# WINTER BREAK LEARNING PACKET

## STEM

### 3RD GRADE STUDENT

**DEC 22ND – JAN 5TH**

## DEPARTMENT OF CURRICULUM & INSTRUCTION

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## WEEK ONE - DECEMBER 22-26, 2025

**STANDARD: 3.PS1.1 Develop a model of solids, liquids, and gases to describe that each state of matter is made of particles too small to be seen.**

### ACTIVITY I

- Read the passage titled States of Matter and complete the chart by identifying the properties.
- Next, label each part of the float with the correct state of matter, and explain your answers.

**Note: This is also a fun and real-world example you can create at home and enjoy!**

### Materials

- Clear Cup
- Ice Cream
- Soda (Root Beer Preferred)

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## WEEK TWO - DECEMBER 29 - January 2, 2026

**STANDARD: 3.PS1.2 Construct an explanation about the effects of heating and cooling a substance differentiating between changes that can be reversed (i.e., freezing & melting) and those that cannot (e.g., baking a cake or burning fuel).**

### ACTIVITY II

- Look at or cut and sort the pictures of real-world items.
- Determine if the item is changed through heating or cooling and if it is reversible or inversible.
- Complete the chart.

# WEEK ONE - DECEMBER 22-26, 2025

**STANDARD: 3.PS1.1 Develop a model of solids, liquids, and gases to describe that each state of matter is made of particles too small to be seen.**

## ACTIVITY I

States of Matter

Particles are made up of neutron, protons, and electrons that make up an atom. Atoms are a part of all matter. The natural eye cannot see these particles. Particles are always moving, but not always in the same way. How particles are arranged, and move is determined by its state of matter. There are three states of matter solid, liquid and gas.

In a solid, the particles are very attracted to each other. They are tightly packed closely together and vibrate in place but don't move past one another. Because of this, they have a fixed volume and a fixed shape. This means that they don't change shape or volume. The are in a constant shape and only take up the space they are in. Some examples of solids are ice cubes, chair, tables, rocks, and oranges. They are visible.

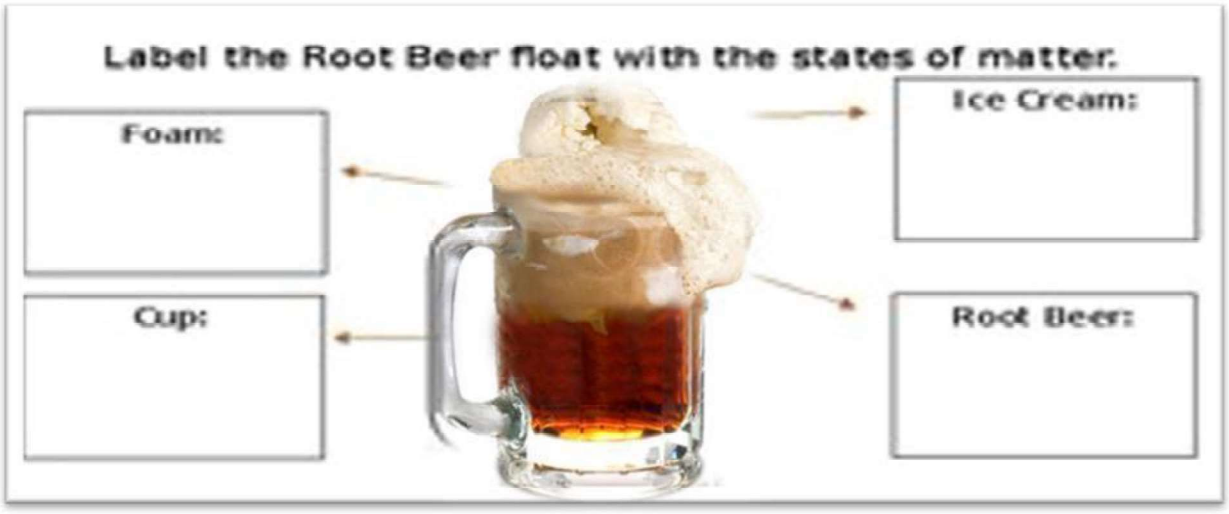
The second state of matter is liquid. The particles are close together in liquids but less tightly packed than a solid. A liquid can flow and does not have a specific shape like a solid. Instead, a liquid conforms to the shape of the container in which it is held. They have a fixed volume that stays constant but not a fixed shape. Any space they take up can't change, but the shape can. For example, the volume in a glass will not change, which is the space you have for your drink, but the shape can change depending on the glass size. Liquids are visible things like milk, water, and juice.

The last state of matter is gases. Gases are an invisible state of matter where particles are spread apart and move freely in all directions. Gas has no fixed shape and no fixed volume. The particles typically bounce off one another. There is a great deal of space between particles, which have a lot of kinetic energy and aren't particularly attracted to one another. Therefore, the amount of space they take up and the shape of the gas can change. That means it can be bigger or smaller depending on the space container. Examples of gases are oxygen, carbon dioxide, and water vapor.

