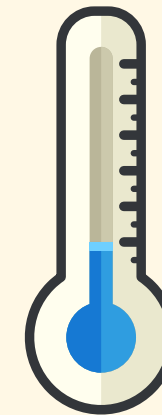
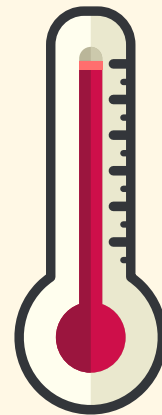


WELCOME TO GRADE 7 SCIENCE!

TERM 1 WEEK 3



ACTIVITY 2: THE WHAT & THE WHERE



Review your Analysis (Questions 1-4). You have 3 minutes!

**Q1: What SIMILARITIES
did you observe?**

**Q2: What DIFFERENCES
did you observe?**

Q3: Fastest spread?

Q4: Slowest spread?

ANSWER KEY!

A1 (Similarities): The dye spread in ALL containers without stirring! (Proof that particles move!)

A2 (Differences): The dye spread at DIFFERENT RATES.

**A3 (Fastest): HOT WATER.
HOT WATER.**

**A4 (Slowest):
COLD WATER.**

ACTIVITY 3: C.E.R. CHALLENGE



Let's build your final Conclusion. You have 3 minutes!

REASONING: This happened because particles in warmer water _____.

EVIDENCE: Based on our observation, the dye _____.

CLAIM: The dye spread fastest in _____ water.

ANSWER **KEY**: THE CONCLUSION

REASONING: This happened because increasing temperature gives particles **MORE ENERGY**, making them **MOVE FASTER**. Faster particles spread the dye faster!



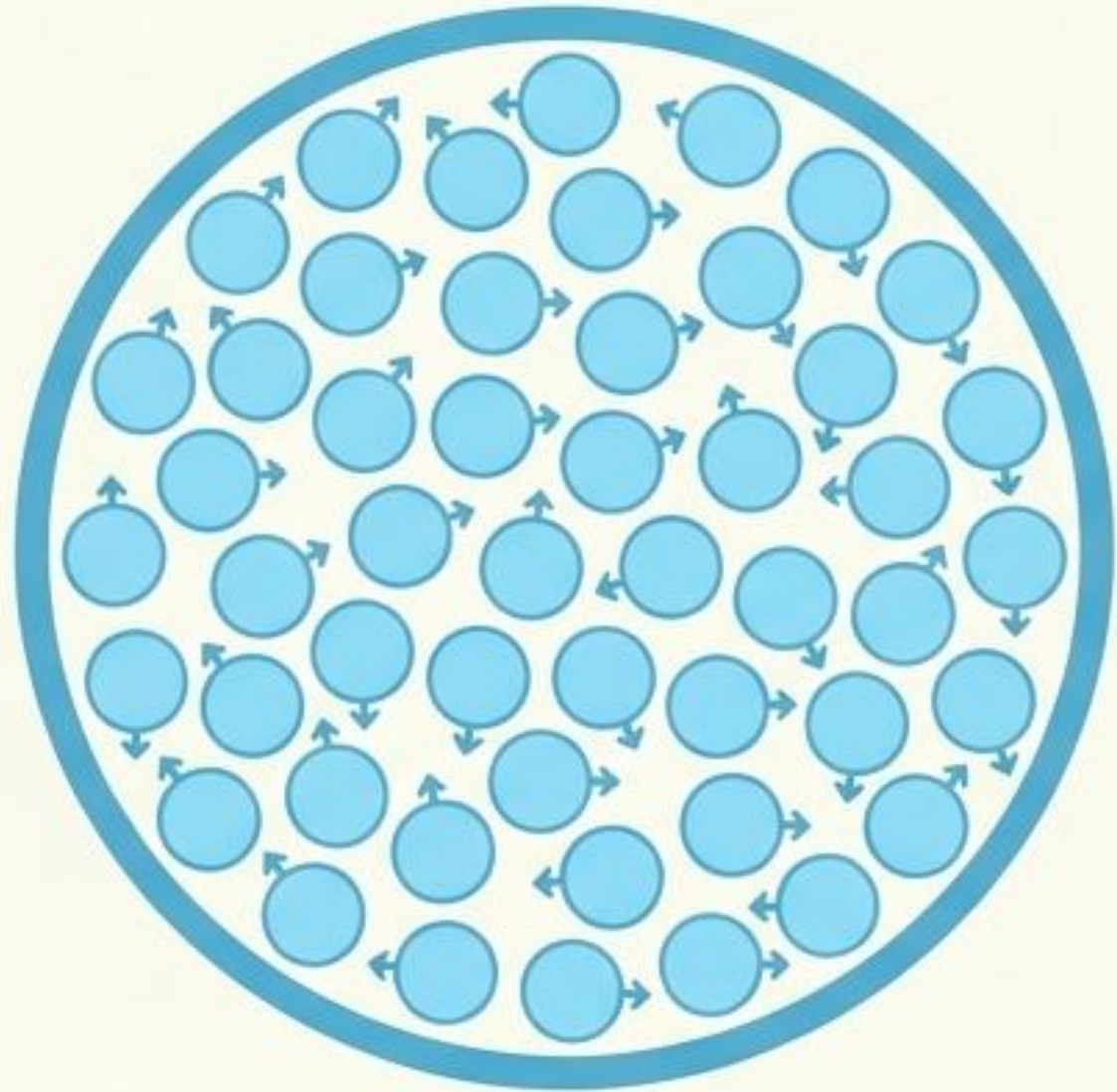
EVIDENCE: Based on our observation, the dye spread widely, showed visible streaks, and mixed evenly first.



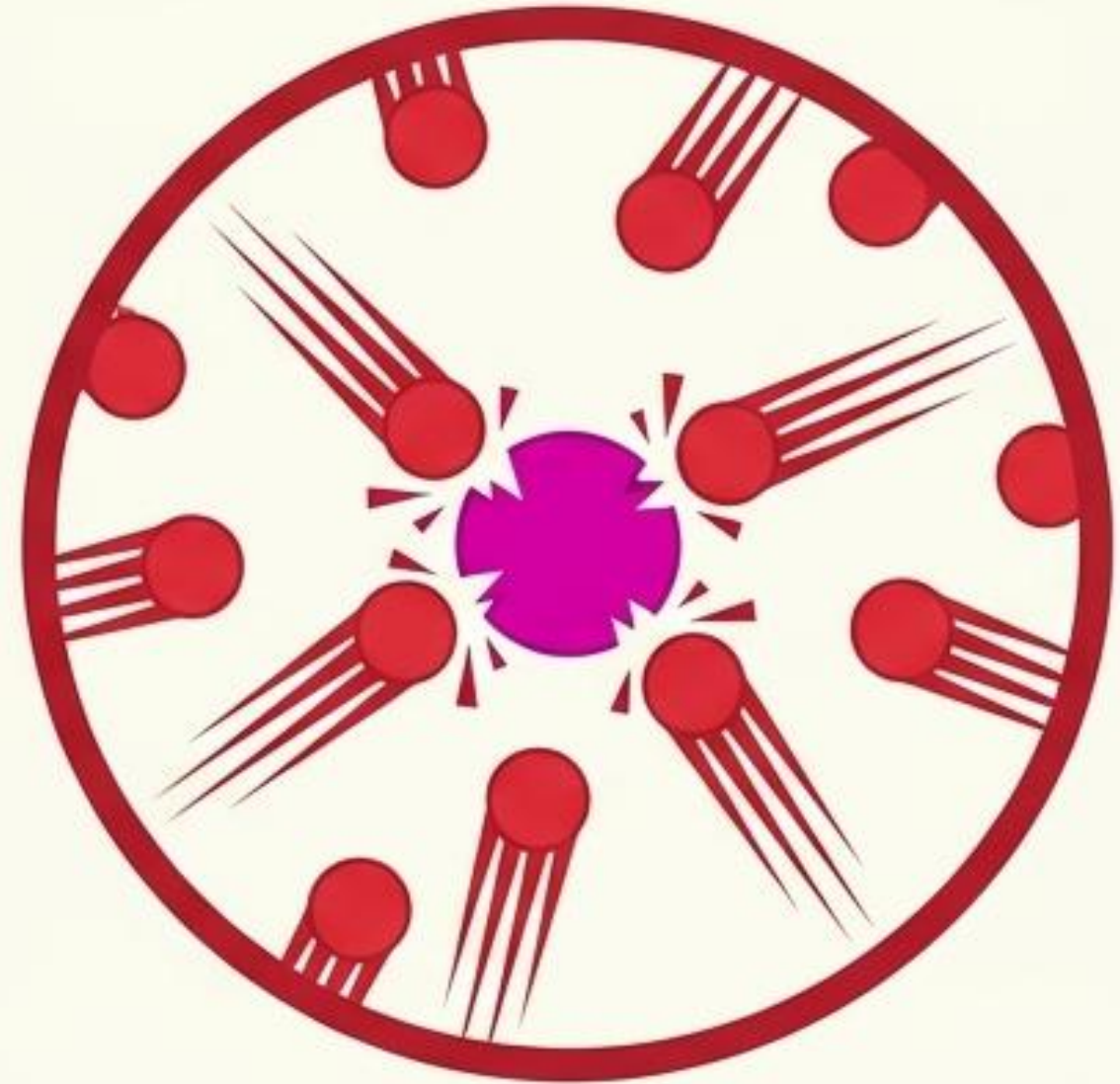
CLAIM: The dye spread fastest in **HOT** water.



WHY? THE PARTICLE MODEL OF MATTER



COLD = LOW ENERGY.
Particles move **SLOWLY**.
(Diffusion is slow).



HOT = HIGH ENERGY.
Particles move **FAST**. They crash
into the dye and spread it quickly!
(Diffusion is fast).

