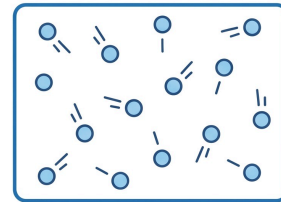
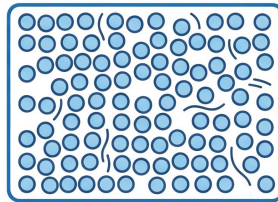
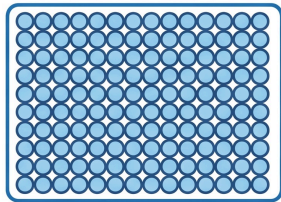


States of Matter

Solids, liquids and gases, and how matter changes from one state to another



7

printable sheets

17

pages

All

answer keys included

States of Matter Teaching Pack

Solids, liquids and gases, and how matter changes from one state to another

How to use this pack. The sheets are in a suggested teaching order: show the labeled diagram, have students label the blank one, then work through the practice sheets and finish with the quiz. Use them all over a week or pick the ones you need. The answer keys are together at the back.

What is inside

1. Teach

States of Matter Diagram 3

2. Label

Blank States of Matter 4

3. Match

States of Matter Words 5

4. Read

Solid, Liquid, Gas 6

5. Apply

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6. Review

States of Matter Crossword 9

7. Check

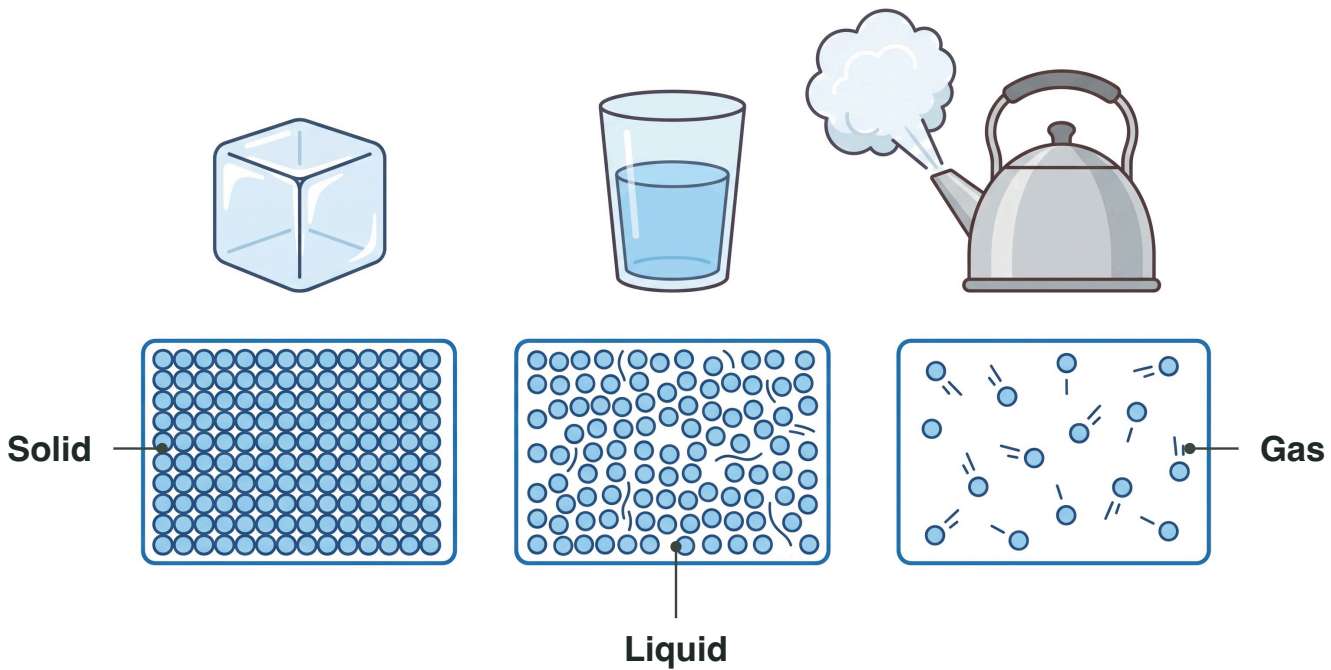
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Answer keys

