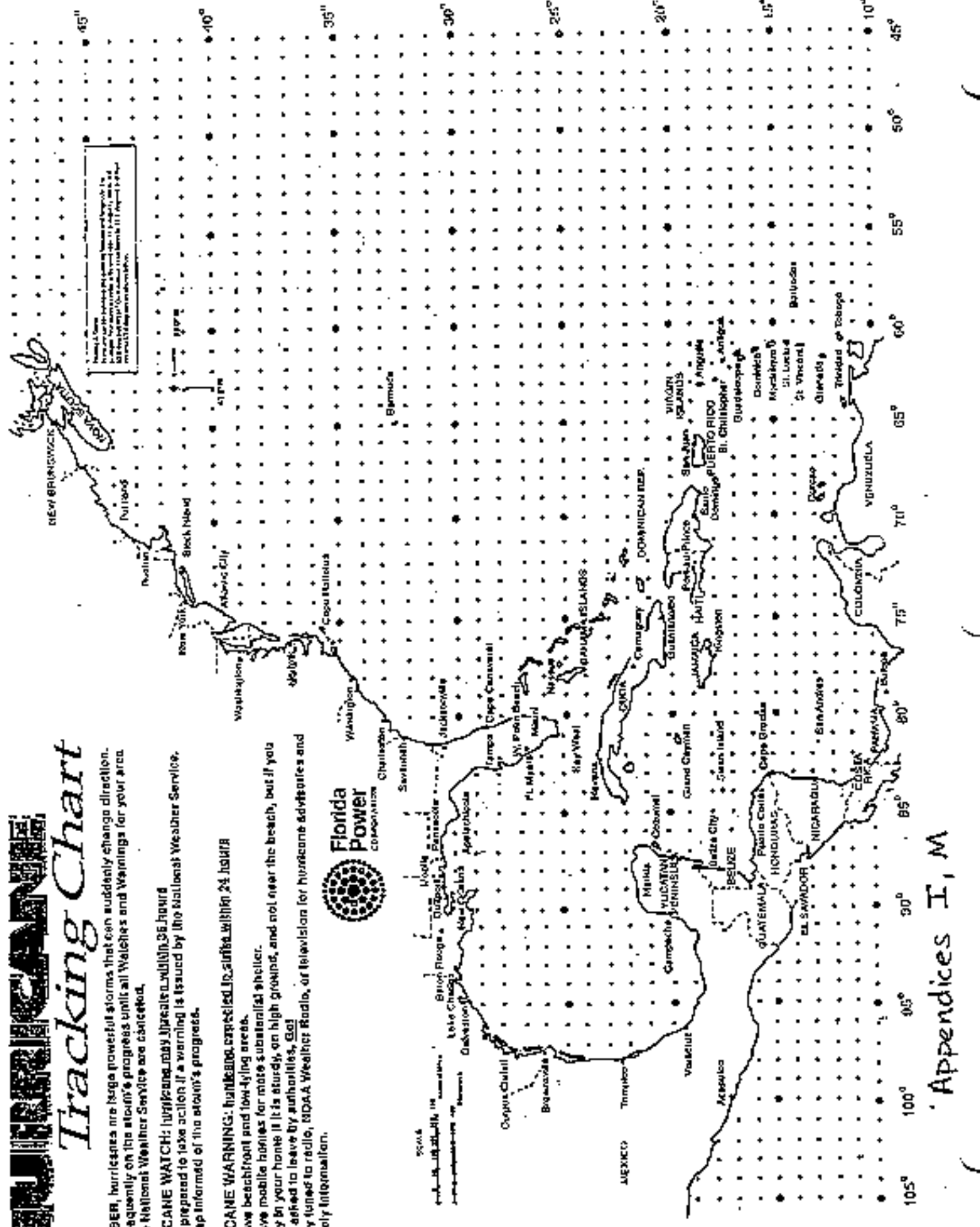
Tracking Chart

HURRICANE, hurricane are (saga powerful storms that can suddenly change direction. Frequently on the storm's progress until all Watches and Warnings for your area. No National Weather Service are cancelled.

HURRICANE WATCH: hurricane may (create within 36 hours is prepared to take action if a warning is issued by the National Weather Service. Keep informed of the storm's progress.

HURRICANE WARNING: hurricane expected to strike within 24 hours have beachfront and low-lying areas.

Use mobile homes for more substantial shelter. Stay in your home if it is sturdy, on high ground, and not near the beach, but if you are asked to leave by authorities, get out. Stay tuned to radio, NOAA Weather Radio, or television for hurricane advisories and other information.



Appendices I, M

Hurricane Project

Dear Parents,

Over the next two weeks your 2nd grader will be involved in a project called Hurricane. We will be studying and researching various islands in the Caribbean and tracking a hurricane. Each student will be assigned a particular island and will follow a checklist of requirements to complete their project. The project will be worked on in class, but they can work on it at home if they want to. Your help and input is always welcome.