QUIZ ANSWERS! Check your work.



They move FASTER.



COLD water.



FALSE (It spreads, just very slowly).



The Particle Model of Matter.



**Hot water particles have MORE ENERGY,
so they move faster and collide with the dye.**



MISSION ACCOMPLISHED!

HEAT = ENERGY = FASTER PARTICLES!

TRY THIS AT HOME: Look around your house today. Can you spot another example of diffusion?

(Hint: Think about cooking, making tea, or spraying perfume!)

Please submit your Lab Sheets and Quiz Papers on your way out!

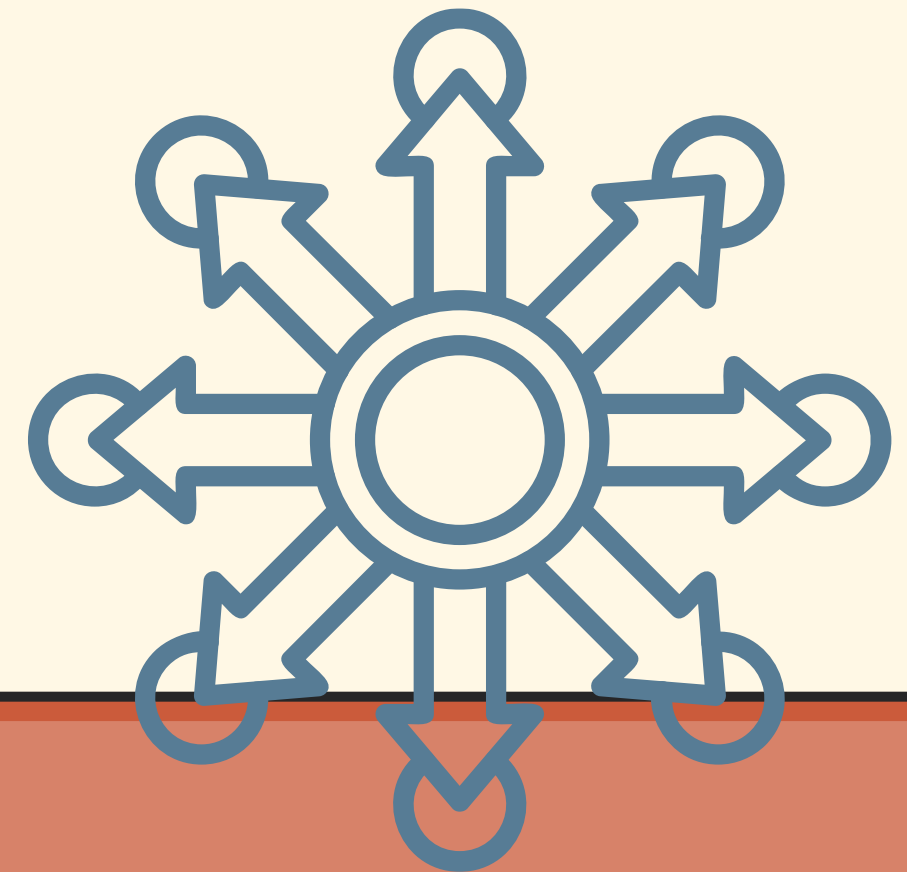
TEMPERATURE

1. When you measure how hot or cold something is, you are measuring its

-----•

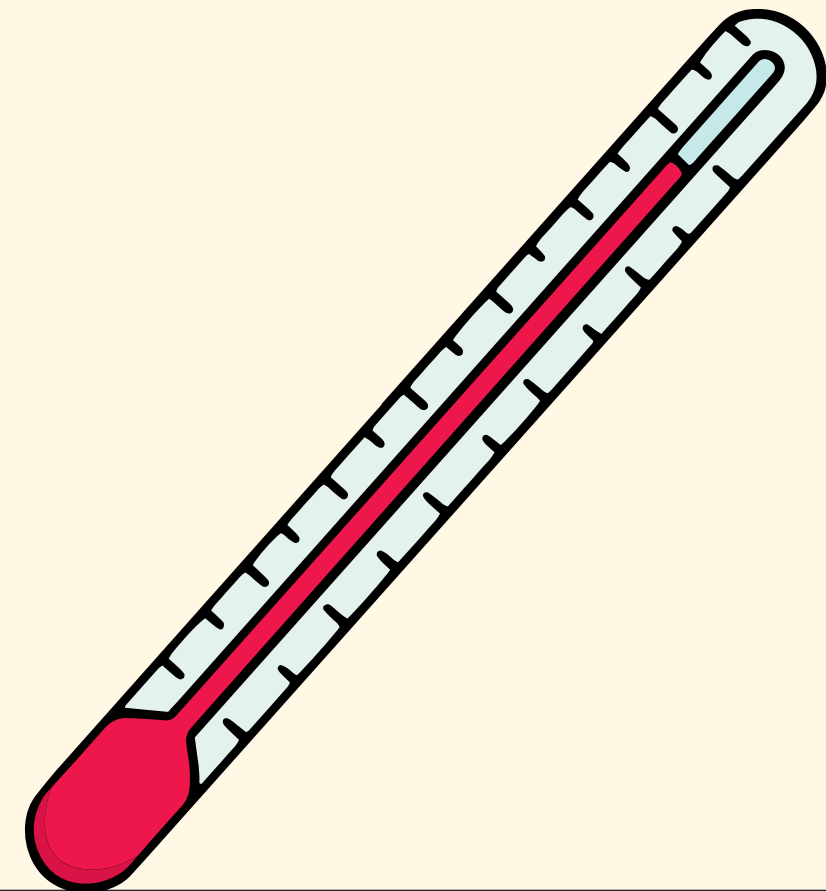
DIFFUSION

2. The process by which particles spread from an area of high concentration to an area of low concentration is called -----.

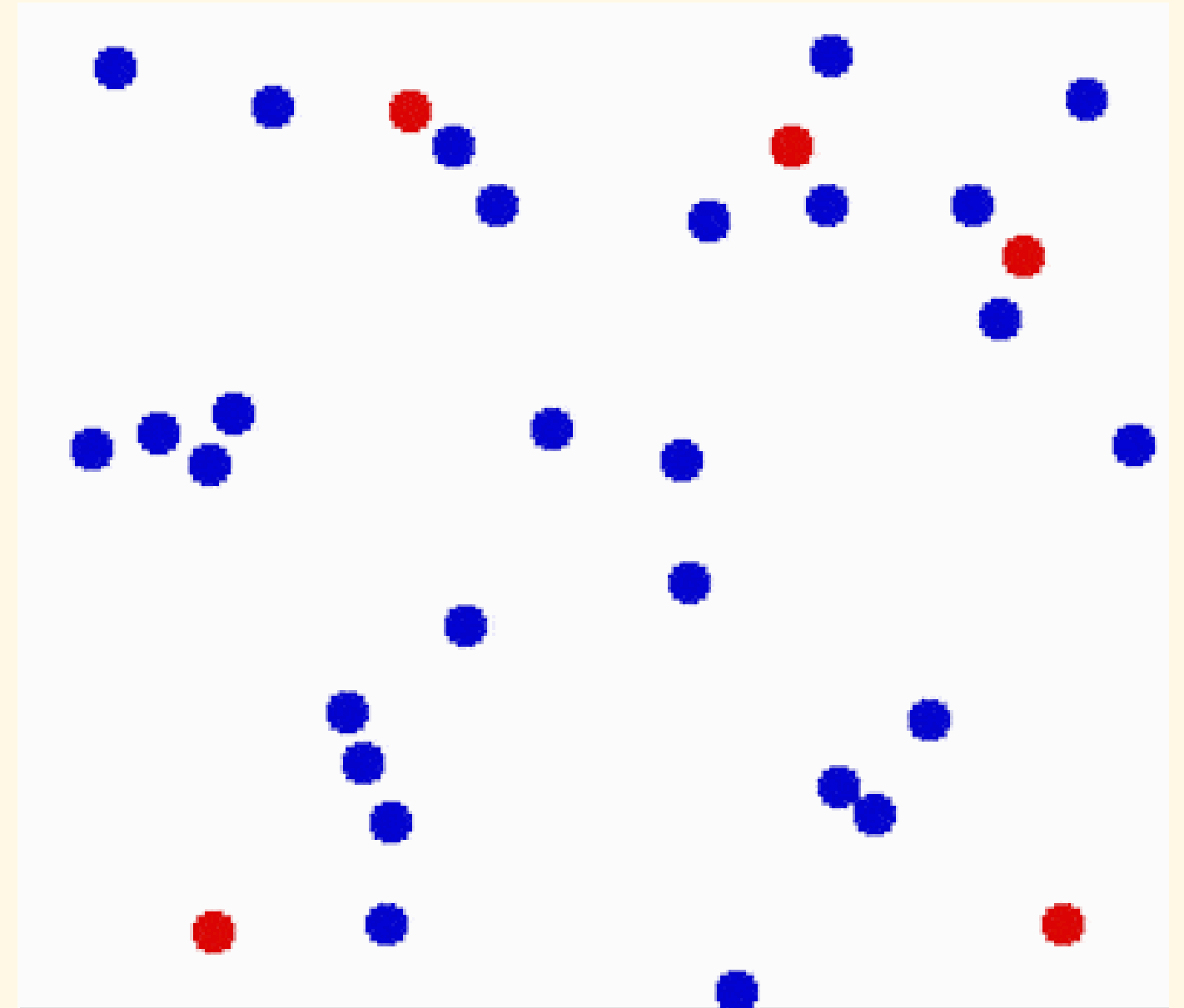


THERMOMETER

A _____ is an instrument used to measure temperature.

