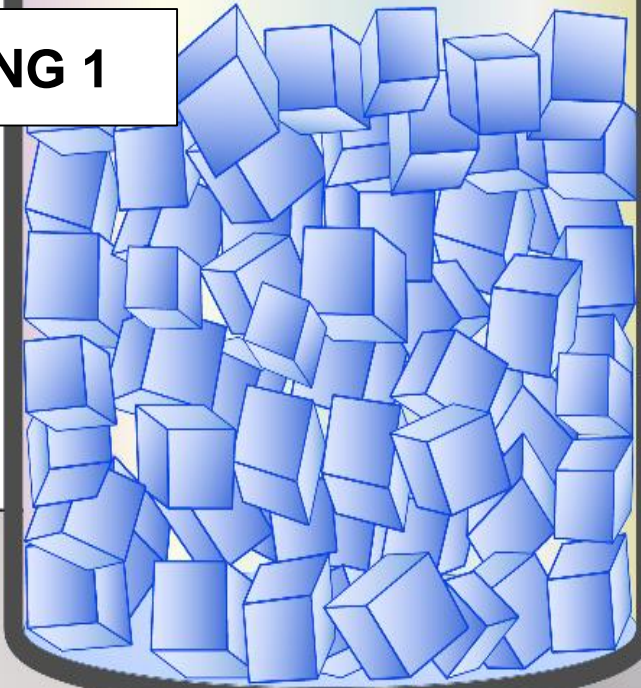


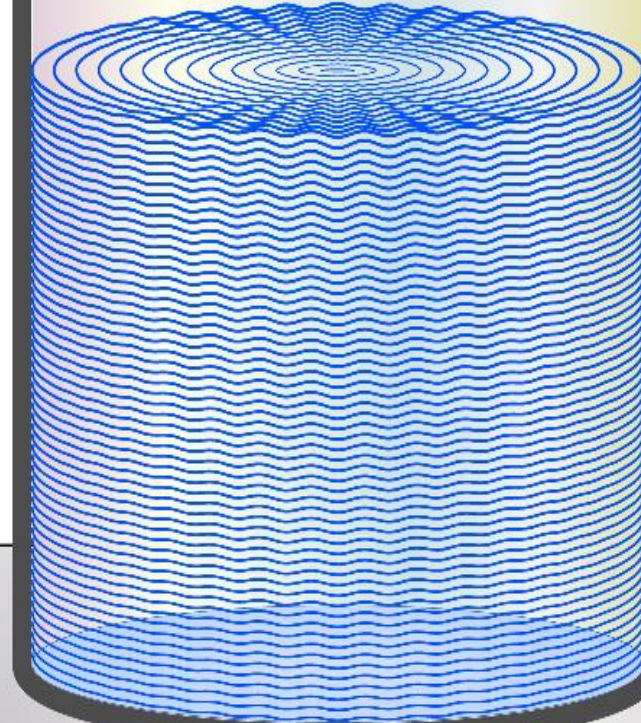
Phases of Matter

YEAR FOUR

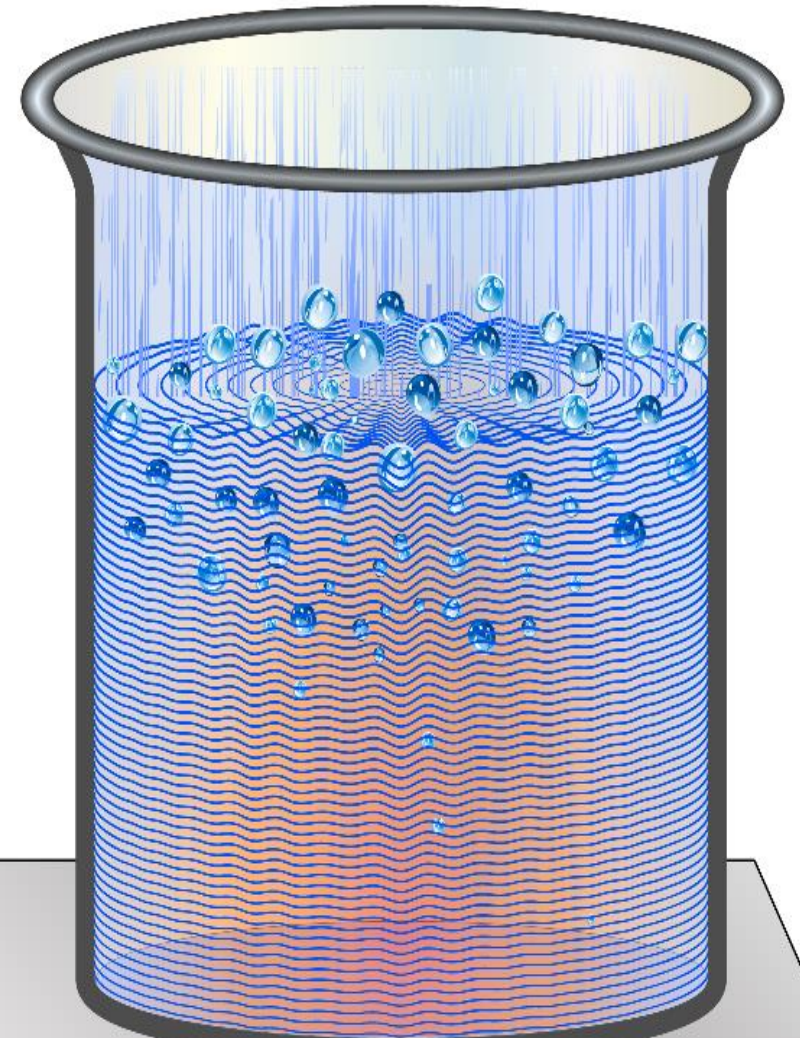
SPRING 1



Ice



Water



Water vapour

LESSON FOUR

What are 'changes of state' and why do they take place?



Do Now – Retrieval practice from last term

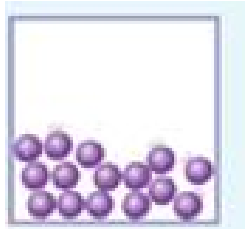
1. What do the particles in a substance do if it is heated?

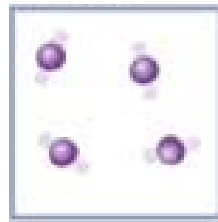
If a substance is heated, the particles begin to _____.

2. What happens to the movement of particles in solids, liquids and gases when they are heated?

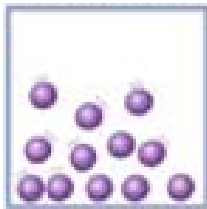
In a solid, the particles will _____ more. In liquids and gases, the particles will move with a _____.

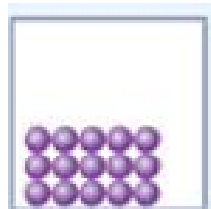
Label the diagrams below to say if they show a hot or cold solid/liquid/gas

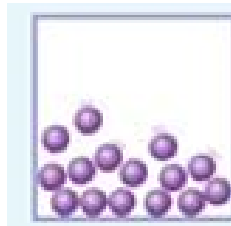












From last year

Fill in the gaps below in the definitions:

The independent variable is the thing you _____ *can*

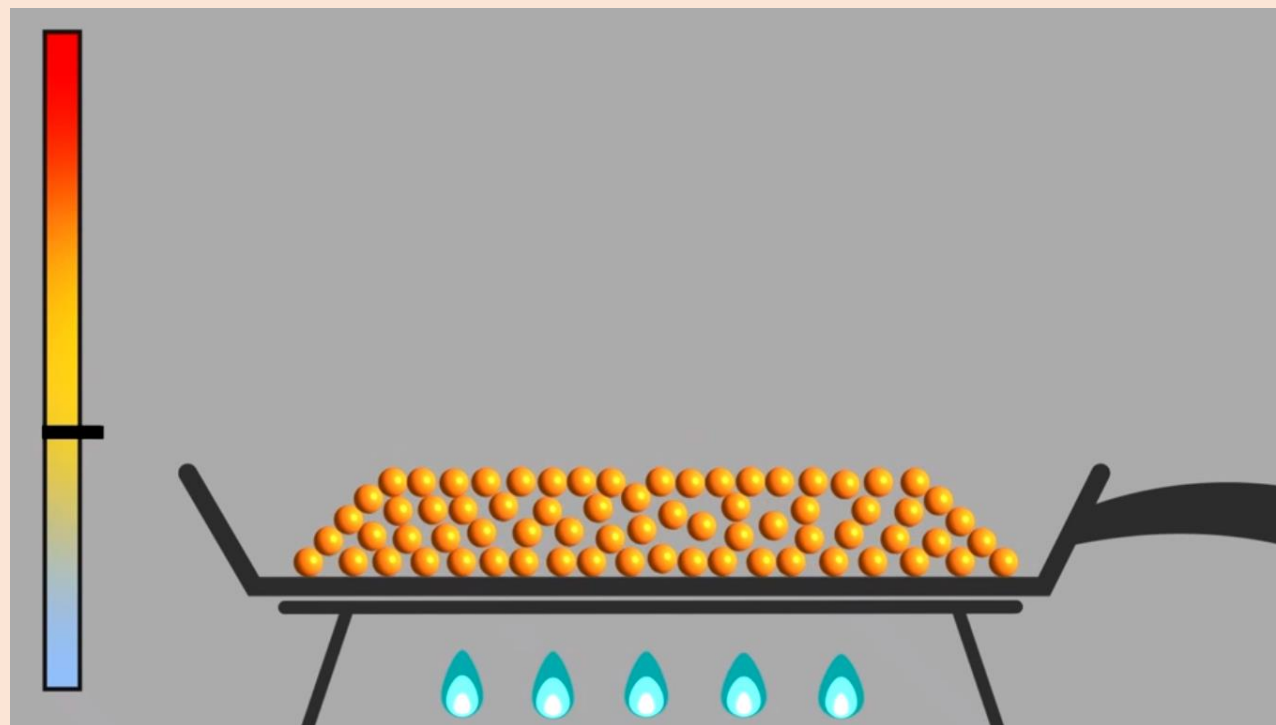
The dependent variable is the thing you _____.

What are sounds?

Sounds are _____ that spread through the air.



Watch the [video](#) and look at what happens to the particles when they change from solid to liquid to gas

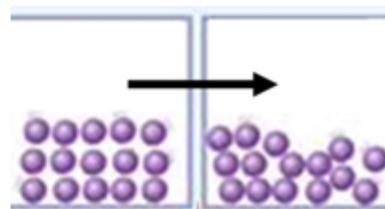




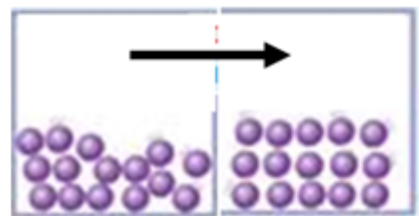
Read the following passage about changes of state

We know that particles can be arranged to make solids, liquids or gases but how do they move from one state to another?

When the particles in solids vibrate more and more as they are heated, some of their bonds start to break. This means the particles can begin to slide over each other which means they now form a liquid. This process is called melting.



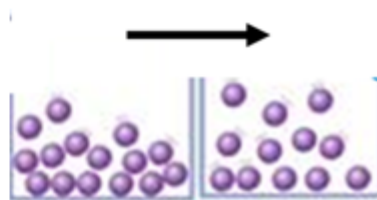
Melting



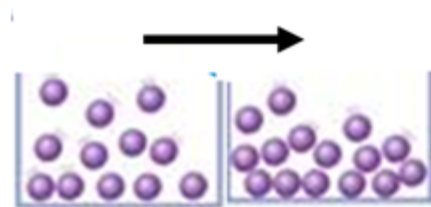
Freezing

When these particles cool and move less, they become strongly bonded again and stuck in a fixed position – they have become a solid. We call this process freezing.

When the particles in liquids move faster and faster as they are heated, the last bonds that were left start to break. This means the particles can begin to move freely and become far apart from each other. This means they now form a gas. This process is called boiling.



Boiling



Condensing

When these particles cool and move less, they become bonded to each other again and are stuck together but can still move – they have become a liquid. We call this process condensation.



Find answers to questions below in the passage above

1. What happens to the particles in a solid when they are heated strongly?

The bonds between some of the particles b_____ which means they can now s_____ o_____ each other. It has become a l_____.

2. What happens to the particles in a liquid when they cool down a lot?

The particles move more s_____ and become strongly b_____ together again. They are now in a f_____ p_____ and have become a s_____.

3. What happens to the particles in a liquid when they are heated strongly?

Any bonds that are left over between particles now b_____ which means they can now move f_____ a_____ from each other. It has become a g_____.