Every answer key, in the same order 12

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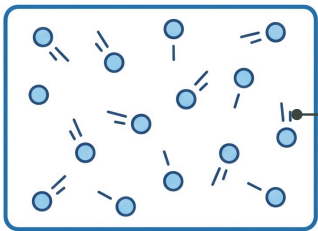
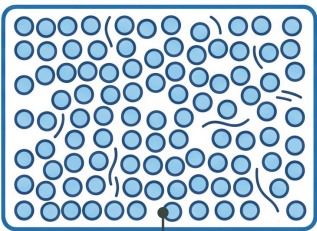
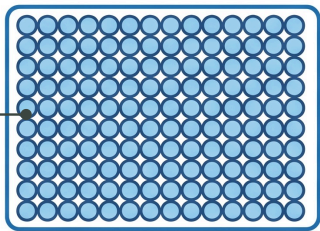
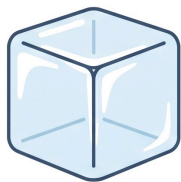
States of Matter



States of Matter

Name: _____

Write the name of each part on its line. Use the word bank.



Word bank Gas Liquid Solid

States of Matter Words

Use the labeled states of matter diagram to help you.

Part A. Write the word that fits each description.

Word bank

Condensation

Evaporation

Freezing

Gas

Liquid

Matter

Melting

Particle

Solid Volume

1. The change from a liquid to a gas at the surface of the liquid.

2. The state that keeps its own shape. Its particles are packed tightly in a fixed pattern.

3. The amount of space that something takes up.

4. The change from a solid to a liquid.

5. The state that spreads out to fill its whole container. Its particles are far apart and move freely.

6. One of the tiny pieces, far too small to see, that everything is made of.

7. The change from a gas to a liquid.

8. The state that flows and takes the shape of its container. Its particles slide past one another.

9. Anything that has mass and takes up space.

10. The change from a liquid to a solid.

Part B. Answer the questions.

1. Which two changes of state happen when heat is added?

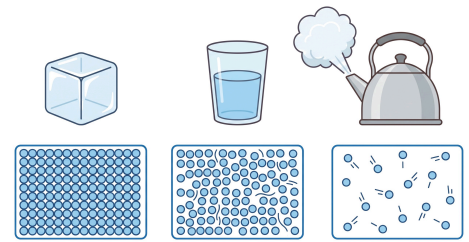
2. In which state are the particles farthest apart?

3. You pour a cup of milk from a tall glass into a wide bowl. What changes and what stays the same?

Solid, Liquid, Gas

Read the text. Then answer the questions on the next page.

- 1 Ice, liquid water and the water vapor in the air seem nothing alike, yet all three are the same substance. They are water in three **states of matter**: solid, liquid and gas. All matter is made of tiny **particles** that are always moving. The state depends on how the particles are arranged and how freely they move.
- 2 In a **solid**, the particles are packed tightly in a fixed pattern. They cannot change places. They only vibrate in place. That is why a solid keeps its own shape and its own **volume**, the amount of space it takes up.
- 3 In a **liquid**, the particles are still close together, but they can slide past one another. A liquid flows and takes the shape of its container. Its volume stays the same. A cup of juice is still one cup in a tall glass or in a wide bowl.
- 4 In a **gas**, the particles are far apart and move freely in every direction. A gas has no shape or volume of its own. It spreads out to fill its whole container. The air in a room reaches every corner.
- 5 Adding or removing heat can change the state. Heat makes particles move faster. A solid that gets warm enough turns into a liquid. This is **melting**. A liquid changes into a gas by **evaporation**. A puddle evaporates on a cool day without ever boiling. Removing heat does the opposite. A gas cools into a liquid by **condensation**, and a liquid turns solid by **freezing**. Through every change, the particles themselves stay the same. Only their motion and spacing change, so the mass does not change.