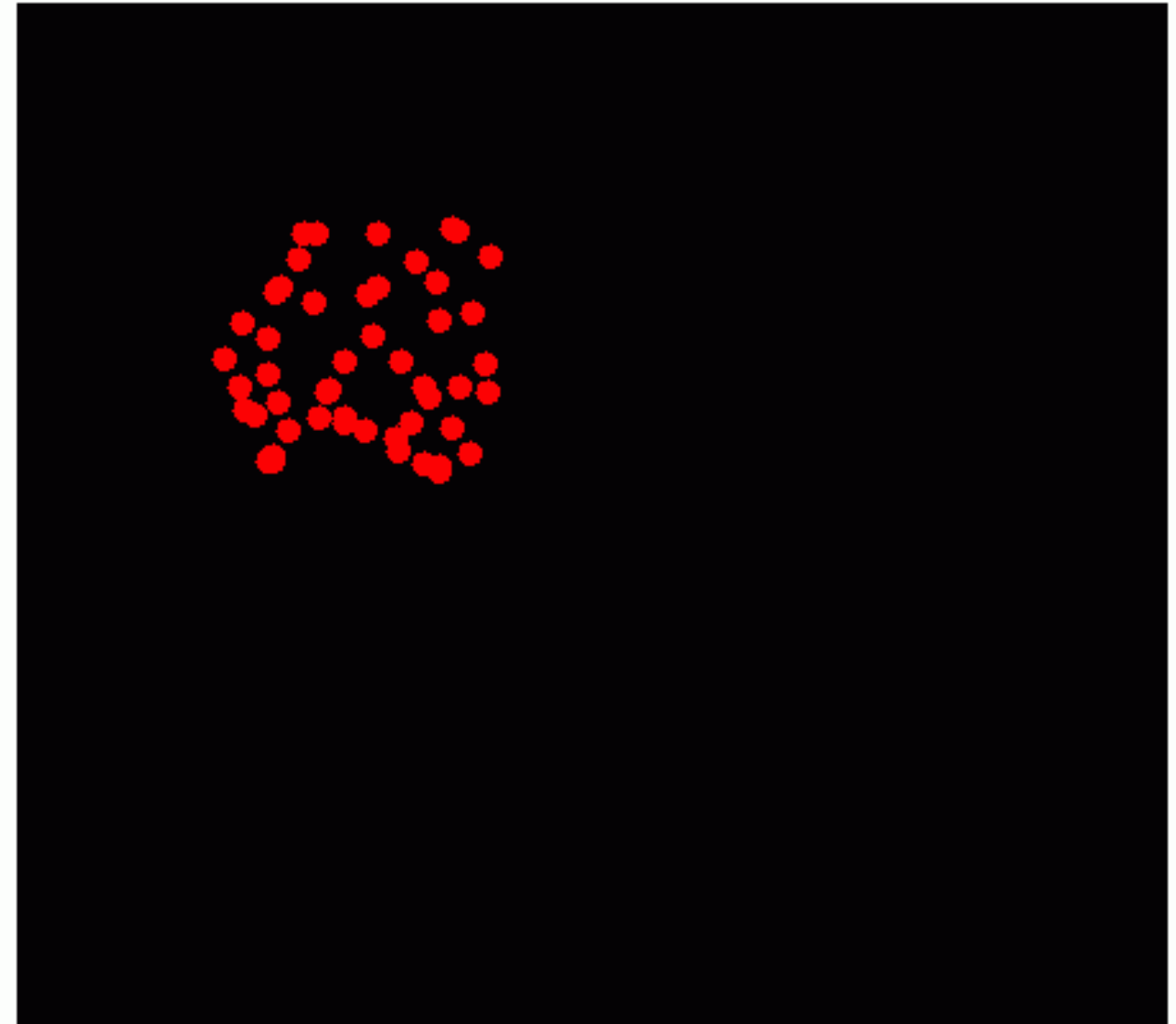


**Particles move
randomly and collide
with each other,
continuing to move in a
different direction.**



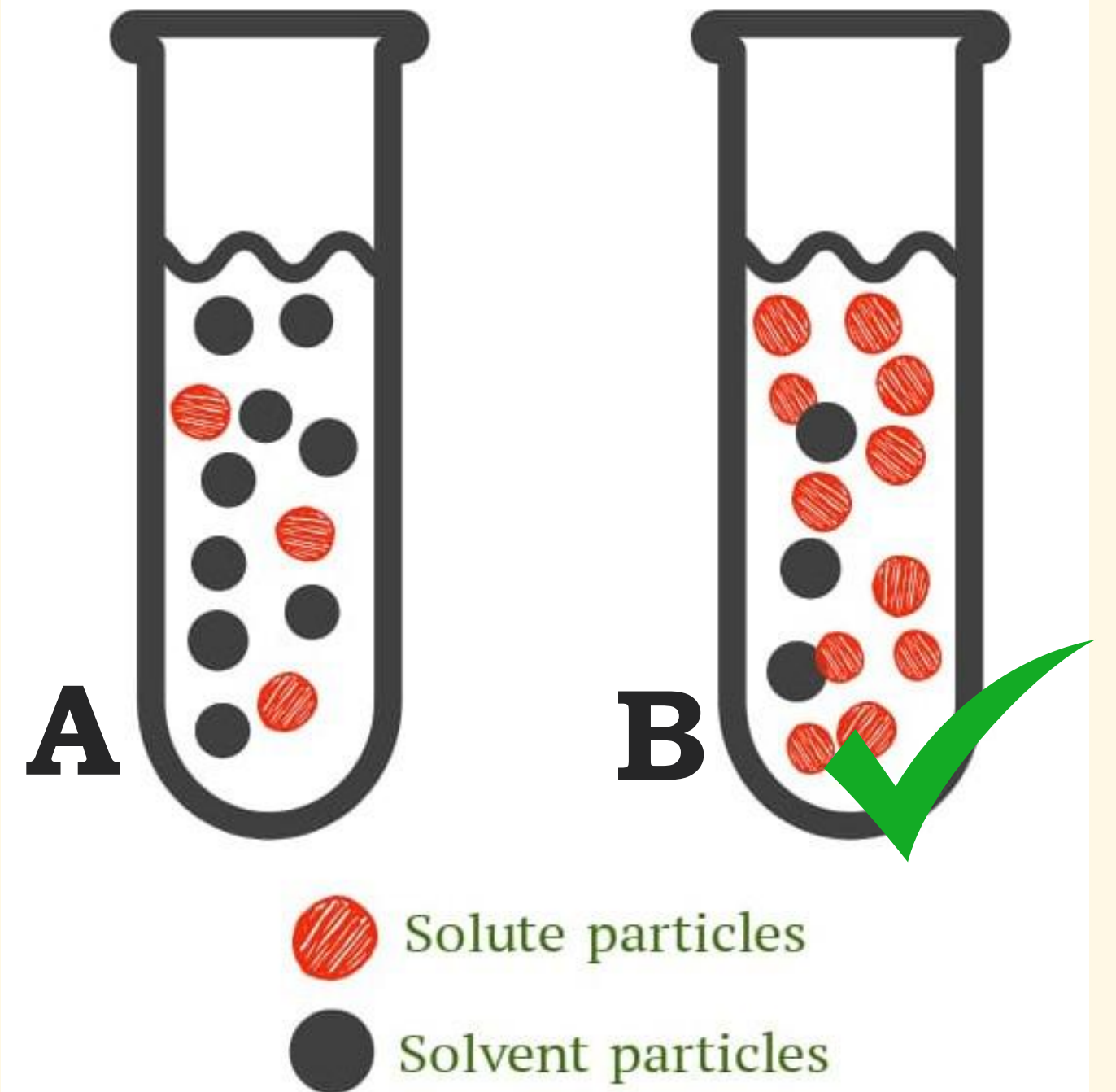
DIFFUSION

The process by which particles spread from an area of high concentration to an area of low concentration.