Requirements:

- (1) Make a 3-D creative cover for your project/report.
- (2) Map requirements
 - *Color the provided map of your island.
 - *Mark the capitol city with a foil star.
 - *Put a triangle on the city where you are located
 - *Mark an escape route to a hurricane shelter from your assigned city in red marker.
- (3) Decorate and color a flag of your assigned island (blank flag will be provided)
- (4) If you could not leave to go to the hurricane shelter.....
 - *What would you need to do to your house?
 - *What supplies would you need?
 - *What plan of action would you take?
- (5) Plot the hurricane's coordinates on the provided hurricane map.
- (6) Research your island
 - *Native language
 - *chief products
 - *agriculture
 - *2 facts about the history of the island that you found interesting

RESEARCH OUTLINE
HURRICANE PROJECT

Name _____

Island's Name _____

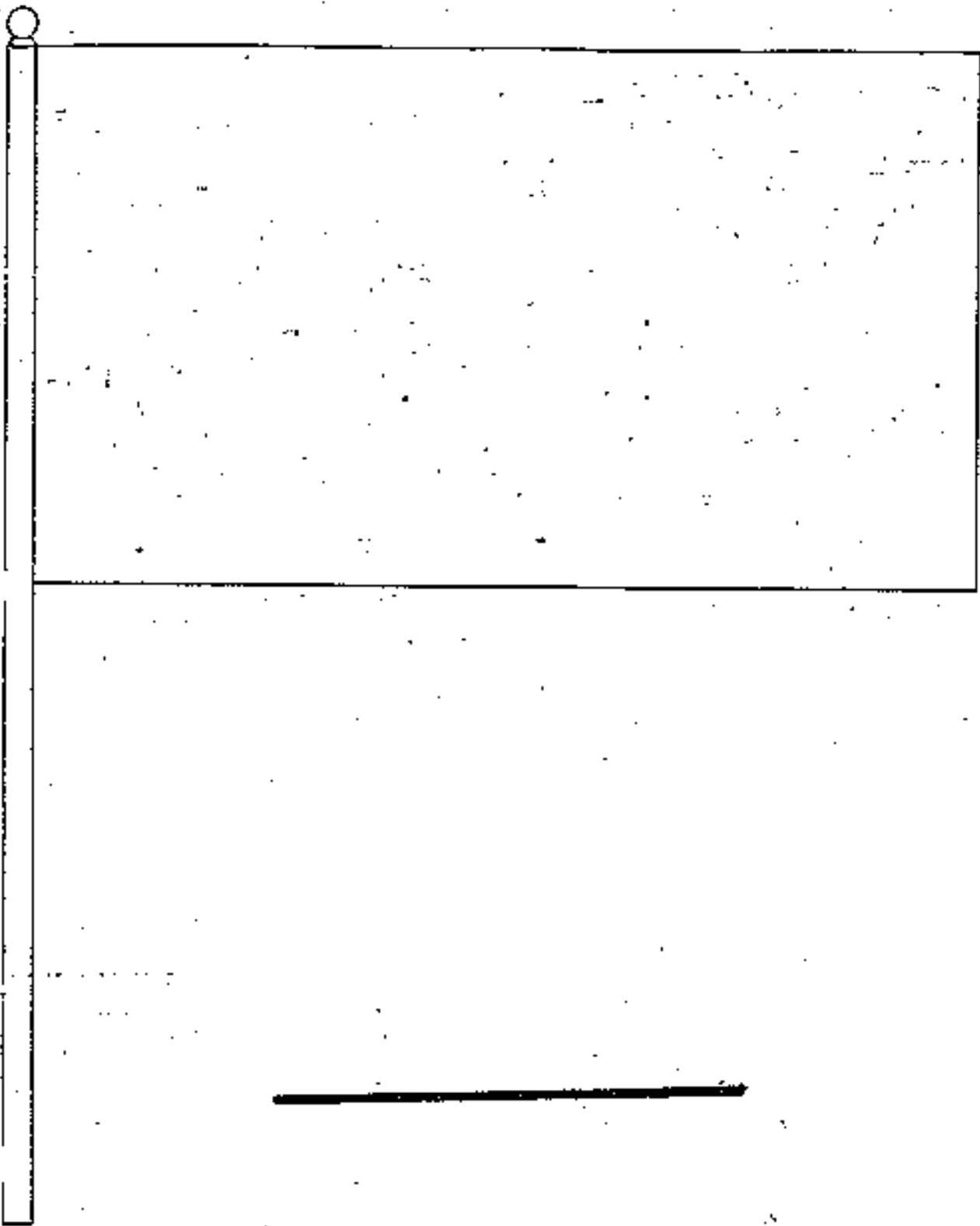
1. Native Language
(What is the language that everyone speaks)

2. Chief Products
(What products does the country make to sell to others)

3. Agriculture
(Fruits, vegetables, animals or anything that the country grows or raises to sell to others)

4. List 2 or more facts about the history of your country

5. Write down anything else that you found interesting and would like to share with others.



Appendix L