Ice is a solid and water is a liquid. Water boiling in a kettle turns into a gas. Each box shows the particles.

Solid, Liquid, Gas: Questions

Go back to the text to find each answer. The paragraphs are numbered to help you.

1. What is this text mostly about?

- ☐ How to boil water safely
- ☐ Why ice floats on water
- ☐ How particles behave in solids, liquids and gases
- ☐ How to measure the volume of a liquid

2. How do the particles in a solid move?

3. What happens when you pour a liquid into a different container?

- ☐ Its volume changes, but its shape stays the same.
- ☐ Its shape changes, but its volume stays the same.
- ☐ Its shape and its volume both change.
- ☐ Its shape and its volume both stay the same.

4. Why does a gas fill its whole container?

- ☐ Its particles are packed tightly together.
- ☐ Its particles get bigger.
- ☐ Its particles only vibrate in place.
- ☐ Its particles are far apart and move freely.

5. Number the states 1, 2 and 3 from the particles that are least free to move to the particles that are most free to move.

- ☐ Liquid
- ☐ Gas
- ☐ Solid

6. Which change turns a gas into a liquid?

- ☐ Melting
- ☐ Evaporation
- ☐ Condensation
- ☐ Freezing

7. What example in the text shows that water can evaporate without boiling?

8. Why does the mass stay the same when ice melts?

Name the Change of State

Read what happens in each example. Write the name of the change of state. Each word in the word bank is used twice.