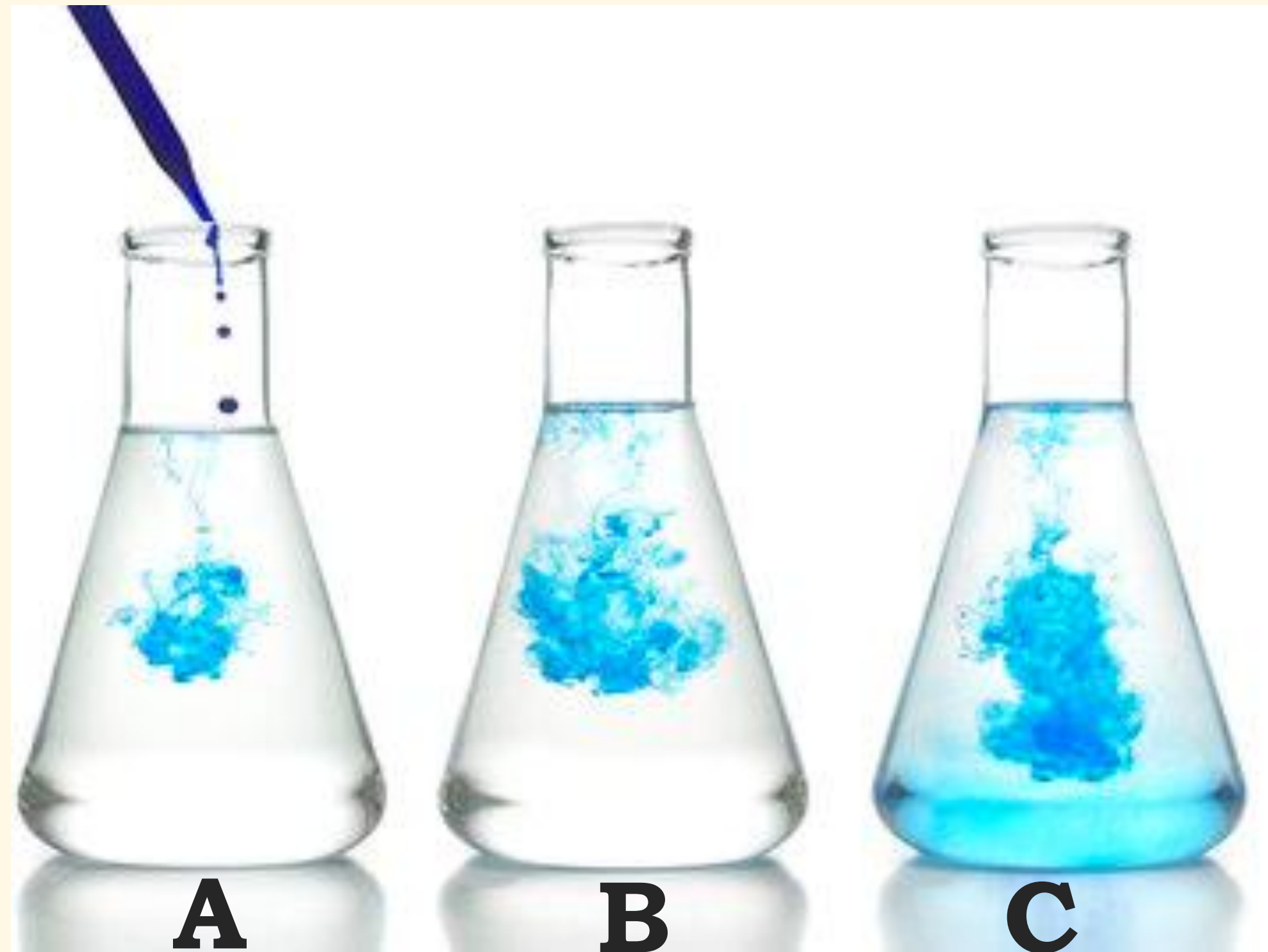
Concentration - amount of a substance (solute) present in a certain volume of solution or mixture.

Which one has a higher concentration?



OBSERVE

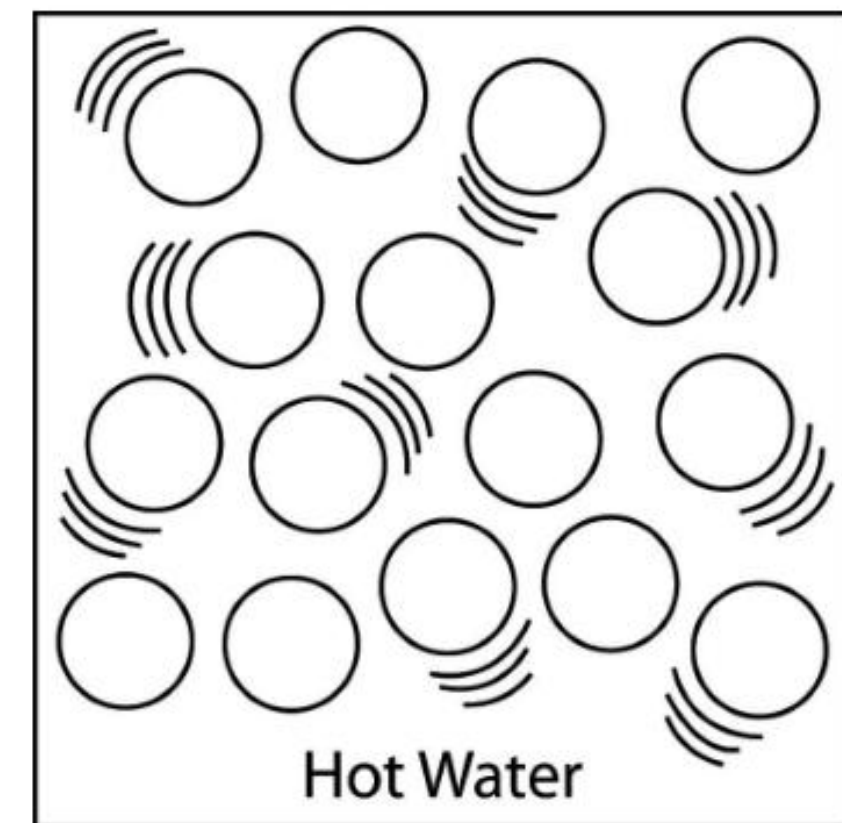
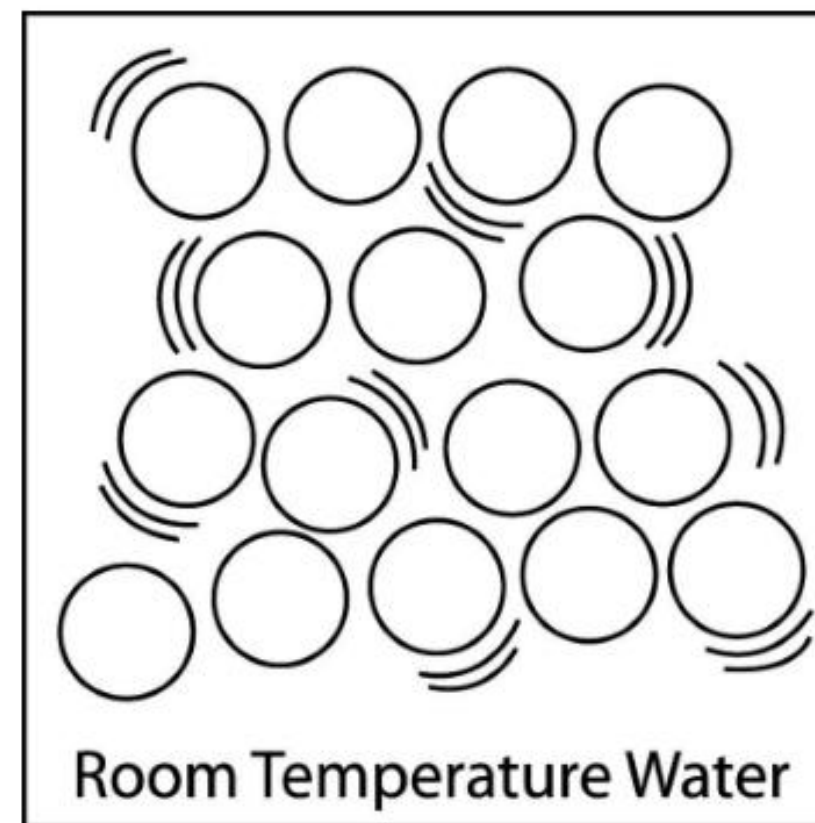
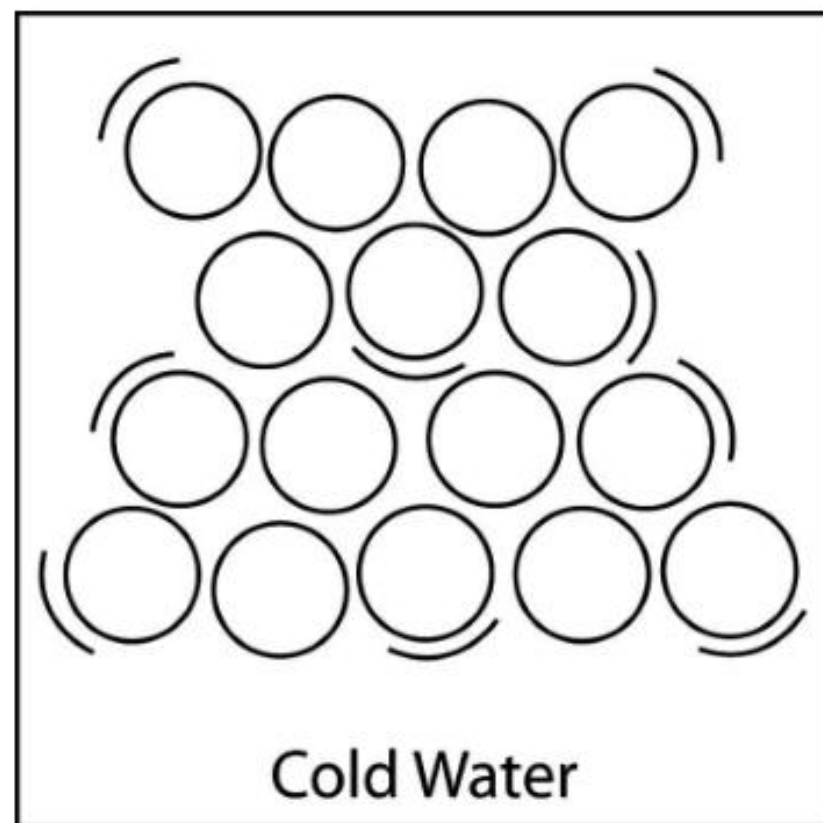
1. What similarities and differences did you observe when a drop of dye was added to each container?
2. Which do you think is the coldest? Hottest?
3. In which container did the dye scatter the fastest? In which did it scatter the slowest?
4. How do you relate the temperature of the water to the rate of diffusion of the dye?