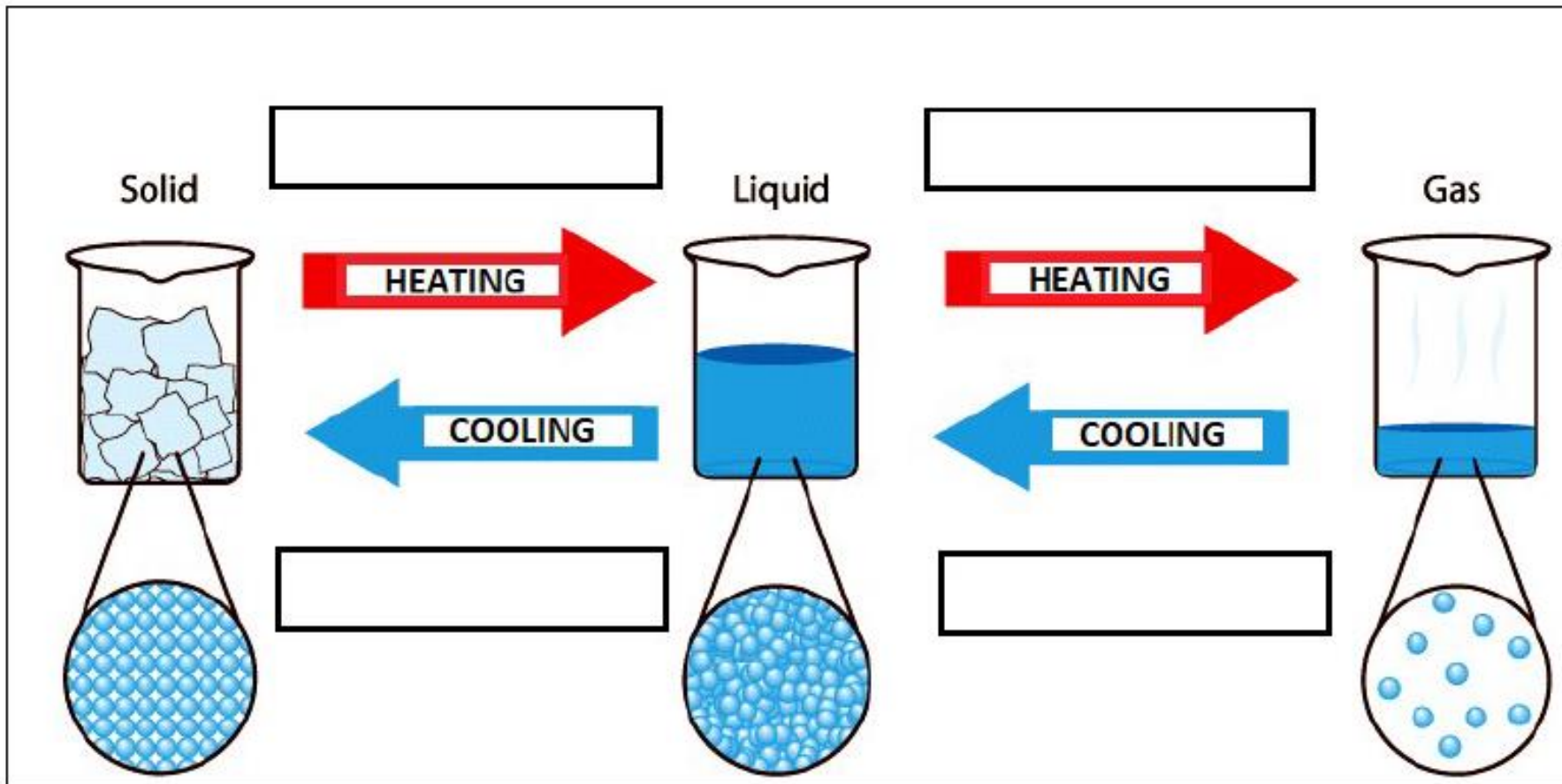
4. What happens to the particles in a gas when they cool down a lot?

As the particles move more s_____, they become b_____ together again. They are stuck together but can still s_____ p_____ each other and move so they have become a l_____.



Write the words into the correct empty box in the diagram

Freezing | Melting | Boiling | Condensing







You are going to act out particles changing from a solid to a liquid and from a liquid to a gas and back again.

