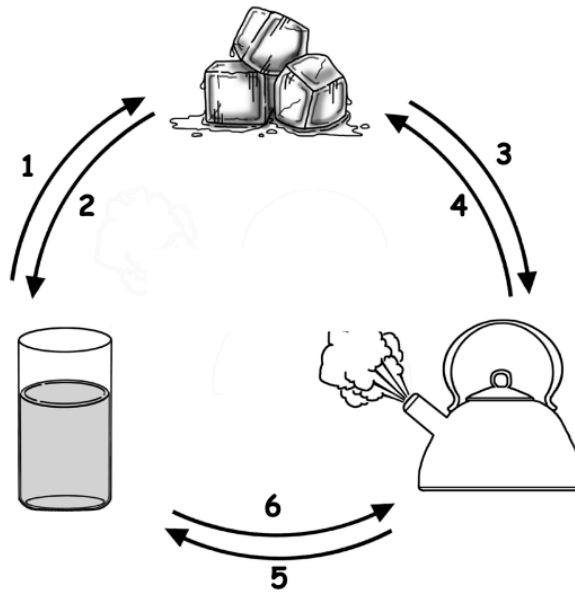


1. Changes in State
2. Phase Change Diagram

How does adding or removing energy affect the state of matter?

- When energy is added, _____ happens. Particles move faster, spread out, and take up _____.
- When energy is removed, _____ happens. Particles move more slowly, get closer together, and take up _____.
- When _____ energy is added or removed, it can completely _____ the state:



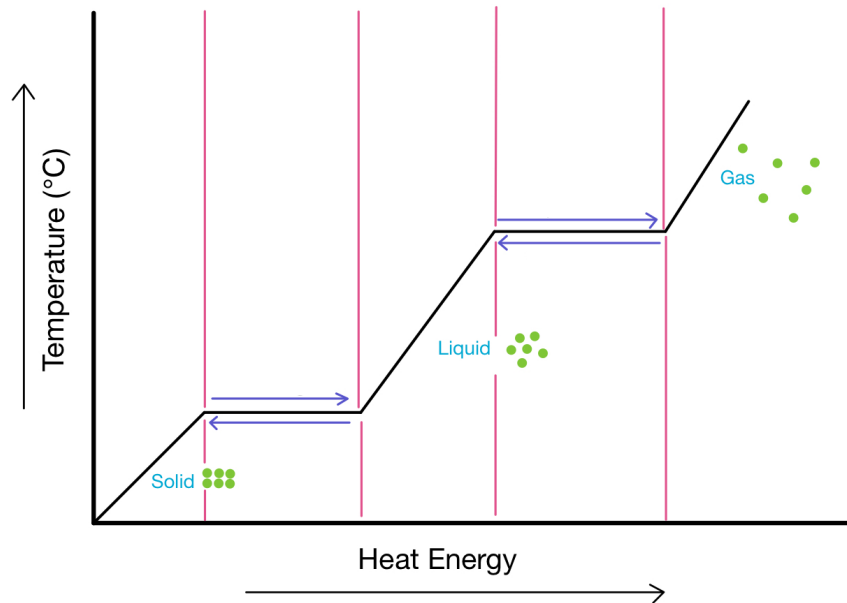
What are examples of phase changes?

<p>1. _____</p> <ul style="list-style-type: none"> • Heat is _____ • Examples: 	<p>3. _____</p> <ul style="list-style-type: none"> • Heat is _____ • Examples: 	<p>5. _____</p> <ul style="list-style-type: none"> • Heat is _____ • Examples:
<p>2. _____</p> <ul style="list-style-type: none"> • Heat is _____ • Examples: 	<p>4. _____</p> <ul style="list-style-type: none"> • Heat is _____ • Examples: 	<p>6. _____</p> <ul style="list-style-type: none"> • Heat is _____ • Examples:

How do we know when a phase change will happen?

- For a substance (e.g. water), there are _____ like freezing point and boiling point that tell us when the state of matter will change.
- For example, with water:
 - Freezing point: the temperature at which _____ from a liquid to a solid (_____) =
 - Boiling point: the temperature at which water transitions from a _____ to a _____ (water vapor) =

- We show how these phases change in the form of a Phase Change Diagram:



Expand and contract

Vocabulary	
condensation	melting
contracts	move around quickly
deposition	rises
evaporation	slide past each other
expands	slower
falls	solidification
faster	state of matter
kinetic molecular theory	sublimation
mass	vibrate
matter	volume

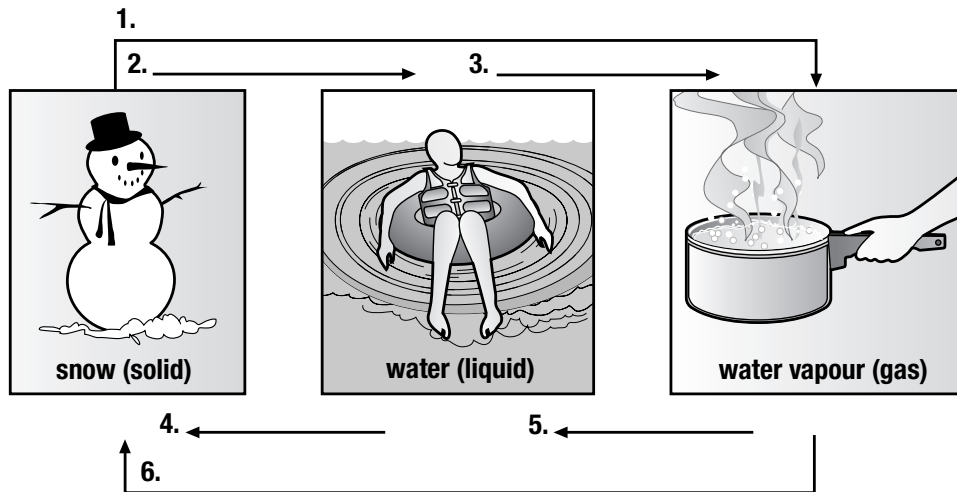
Use the terms in the vocabulary box to fill in the blanks. Use each term only once. You do not need to use all the terms.