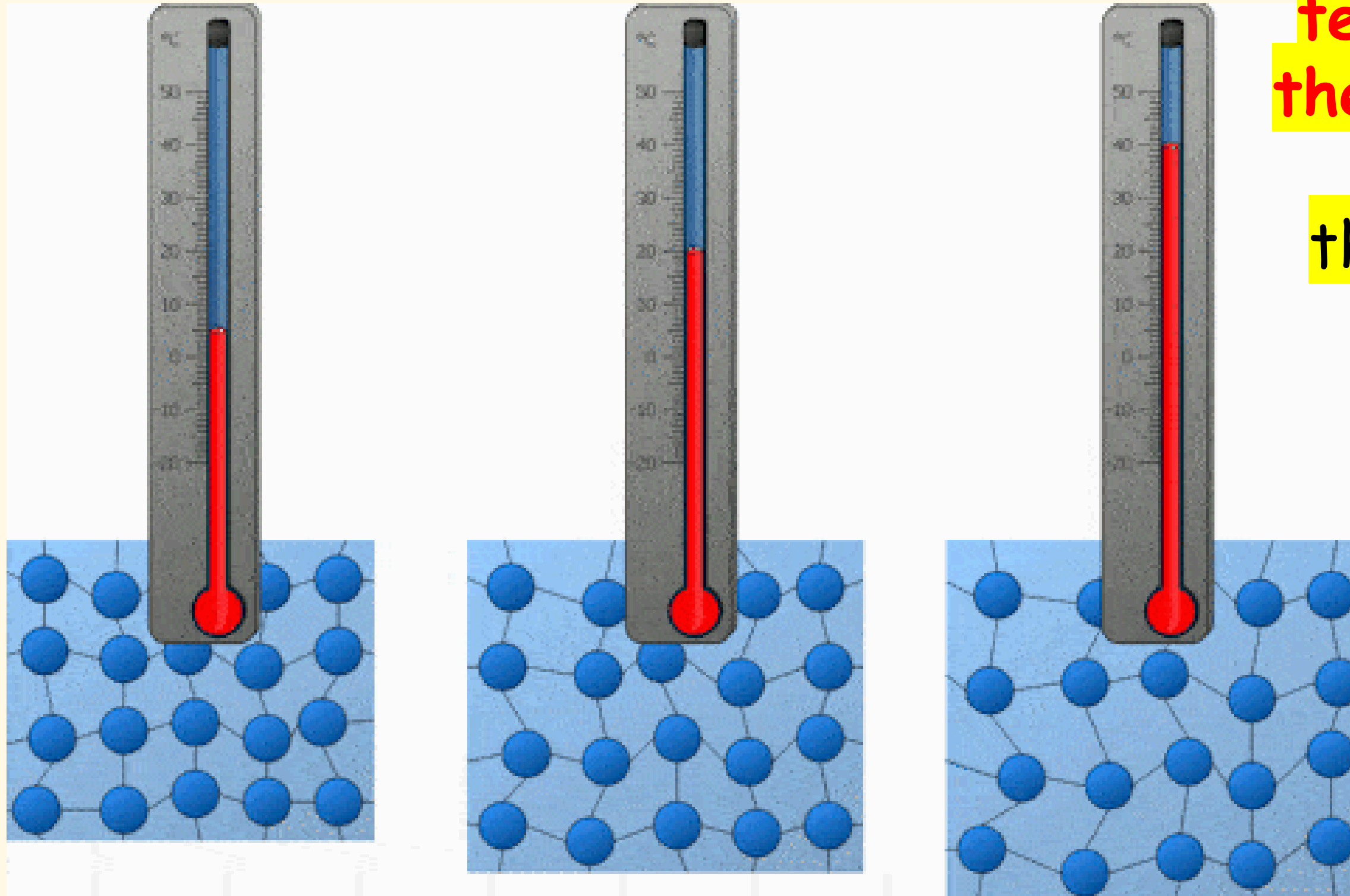
MOLECULAR MODELS

Water Molecules at Different Temperatures

- The circles represent water molecules.
- The molecules are randomly arranged.
- They interact with each other because of their attractions.
- The motion lines show that they are moving.



OBSERVE



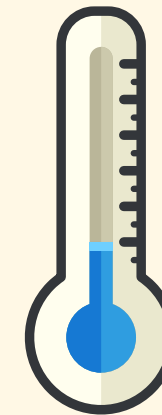
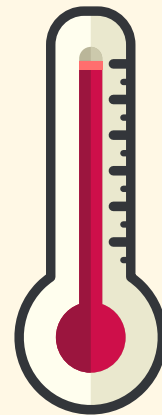
The higher the temperature, the higher the kinetic energy of the particles. Particles therefore move faster.

Diffusion happens faster at higher temperatures.

T1 WEEK 3

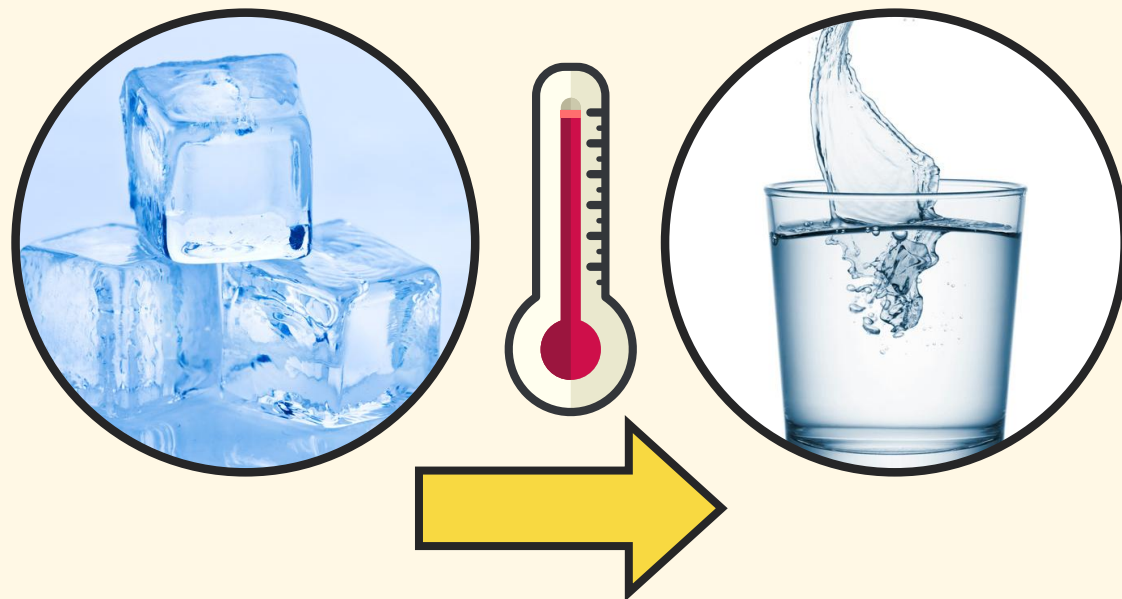
PHASE CHANGES

Ms. Pia Catanauan

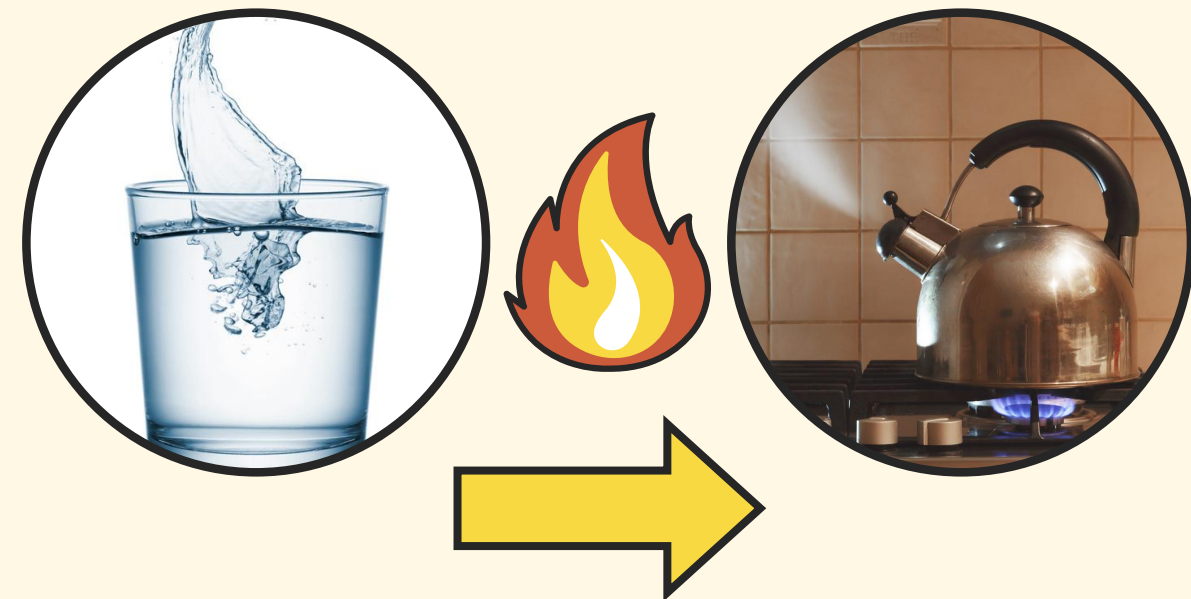


PHASE CHANGES IN MATTER

Phase change in matter is the process by which matter changes from one PHYSICAL state or phase to another.



