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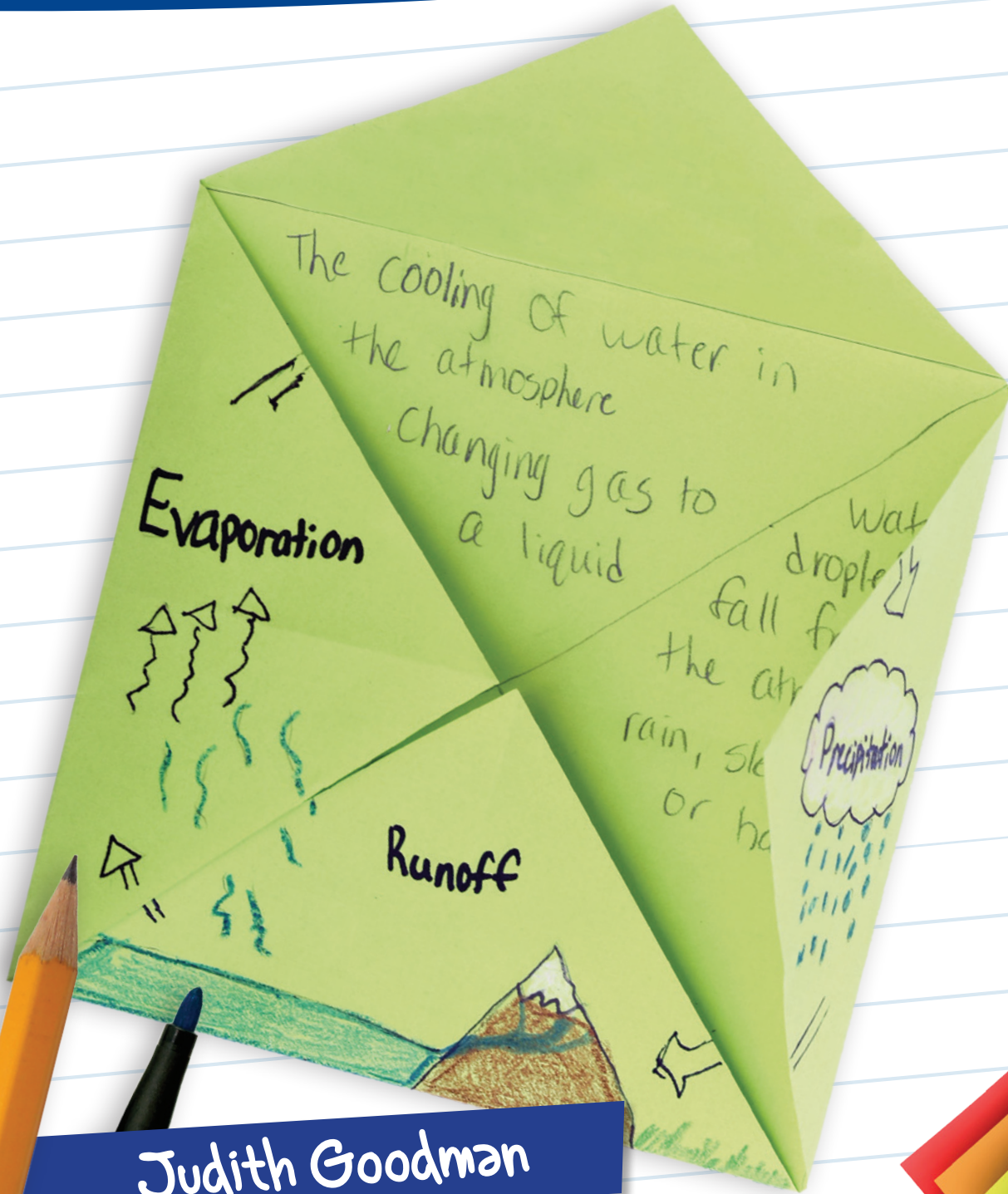
SHELL  
EDUCATION

# Interactive Notetaking

for Content-Area Literacy

LEVELS

3-5



Judith Goodman

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# States of Matter

## Standards

### Science

Understands the structure and properties of matter.

### Reading

Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.