1. _____ is the amount of material that makes up something.
_____ is the amount of space that a material takes up.
Anything that has mass and volume is called _____.
2. When you add energy to matter, its temperature _____.
3. _____ is the process of a solid changing to a liquid.
_____ is the process of a solid changing directly to a gas.
4. _____ is the process of a liquid changing to a gas.
_____ is the process of a liquid changing to a solid.
5. _____ is the process of a gas changing to a liquid.
_____ is the process of a gas changing to a solid.
6. Particles in a solid are packed so close together they can only _____.
Particles in a liquid can _____.
Particles in a gas can _____.
7. When you remove energy from particles they move _____ and the matter _____.
8. The _____ explains how particles act when their spacing and movement change.

What's the matter?

Vocabulary	
condensation	melting
deposition	solidification
evaporation	sublimation

Use the terms in the vocabulary box to label the diagram. Place the terms on the numbered arrows.



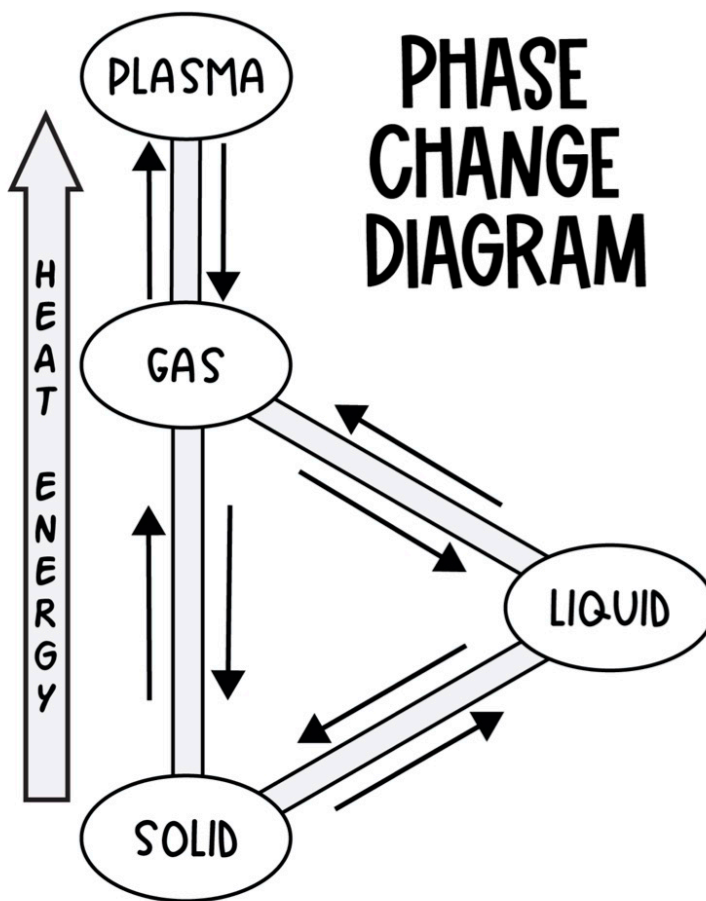
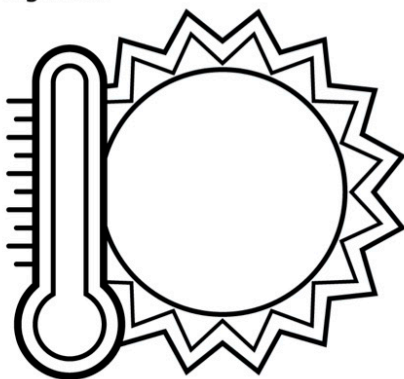
Complete the following table by describing the change of state. The table has been partially completed to help you.

	Change of state	Heat added or released
condensation		released
deposition		
evaporation	liquid to gas	
melting		added
solidification		
sublimation		

HOW DOES HEAT AFFECT THE STATE OF MATTER?

Matter can change from one state to another with a change in _____ energy.

When heat increases, the particles move _____ and spread further apart. When heat decreases, the particles move _____ and get closer together.



PHASE CHANGES

PHASE CHANGE	ORIGINAL STATE	FINAL STATE	MOTION OF PARTICLES
MELTING			
VAPORIZATION			
FREEZING			
DEPOSITION			
SUBLIMATION			
CONDENSATION			

CHECKING FOR UNDERSTANDING

Circle true or false for each statement about states of matter.

- TRUE OR FALSE 1. The particles in a solid are rigid and do not move.
- TRUE OR FALSE 2. A liquid does not have a shape of its own.
- TRUE OR FALSE 3. Decreasing heat energy can cause a phase change.
- TRUE OR FALSE 4. Increasing heat energy can cause a phase change.
- TRUE OR FALSE 5. The evaporation of water over time is an example of sublimation.
- TRUE OR FALSE 6. Plasma is rare on Earth but plentiful in the universe.
- TRUE OR FALSE 7. Placing a balloon in a freezer will cause the balloon to expand.