Can you act out:

1. A cold solid to a hot solid?
2. A cold liquid to a hot liquid?
3. Show particles in a solid become a liquid and then changing from liquid back to solid?
4. Show particles in a liquid become a gas and then changing from gas back to liquid?
5. Show particles in a solid change to liquid, then gas and back to liquid and back to a solid?
6. Show the change in state your teacher calls out.





Write down the change of state that is present in each example below and explain your choice

Example	Which change of state?	Why?
<p data-bbox="466 382 970 461">When water forms on a mirror that you breath on</p> 		
<p data-bbox="466 832 945 911">The steam produced from a kettle</p> 		



Write down the change of state that is present in each example below and explain your choice

Example	Which change of state?	Why?
<p>Rain turns into snow</p> 		
<p>When a puddle turns to ice in cold weather</p> 		



Write down extra examples of each change of state below:

Melting	- _____ - _____
Freezing	- _____ - _____
Boiling	- _____ - _____
Condensing	- _____ - _____

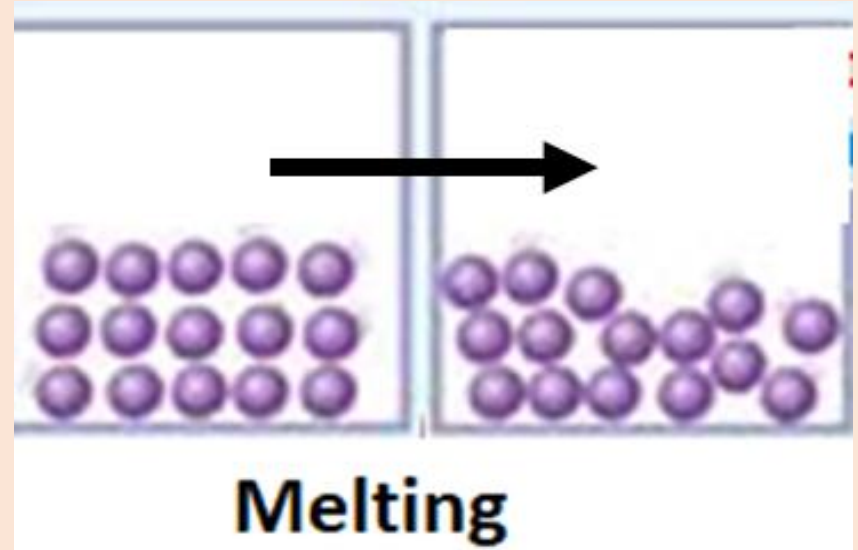


What happens to the particles in chocolate if you hold on to it for too long?





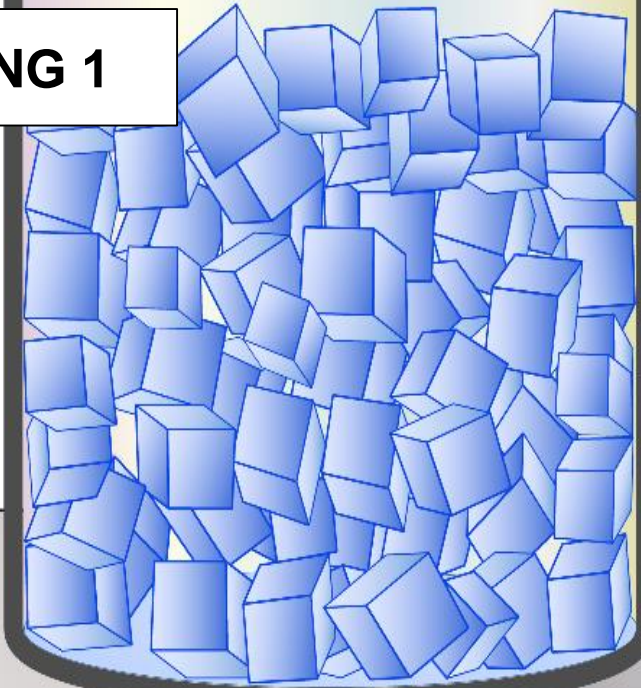
What happens to the particles in chocolate if you hold on to it for too long?