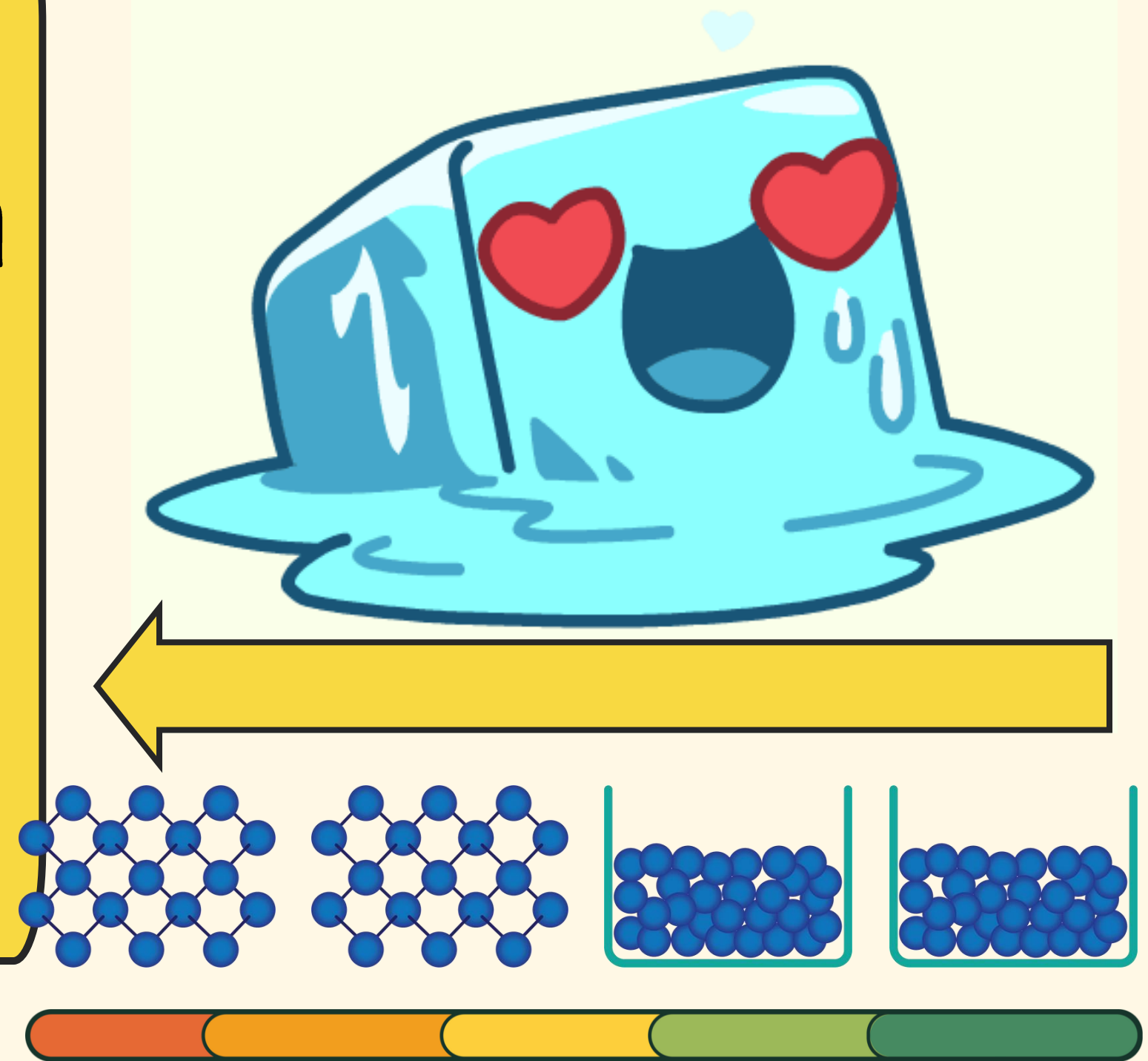
For example, from solid to liquid



Another example, from liquid to gas

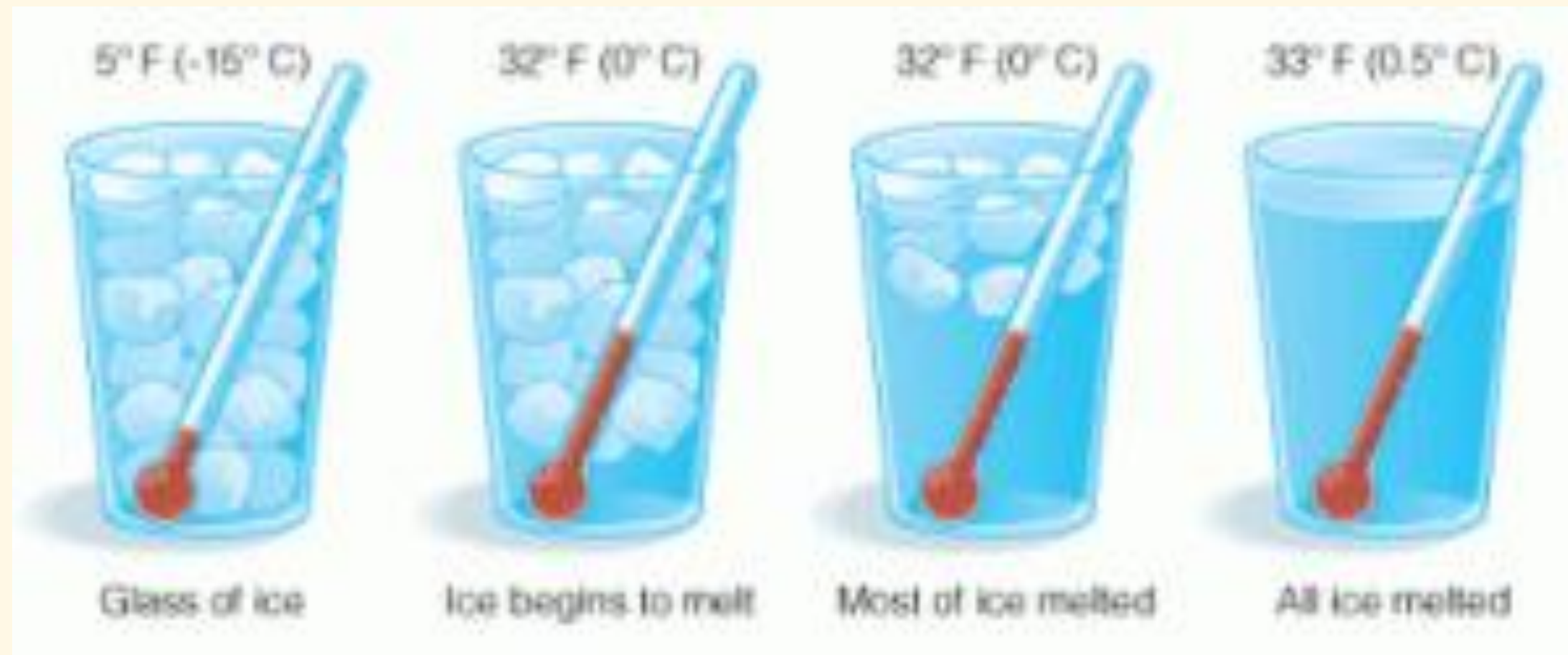
Increase in Heat Energy

Melting - The process in which a solid changes into a liquid due to heat. This occurs when a substance reaches its melting point.



Melting point - temperature at which it changes from a solid to a liquid.

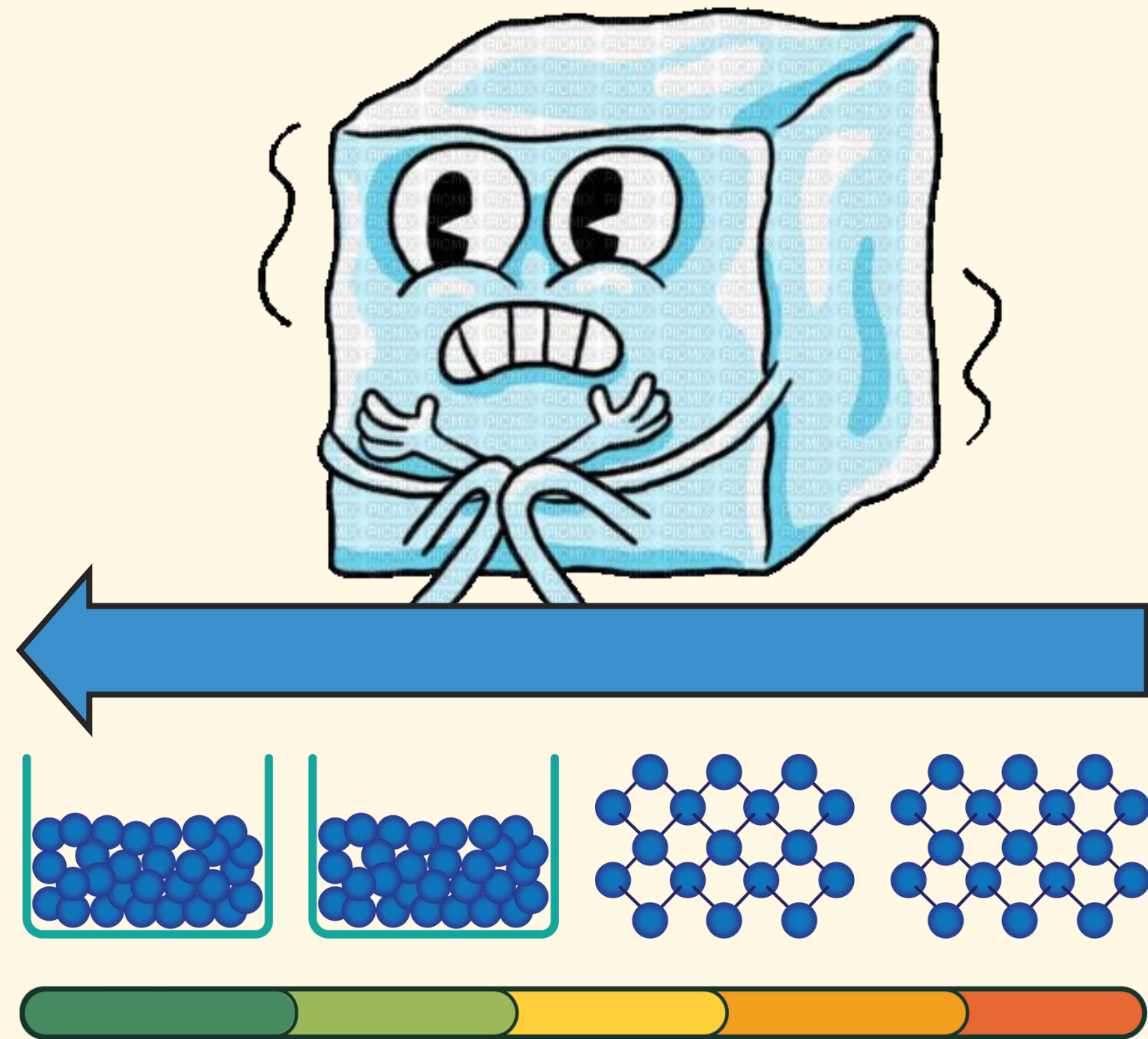
Ex: The melting point of **ice (solid water)** is **0°C**.
At this temperature, ice turns into liquid water.