### Writing

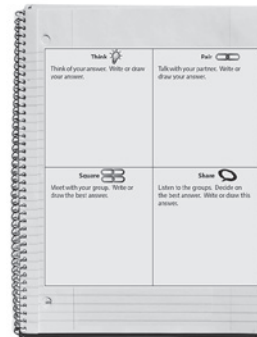
Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

## Materials

- copies of *States of Matter* (pages 73–74)
- copies of *States of Matter Think-Pair-Square-Share* (page 75)
- copies of *States of Matter Frayer Model* (3 per student) (page 76) (optional)
- copies of *States of Matter Three-Sides Notetaking* (page 77)
- poster chart (1 per group; optional)
- 8.5" x 11" sheets of paper (different colors if possible; 3 per student)
- markers, scissors, and glue (or stapler)
- each student's interactive notebook

## Graphic Organizer Examples

### Before Reading— Think-Pair-Square-Share



### During Reading— Frayer Model



### After Reading— Three-Sides Notetaking





## States of Matter *(cont.)*

### Before Reading Procedure

#### Strategy: Think-Pair-Square-Share

1. Distribute copies of *States of Matter Think-Pair-Square-Share* (page 75) to students. Project the word *matter* for students. Ask students to think about the word as it relates to science.
2. Ask students to think about the question, *What are the states of matter and the unique properties of each?* Have students record their answers in the *Think* box on the activity sheet.
  - **Differentiation:** Display pictures of objects that portray the three states of matter. Encourage students to observe the pictures and find similarities in the properties of the objects.
3. Tell each student to share their answers with the person next to them. Pairs of students should collaborate to find the best answer to share with other classmates and an explanation of why each is the best. Then, have each pair write their answer and explanation in the *Pair* box on the activity sheet.
4. Have students share their answers in groups of four or more, depending on class size. Have each pair share their answers with the group.
5. Each group should decide which answer they think is best as well as an explanation of their reasoning. Once an answer has been agreed upon, students should write their group's answer and the justification in the *Square* box on the activity sheet.
  - **Differentiation:** Once the Square groups have agreed upon their best answers to share with the class, ask students to transfer their group answers to a poster chart. Each group could then present its answer to the rest of the class. You may choose for the class to do a gallery walk so they can get a closer look at each group's presentation.
6. Ask students to share their group choices and reasoning with the class. Have students write the best answers they heard along with explanations defending their choices in the *Share* box on the activity sheet.
7. Have students fold their activity sheets into quarters. Tell them to glue the bottom-right quarter of their completed *States of Matter Think-Pair-Square-Share* activity sheets onto an empty Lesson Input page.
8. On the Student Output page, have students write summaries of their discussions. Tell students to include their final answers and why they chose them.

### Assessment

- On the Student Output page, students should compose single paragraphs that express their final answers. Explain that students will use the notes they took from the various groups and compile a cohesive paragraph. Remind students that this final step should explain, in detail, their final answers.



## States of Matter *(cont.)*

### During Reading Procedure

#### Strategy: Frayer Model

1. Distribute copies of *States of Matter* (pages 73–74) to students. Have them read the text in pairs.
2. Ask students to annotate the text by circling the three states of matter and underlining the unique properties of each. As they read, they should write examples of each state of matter in the margins. For example, a student circles the word *solids* and underlines the properties (hard or soft, big or small). They might write *plastic, metal, stone, bone, straw, sand, crackers, or ice* in the margin.
3. Distribute three 8.5" x 11" sheets of different colored paper to each student. Tell students to fold the first sheet of paper horizontally.
  - You may choose to distribute three copies of *States of Matter Frayer Model* (page 76) to students instead of blank paper. Have students cut out the template and continue with the steps below.
4. Have students open the folded paper and hold it in landscape layout. Then, tell them to fold each edge of the paper to the creased fold to create a “shutter-doors” fold.
5. While the “shutter doors” are still folded inward, have students cut both the doors in half horizontally to create four flaps. Monitor students closely as they complete this step to ensure that they cut correctly.
6. While still folded, have each student flip up the four center corners of the flaps to create a diamond-shaped window in the center of their paper. Tell students to write the word *solids* in their windows.
7. While the flaps are still closed, have students label the flaps.
  - top left: *Definition*
  - top right: *Characteristics*
  - bottom left: *Example*
  - bottom right: *Non-Example*
8. Talk through an example of how to complete the template using the term *solids*.
  - **Differentiation:** To assist students in completing their booklets, provide sentence stems, such as *Some examples of solids are....*
9. Have students repeat Steps 3–7 to create Frayer model booklets for the other two states of matter.
10. Have students fold their Frayer model booklets back over the horizontal folds from Step 3. Then, tell them to put the books in alphabetical order. Next, have students number the booklets 1–3 from left to right.
11. Show students how to stack the booklets one on top of the other so all the folds are on the left and all the open ends are on the right. Booklet 1 should be on top, followed by booklets 2 and 3. Have students attach the booklets together by gluing one on top of the other.
12. Have students write the title, *States of Matter*, on the front cover of the stacked booklets. Students can then attach the booklets onto the next Lesson Input page.