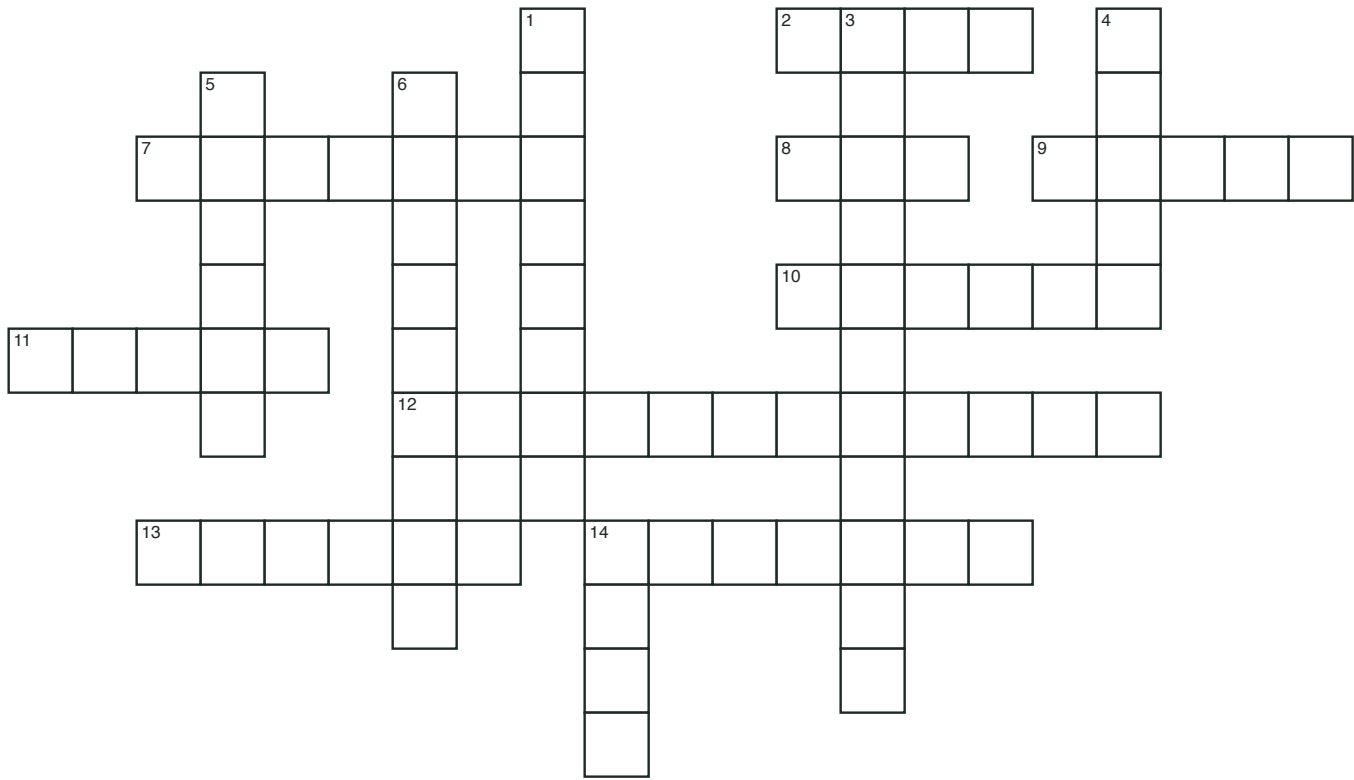
EXAMPLE	WHAT HAPPENS	CHANGE OF STATE
1. A puddle	It dries up on a sunny afternoon. Heat is added, and liquid water becomes a gas.	_____
2. An ice pop	It drips down your hand on a hot day. Heat is added.	_____
3. A cold can	Drops of water form on the outside. Water vapor in the air loses heat to the can.	_____
4. An ice tray	The water in it is left in the cold overnight and turns hard. Heat is removed.	_____
5. Wet laundry	It dries on a clothesline. The water goes into the air as a gas.	_____
6. A mirror	It fogs up during a hot shower. Water vapor cools on the glass and forms tiny drops.	_____
7. Candle wax	Hot liquid wax runs down the candle. It cools and turns hard.	_____
8. A bar of iron	It is heated in a furnace until it can be poured. Heat is added.	_____
Word bank Condensation Evaporation Freezing Melting		

Your turn

An ice cube is left in a dish on the table for a week. In the end the dish is dry. Name the two changes of state that happened, in order. Was heat added or removed?

States of Matter Crossword

Read each clue. Write the answer in the puzzle, one letter in each box. Use the word bank if you get stuck.



ACROSS

2. Add this to make particles move faster.
7. To shake back and forth in place, as the particles in ice do.
8. The state that spreads out to fill all the space it is given.
9. Water ____ is water in the form of a gas.
10. The amount of space that something takes up.
11. The state that keeps its own shape.
12. The change that puts drops of water on the outside of a cold glass.
13. Anything that has mass and takes up space.
14. The change that turns ice into water.

DOWN

1. The change that turns water into ice.
3. The change that dries up a puddle.
4. A liquid takes this from the cup, glass or bowl it is in.
5. The state that flows and takes the shape of what it is poured into.
6. The tiny pieces, far too small to see, that everything is made of.
14. The amount of matter in something. It does not change when ice melts.

Word bank

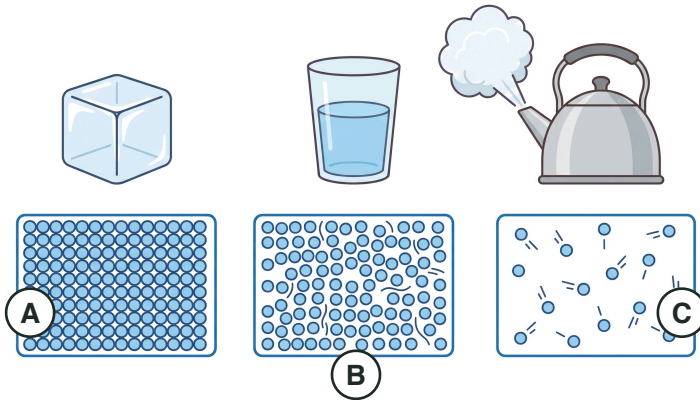
condensation evaporation freezing gas heat liquid mass matter melting
particles shape solid vapor vibrate volume

States of Matter Quiz

Score _____ / 11

Show what you know about solids, liquids and gases.