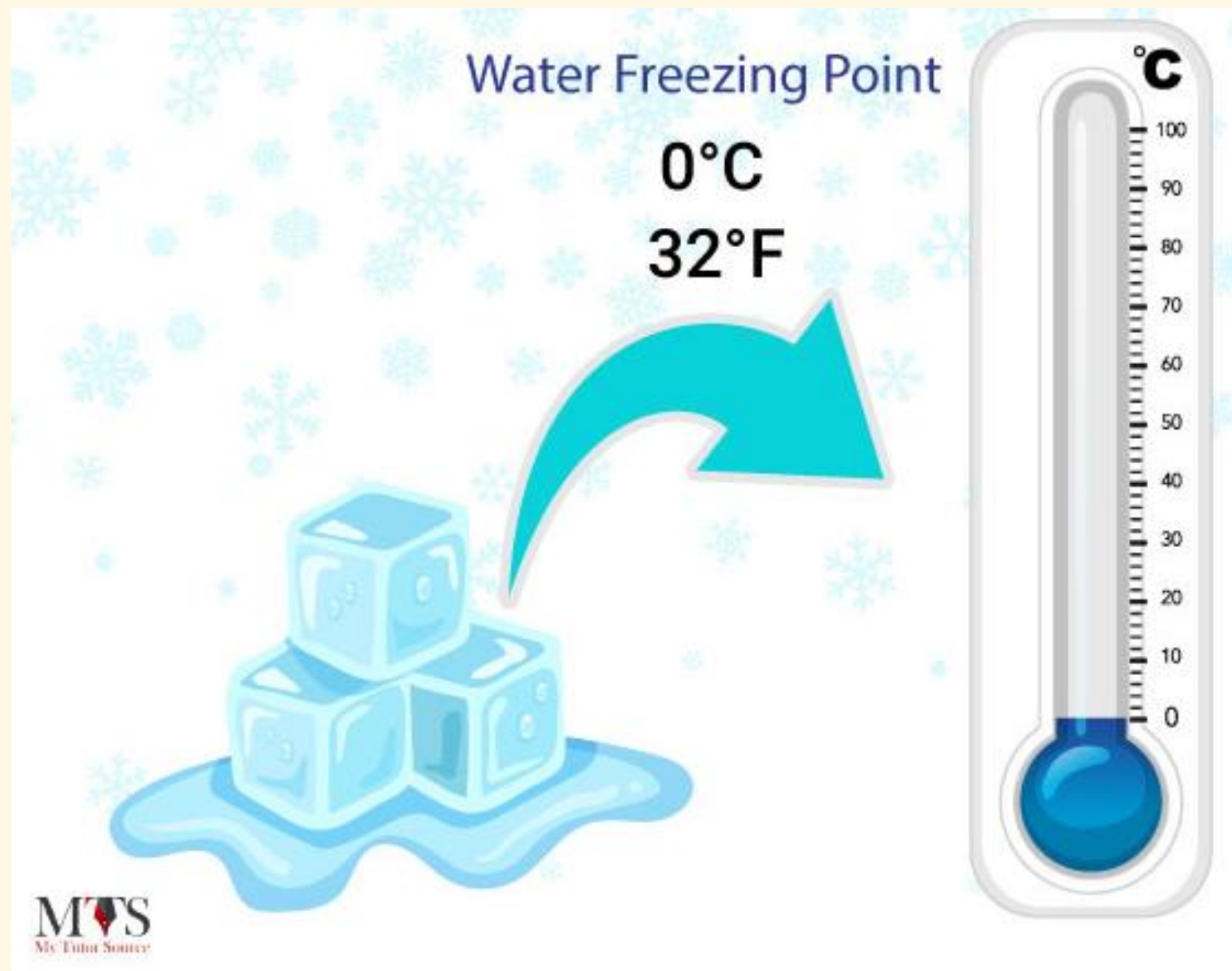
Ex: When an ice cream melts when left out in a warm room. The heat causes the ice cream to absorb energy, causing the molecules to vibrate and transition into a liquid state.



Decrease in Heat Energy



Freezing - The process in which a **liquid changes into a solid** due to the **removal of heat**. This happens when a substance reaches its **freezing point**.

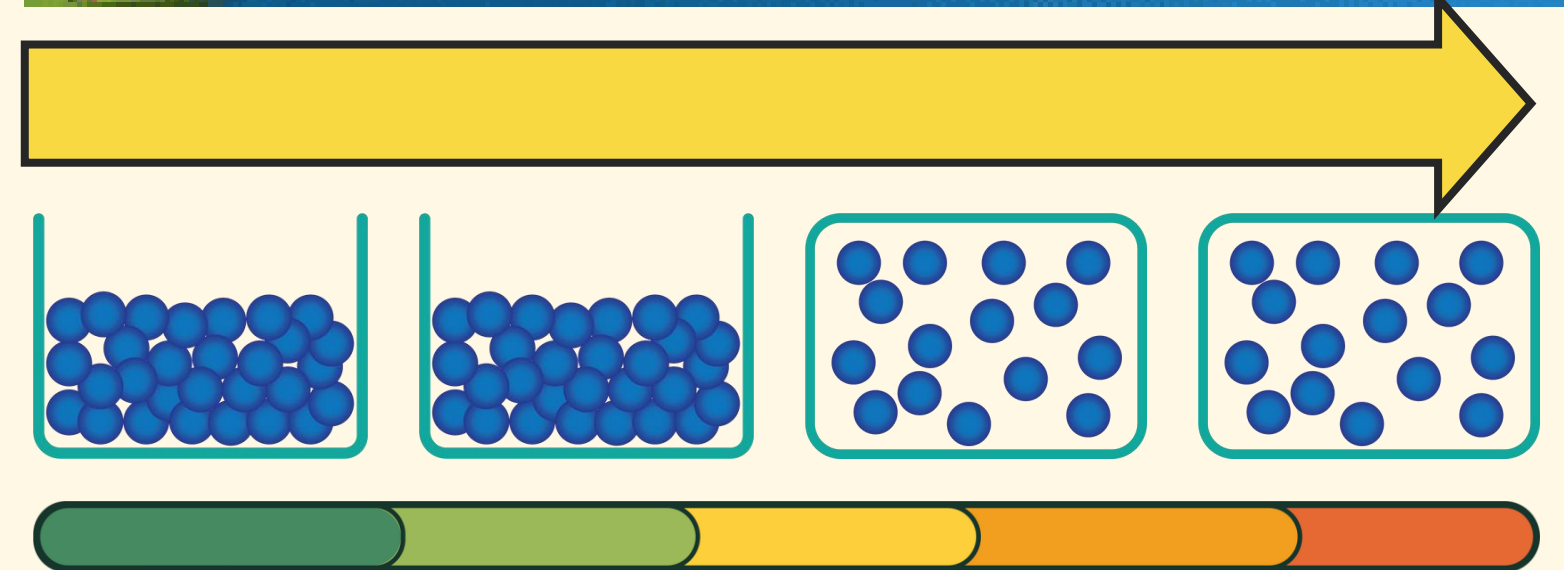
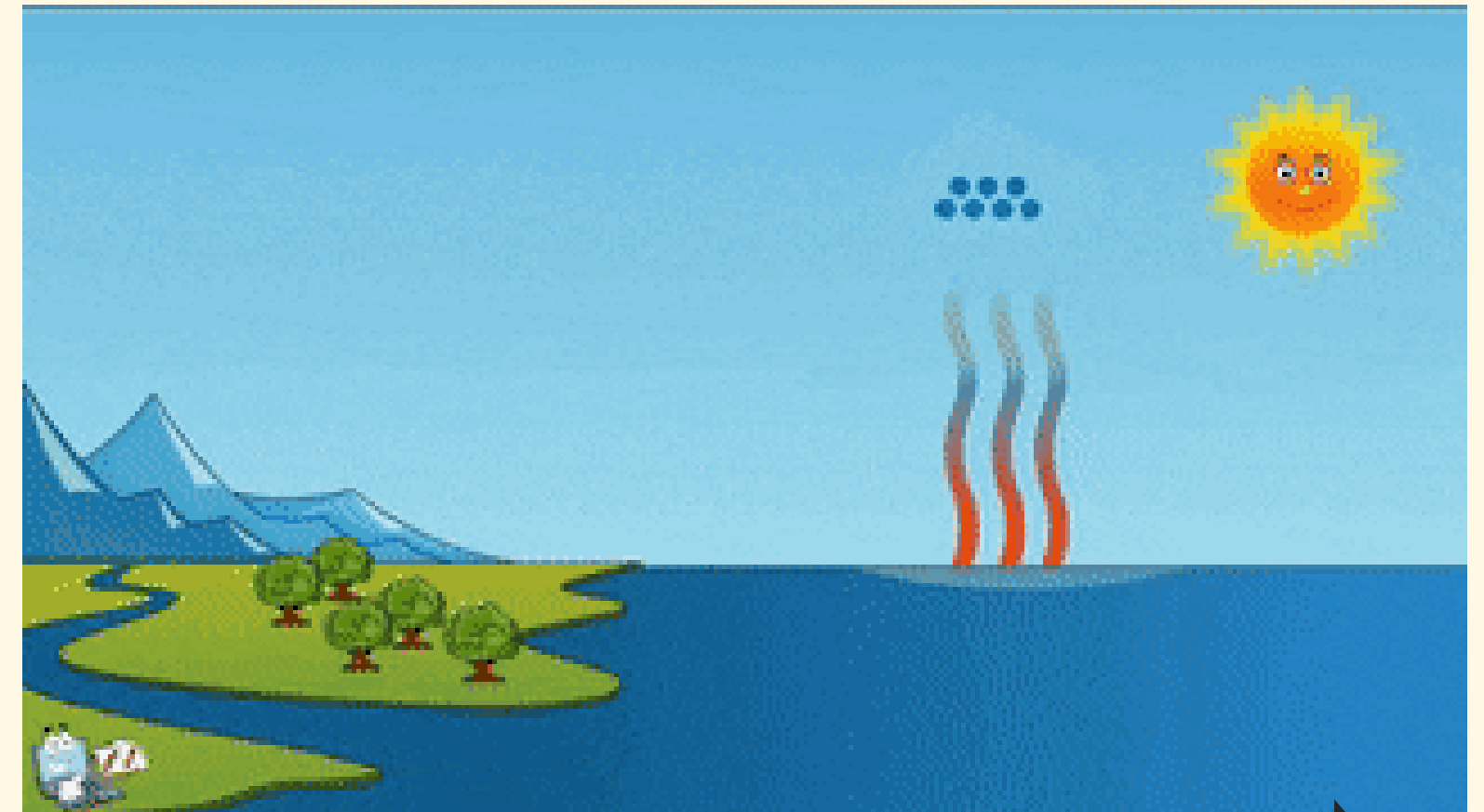