**Name:** _____

Based off the reading on the previous page, complete the chart below.

| | Visible or Invisible | Volume | Shape | Particles | Example |
|---|---|---|---|---|---|
| Solid | | | | | |
| Liquid | | | | | |
| Gas | | | | | |




Explain Your Answers

# WEEK TWO - DECEMBER 29 - January 2, 2026

**STANDARD**: **3.PS1.2 Construct an explanation about the effects of heating and cooling a substance differentiating between changes that can be reversed (i.e., freezing & melting) and those that cannot (e.g., baking a cake or burning fuel).**

ACTIVITY II

Pictures/Card Sort

| | | | |
|---|---|---|---|
| **Butter Melting**  | **Rusting Car**  | **Water Turning to Ice**  | **Wood Burning**  |
| **Sugar Dissolving In Hot Tea**  | **Wax Melting**  | **Frying Eggs**  | **Melting Chocolate**  |
| **Hot Air Balloons**  | **Baking A Cake**  | **Oil and Vinegar Mix**  | **Water Vapor**  |

**Name:** _____

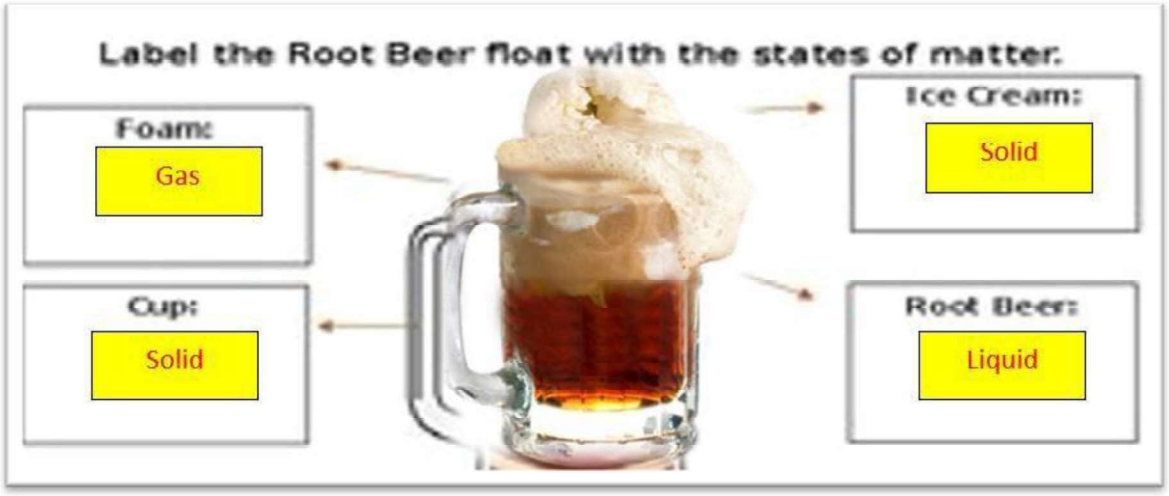
**After viewing and/or sorting the picture, complete the table.**

| Reversible Changes | Heating or Cooling Explain Answer | Irreversible Changes | Heating or Cooling Explain Answer |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

**ANSWER KEY**

## ACTIVITY I

| | Visible or Invisible | Shape | Volume | Particles | Example |
|---|---|---|---|---|---|
| Solid | Visible | Fixed | Fixed | Tightly Packed | Ice cube<br>Chair<br>Tables<br>Rocks<br>Oranges |
| Liquid | Visible | Not Fixed | Fixed | Close Together | Milk<br>Juice<br>Water |
| Gas | Invisible | Not Fixed | Not Fixed | Spread Apart | Oxygen<br>Carbon Dioxide<br>Water Vapor |




Explain Your Answers

Foam - The foam is gas because it consists of carbon dioxide from the carbonated drink which is a gas.
Cup - The cup is a solid because the particles are close and maintain its own shape.
Ice Cream - The ice cream is a solid because it is in a frozen state of matter.
Root Beer - The root beer is liquid because it flows freely and takes the form of the glass.

## ACTIVITY II

**After viewing and/or sorting the picture, complete the table.**

| Reversible Changes | Heating and/or Cooling Explain Answer | Irreversible Changes | Heating and/or Cooling Explain Answer |
|---|---|---|---|
| Butter Melting | Heating – because the solid butter is melting into a liquid which uses heat. | Rusting Car | Both – rust happens due to heating and cooling but cannot be reversed. |
| Water Turning to Ice | Cooling – because it turns back into a solid. | Wood Burning | Heating - You cannot reverse burning wood. |
| Sugar Dissolving In Hot Tea | Heating – because the tea is hot. | Frying Eggs | Heating - You cannot reverse a cooked egg. |
| Wax Melting | Heating – because the wax is melting the solid into a liquid which uses heat. | Baking A Cake | Heating - You cannot reverse a baked cake |
| Melting Chocolate | Heating – because the chocolate is melting from a solid to a liquid which uses heat. | | |
| Balloons With Air | Heating – because the balloon is powered by heat and the air is gas. | | |
| Oil and Vinger Mix | Both – When hot they mix but when cool they separate back into their original liquid. | | |
| Water Vapor | Heating – Water vapor is a gas that can turn back to liquid. | | |