Part A. Each box shows the particles in one state of matter. Write the name of each state.



A _____

B _____

C _____

Gas · Liquid · Solid

Part B. Choose the best answer.

- How do the particles in a solid move?**
 - ☐ They do not move at all.
 - ☐ They vibrate in place.
 - ☐ They slide past one another.
 - ☐ They move freely in every direction.
- Which state has a fixed volume but takes the shape of its container?**
 - ☐ Solid
 - ☐ Liquid
 - ☐ Gas
 - ☐ All three
- What is the change from a liquid to a solid called?**
 - ☐ Melting
 - ☐ Evaporation
 - ☐ Condensation
 - ☐ Freezing
- Drops of water form on the outside of a cold glass. What is this change called?**
 - ☐ Condensation
 - ☐ Evaporation
 - ☐ Melting
 - ☐ Freezing
- What happens to the particles when a solid is heated?**
 - ☐ They get bigger.
 - ☐ They get heavier.
 - ☐ They move faster.
 - ☐ They turn into different particles.
- A block of ice melts in a closed jar. What happens to its mass?**
 - ☐ It goes up.
 - ☐ It goes down.
 - ☐ It stays the same.
 - ☐ It drops to zero.

Part C. Write your answer.

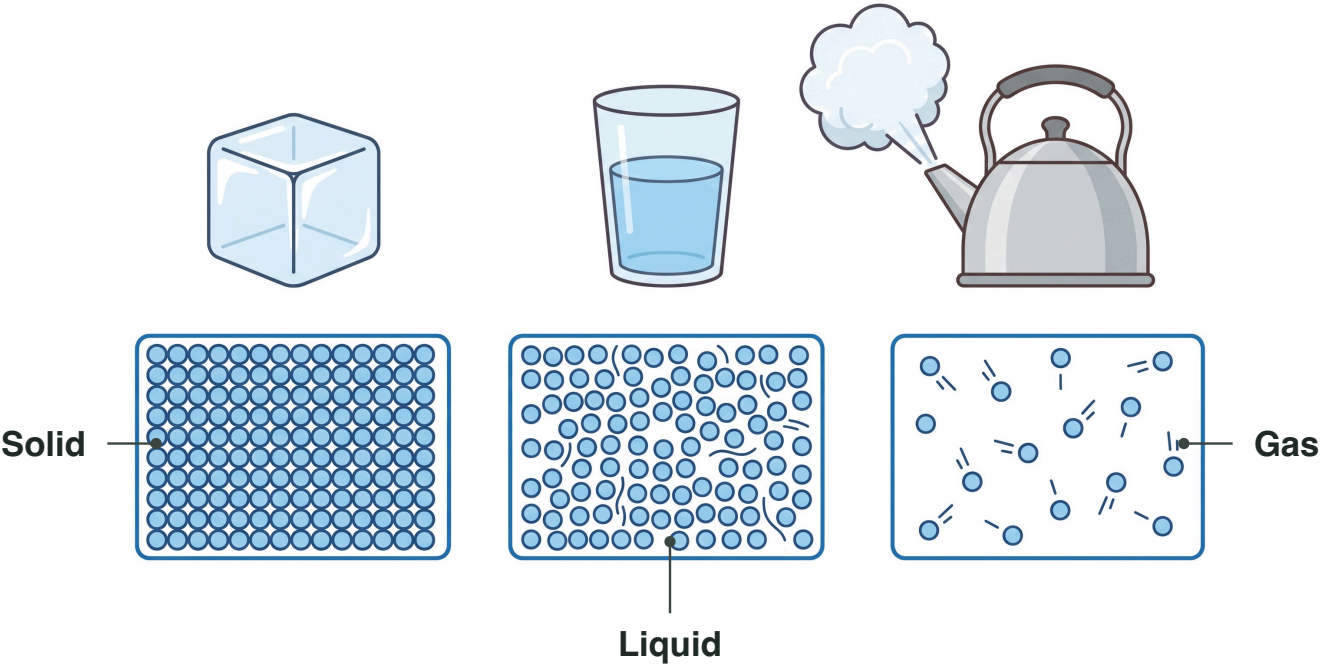
7. How are the particles in a liquid different from the particles in a gas?