## States of Matter *(cont.)*

### Assessment

- On the Student Output page, have students draw three columns and label them *Solids*, *Liquids*, and *Gases*. In each column, they should write things in their everyday lives that have the correct properties. For example, under the *Liquids* column, students may write *water*.

### After Reading Procedure

#### Strategy: Three-Sides Notetaking

1. Distribute copies of *States of Matter Three-Sides Notetaking* (page 77) to students. Have them cut along the outer edges of the square.
2. Draw students' attention to the four triangles that make up the square. Explain that they will be using the top, bottom, and right triangles for notetaking. The triangle labeled *glue* should not be written on.
3. Have students refer to the annotations they made while reading the text. Tell students to record notes about each state of matter on their templates as they reread. Depending on students' ability levels, you may choose to model this. Some examples you could write to describe solids are *hard*, *soft*, *computers*, or *ice*.
  - **Differentiation:** Create a word bank of adjectives students can reference when describing the states of matter. If needed, students can create picture cards to help explain the different adjectives in the word bank.

4. After students have completed their notes, have them cut along the dashed lines. Monitor to ensure that they stop in the center of the square and do not cut on the solid line beyond the cut line.
5. Have students make folds on the solid lines. Students should then put small amounts of glue on the triangle labeled *glue*. Tell students to move the bottom triangle up and over the glue section. The bottom triangle should overlap and cover the glue section. Then, students can press down lightly to adhere the glue. Students should now have three-dimensional notes pages.
6. Have students glue their triangular prisms onto the next Lesson Input page. They should glue only the bottom section of the triangle to the notebook. Additionally, tell students to title the page *States of Matter*. Have students fold the triangular shapes so they lay flat.
7. Have students turn to the next Lesson Input page and attach the text, *States of Matter*. Refer to pages 158–159 for options on how to attach the text.

### Assessment

- Tell each student to think about the text and the notes he or she took on the template. On their Student Output pages, have students write haikus to describe one of the states of matter. A haiku is a three-line poem. The first line has five syllables, the second line has seven syllables, and the third line has five lines. Have students illustrate their haikus.



# States of Matter

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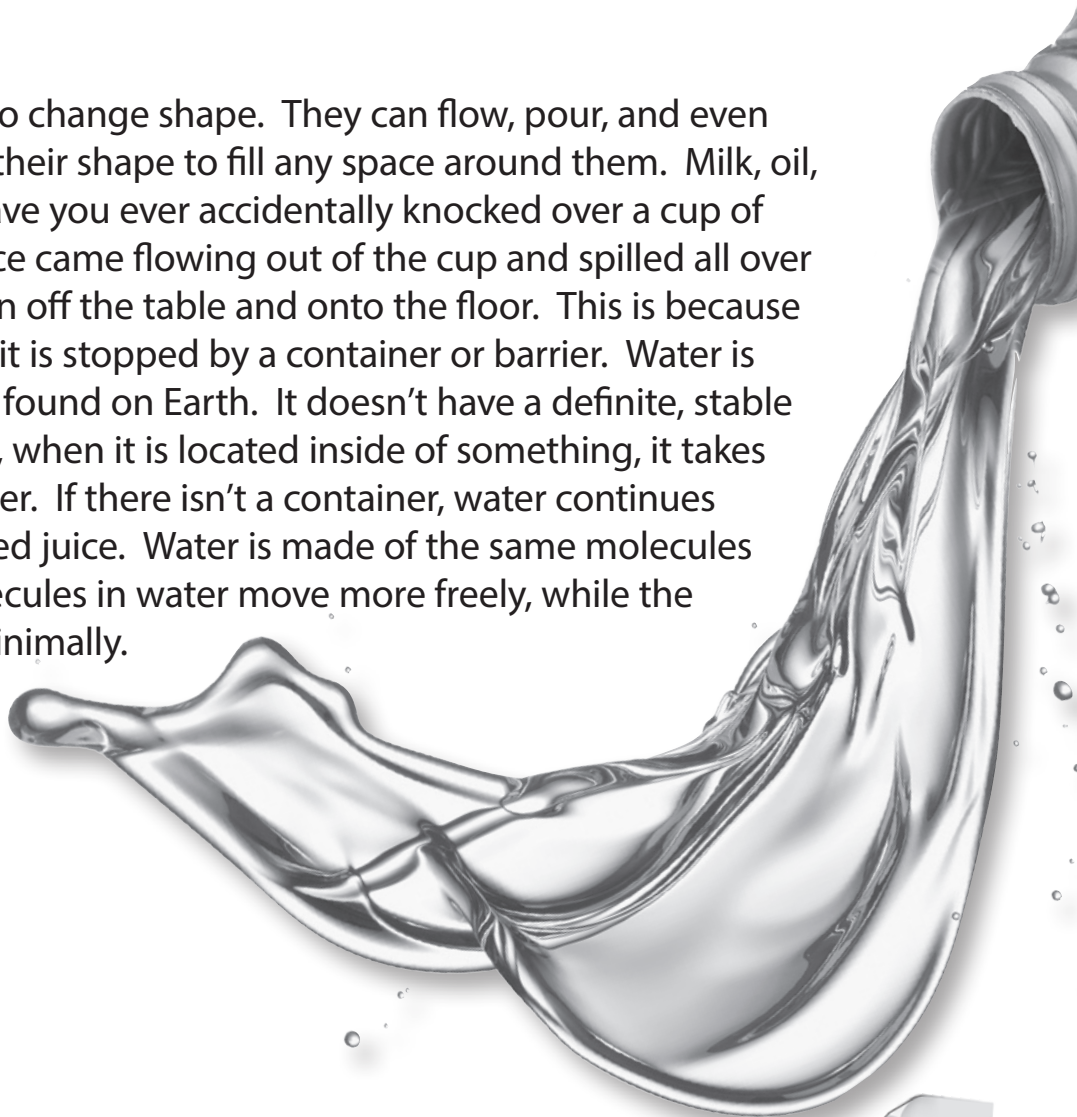
Matter can take the form of a solid, a liquid, or a gas. Each state of matter has its own unique set of properties.