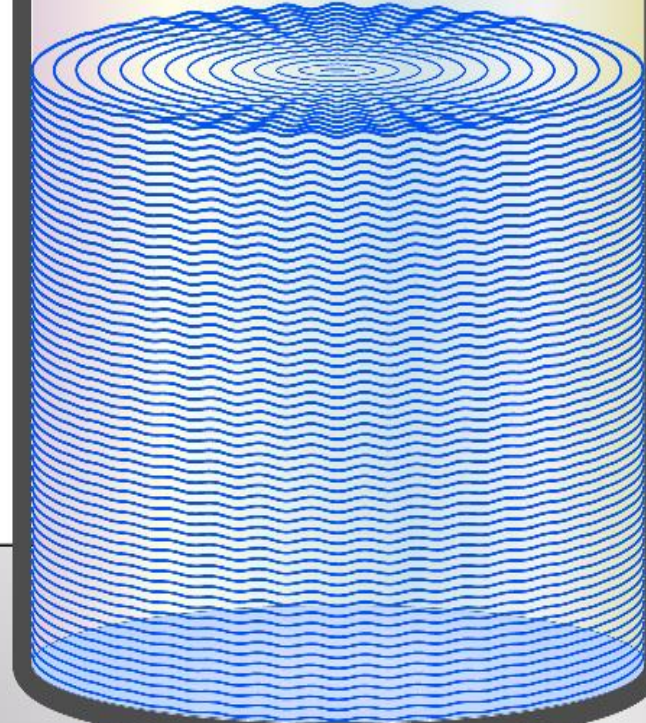
Phases of Matter

YEAR FOUR

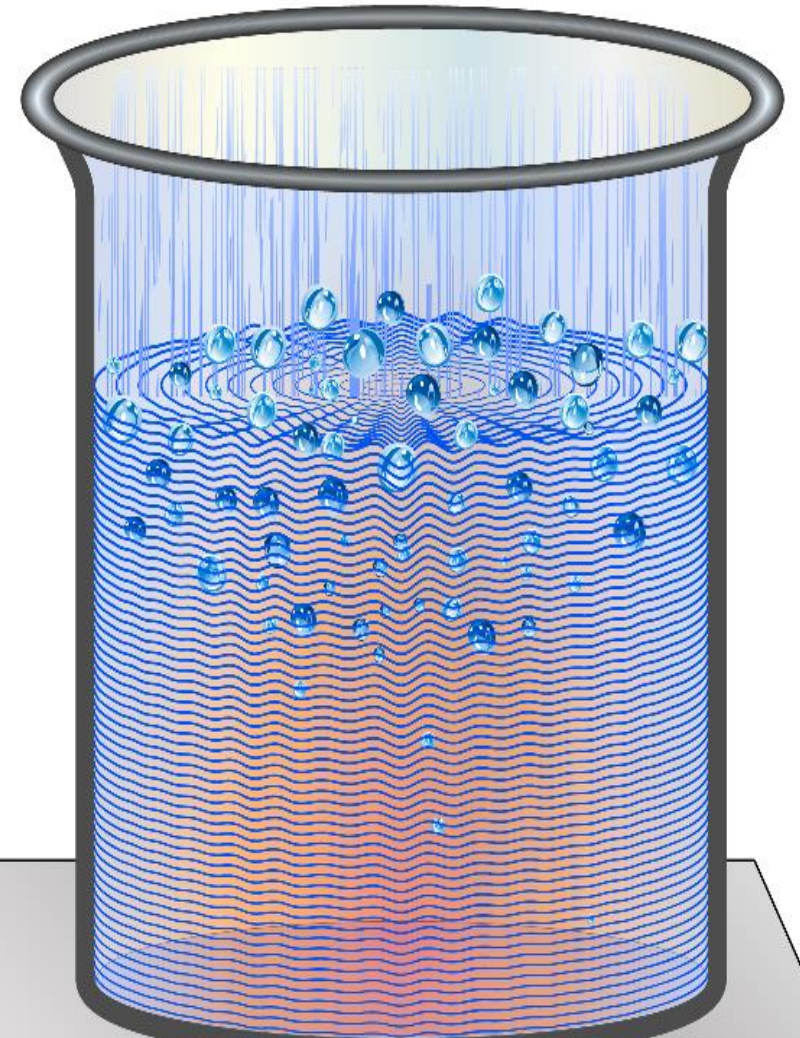
SPRING 1



Ice



Water



Water vapour