8. A puddle dries up on a cool day. What is this change called, and did the water boil?

Answer Keys

In the same order as the sheets.

States of Matter: Answer Key



States of Matter Words: Answer Key

Answers are in green. Written answers will vary; these are examples.

Part A. Write the word that fits each description.

Word bank

Condensation

Evaporation

Freezing

Gas

Liquid

Matter

Melting

Particle

Solid Volume

1. The change from a liquid to a gas at the surface of the liquid.

Evaporation

2. The state that keeps its own shape. Its particles are packed tightly in a fixed pattern.

Solid

3. The amount of space that something takes up.

Volume

4. The change from a solid to a liquid.

Melting

5. The state that spreads out to fill its whole container. Its particles are far apart and move freely.

Gas

6. One of the tiny pieces, far too small to see, that everything is made of.

Particle

7. The change from a gas to a liquid.

Condensation

8. The state that flows and takes the shape of its container. Its particles slide past one another.

Liquid

9. Anything that has mass and takes up space.

Matter

10. The change from a liquid to a solid.

Freezing

Part B. Answer the questions.

1. Which two changes of state happen when heat is added?

Melting and evaporation.

2. In which state are the particles farthest apart?

In a gas.

3. You pour a cup of milk from a tall glass into a wide bowl. What changes and what stays the same?

The shape of the milk changes. Its volume stays the same (still one cup).

Solid, Liquid, Gas: Answer Key

Answers are in green. Written answers will vary; these are examples.

1. What is this text mostly about?

- ☐ How to boil water safely
- ☐ Why ice floats on water
- ☒ **How particles behave in solids, liquids and gases**
- ☐ How to measure the volume of a liquid

2. How do the particles in a solid move?

They vibrate in place. They cannot change places.

3. What happens when you pour a liquid into a different container?

- ☐ Its volume changes, but its shape stays the same.
- ☒ **Its shape changes, but its volume stays the same.**
- ☐ Its shape and its volume both change.
- ☐ Its shape and its volume both stay the same.

4. Why does a gas fill its whole container?

- ☐ Its particles are packed tightly together.
- ☐ Its particles get bigger.
- ☐ Its particles only vibrate in place.
- ☒ **Its particles are far apart and move freely.**

5. Number the states 1, 2 and 3 from the particles that are least free to move to the particles that are most free to move.

- 2** Liquid
- 3** Gas
- 1** Solid

6. Which change turns a gas into a liquid?

- ☐ Melting
- ☐ Evaporation
- ☒ **Condensation**
- ☐ Freezing

7. What example in the text shows that water can evaporate without boiling?

A puddle evaporates on a cool day.

8. Why does the mass stay the same when ice melts?

The particles themselves stay the same. Only their motion and spacing change.

Name the Change of State: Answer Key

Answers are in green. The last answer will vary; one example is given.