## Solids

Solids can be hard or soft, or they can be big or small. Wood is one example of solid matter. Plastic, metal, stone, bone, straw, sand, and crackers are all solids. Human-made solids include everything from computers to keys to the clothes you wear. Ice, the solid state of water, is a familiar solid. Objects in a solid state don't change shape easily.

## Liquids

Unlike solids, liquids do change shape. They can flow, pour, and even be spilled. They change their shape to fill any space around them. Milk, oil, and ink are all liquids. Have you ever accidentally knocked over a cup of juice? Most likely, the juice came flowing out of the cup and spilled all over the place. It may have run off the table and onto the floor. This is because liquid flows freely unless it is stopped by a container or barrier. Water is the most common liquid found on Earth. It doesn't have a definite, stable shape as ice has. Instead, when it is located inside of something, it takes the shape of that container. If there isn't a container, water continues flowing, just like the spilled juice. Water is made of the same molecules found in ice but the molecules in water move more freely, while the molecules in ice move minimally.







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

## States of Matter *(cont.)*

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### Gases





Gases don't have any shapes or sizes of their own. They spread quickly to fill the spaces around them. Similar to liquids, gases flow easily. But they can also be compressed, or squeezed. One example of compression is shown in a basketball. Gas is forced into a small hole in the ball with an inflator needle. When the needle is removed, the hole closes—gas can only escape if the hole opens. Gases are often invisible. So, most of the time, we cannot see them. But gases are all around you; even an empty glass is filled with air. The air we breathe in is a mixture of multiple gases, including oxygen.





# States of Matter Think-Pair-Square-Share

**Directions:** Complete the table with information from the text.

<p><b>Think</b> </p> <p>Think of your answer. Write or draw your answer.</p>	<p><b>Pair</b> </p> <p>Talk with your partner. Write or draw your answer.</p>
<p><b>Square</b> </p> <p>Meet with your group. Write or draw the best answer.</p>	<p><b>Share</b> </p> <p>Listen to the groups. Decide on the best answer. Write or draw this answer.</p>



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

# States of Matter Frayer Model

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**Directions:** Cut along the dashed lines, and fold along the solid lines to create your template.

<b>Example</b>	<b>Non-Example</b>
<b>Definition</b>	<b>Characteristics</b>



# States of Matter Three-Sides Notetaking

**Directions:** Cut along the outer edges of the square. Record notes about each state of matter under the correct flap. Then, cut along the dashed line. Do not cut on the solid lines.