EXAMPLE	WHAT HAPPENS	CHANGE OF STATE
1. A puddle	It dries up on a sunny afternoon. Heat is added, and liquid water becomes a gas.	Evaporation
2. An ice pop	It drips down your hand on a hot day. Heat is added.	Melting
3. A cold can	Drops of water form on the outside. Water vapor in the air loses heat to the can.	Condensation
4. An ice tray	The water in it is left in the cold overnight and turns hard. Heat is removed.	Freezing
5. Wet laundry	It dries on a clothesline. The water goes into the air as a gas.	Evaporation
6. A mirror	It fogs up during a hot shower. Water vapor cools on the glass and forms tiny drops.	Condensation
7. Candle wax	Hot liquid wax runs down the candle. It cools and turns hard.	Freezing
8. A bar of iron	It is heated in a furnace until it can be poured. Heat is added.	Melting
Word bank Condensation Evaporation Freezing Melting		

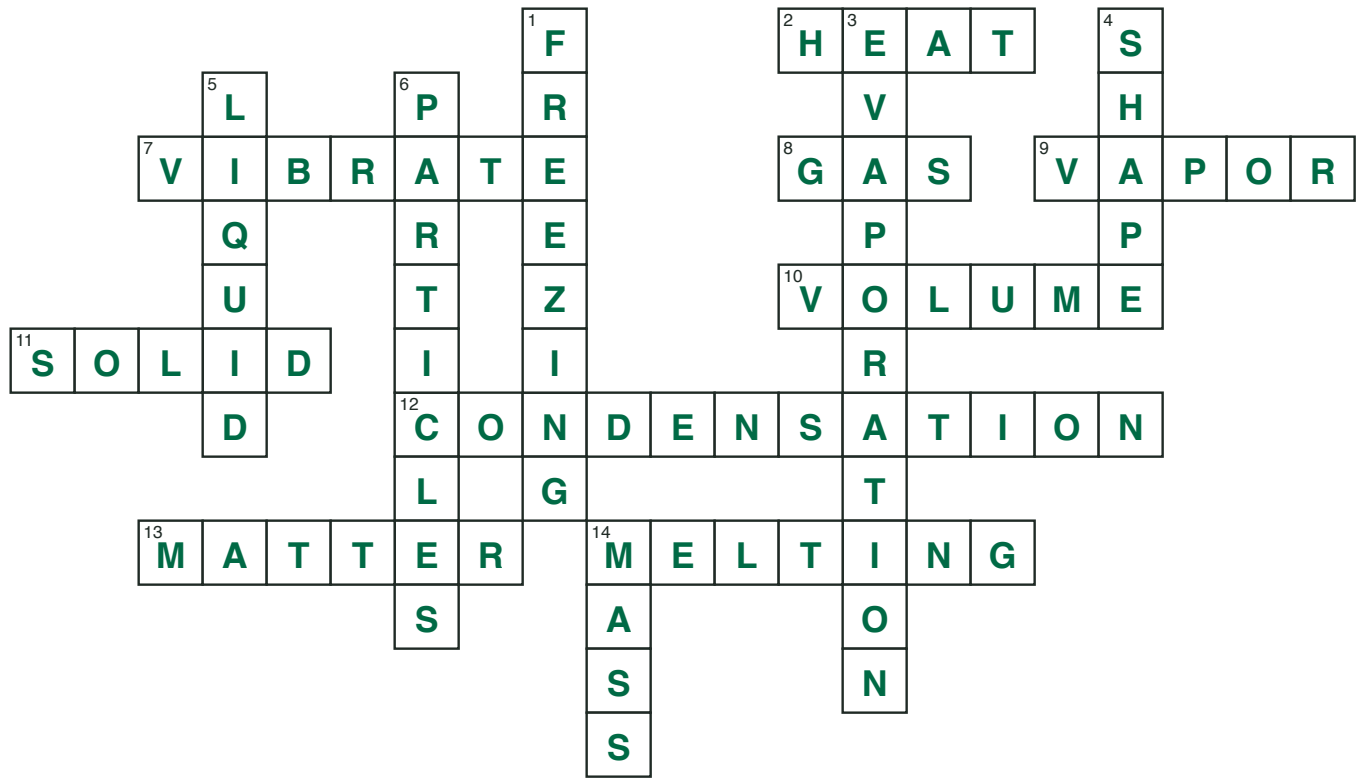
Your turn

An ice cube is left in a dish on the table for a week. In the end the dish is dry. Name the two changes of state that happened, in order. Was heat added or removed?

First the ice melted into liquid water (melting). Then the water went into the air as a gas (evaporation). Heat was added in both changes.

States of Matter Crossword: Answer Key

Answers are in green.



ACROSS

2. Add this to make particles move faster.
7. To shake back and forth in place, as the particles in ice do.
8. The state that spreads out to fill all the space it is given.
9. Water ____ is water in the form of a gas.
10. The amount of space that something takes up.
11. The state that keeps its own shape.
12. The change that puts drops of water on the outside of a cold glass.
13. Anything that has mass and takes up space.
14. The change that turns ice into water.

DOWN

1. The change that turns water into ice.
3. The change that dries up a puddle.
4. A liquid takes this from the cup, glass or bowl it is in.
5. The state that flows and takes the shape of what it is poured into.
6. The tiny pieces, far too small to see, that everything is made of.
14. The amount of matter in something. It does not change when ice melts.

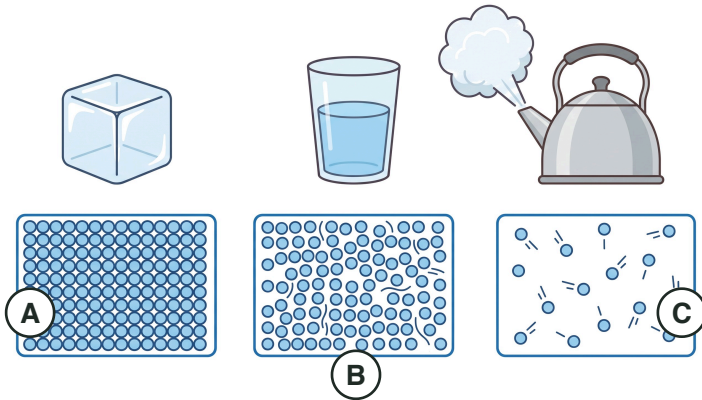
Word bank

condensation evaporation freezing gas heat liquid mass matter melting
particles shape solid vapor vibrate volume

States of Matter Quiz: Answer Key

Answers are in green. Written answers will vary; these are examples.

Part A. Each box shows the particles in one state of matter. Write the name of each state.



A Solid

B Liquid

C Gas

Gas · Liquid · Solid

Part B. Choose the best answer.

- How do the particles in a solid move?
 - ☐ They do not move at all.
 - ☒ They vibrate in place.
 - ☐ They slide past one another.
 - ☐ They move freely in every direction.
- Which state has a fixed volume but takes the shape of its container?
 - ☐ Solid
 - ☒ Liquid
 - ☐ Gas
 - ☐ All three
- What is the change from a liquid to a solid called?
 - ☐ Melting
 - ☐ Evaporation
 - ☐ Condensation
 - ☒ Freezing
- Drops of water form on the outside of a cold glass. What is this change called?
 - ☒ Condensation
 - ☐ Evaporation
 - ☐ Melting
 - ☐ Freezing
- What happens to the particles when a solid is heated?
 - ☐ They get bigger.
 - ☐ They get heavier.
 - ☒ They move faster.
 - ☐ They turn into different particles.
- A block of ice melts in a closed jar. What happens to its mass?
 - ☐ It goes up.
 - ☐ It goes down.
 - ☒ It stays the same.
 - ☐ It drops to zero.

Part C. Write your answer.

- How are the particles in a liquid different from the particles in a gas?
 In a liquid they are close together and slide past one another. In a gas they are far apart and move freely.
- A puddle dries up on a cool day. What is this change called, and did the water boil?
 Evaporation. The water did not boil. Water can evaporate at any temperature.