Freezing point -
temperature at which a
liquid turns into a solid.

Ex: The freezing point of
water is 0°C.

Evaporation - process
in which a liquid
changes into a gas
when molecules at the
surface of the liquid
gain enough energy to
break free.

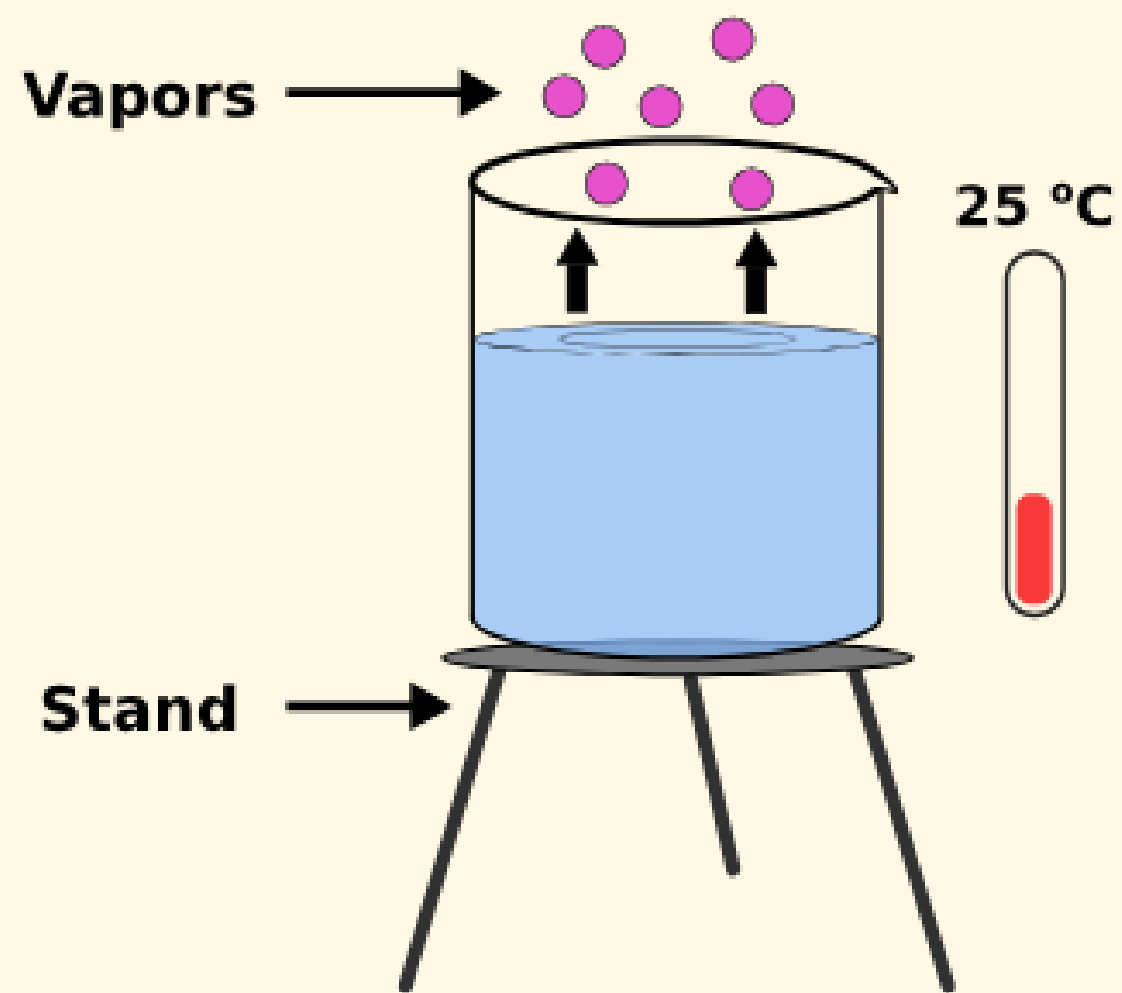
Increase in Heat Energy



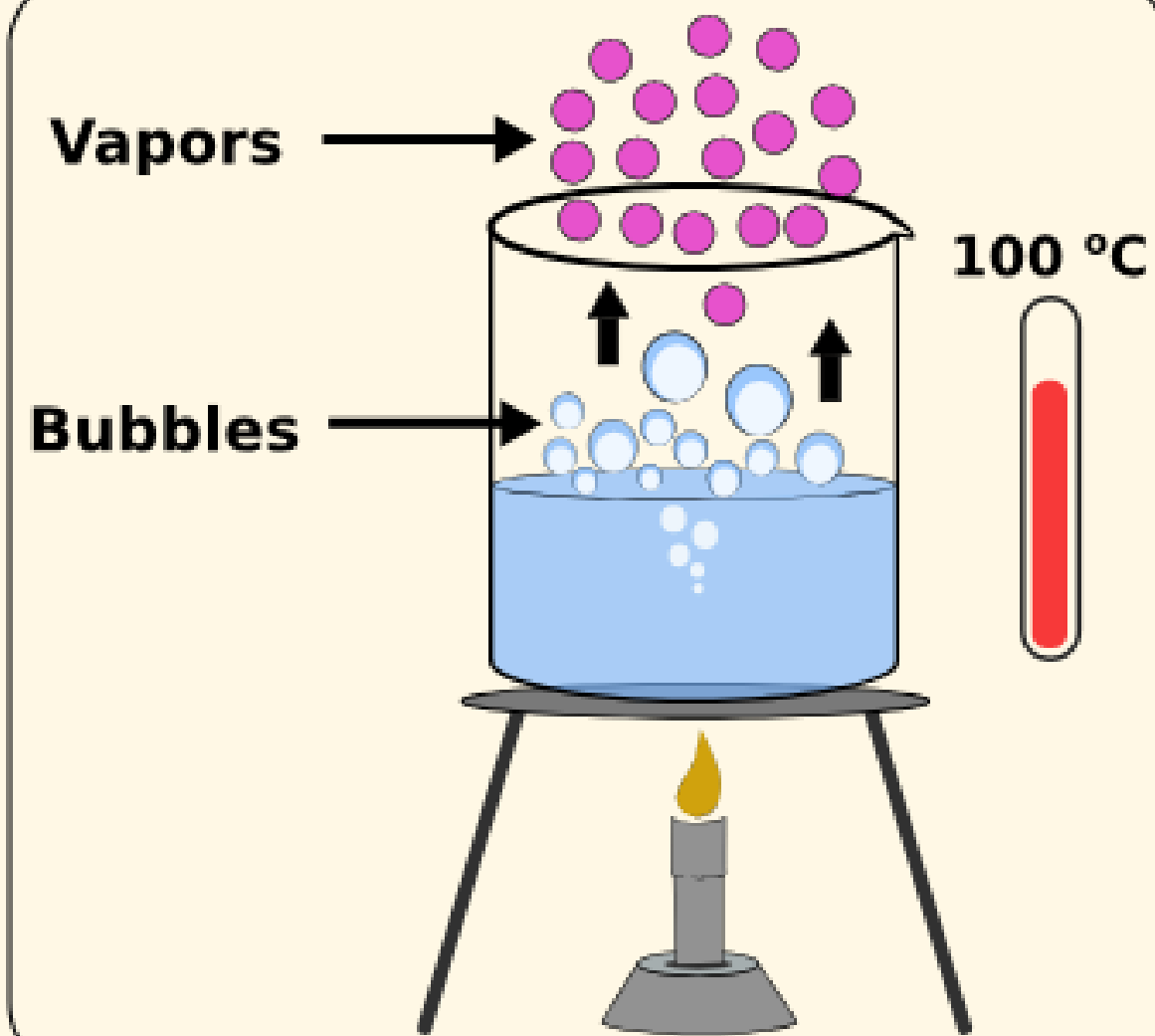
**How does
evaporation differ
from boiling?**

VAPORIZATION

Evaporation



Boiling

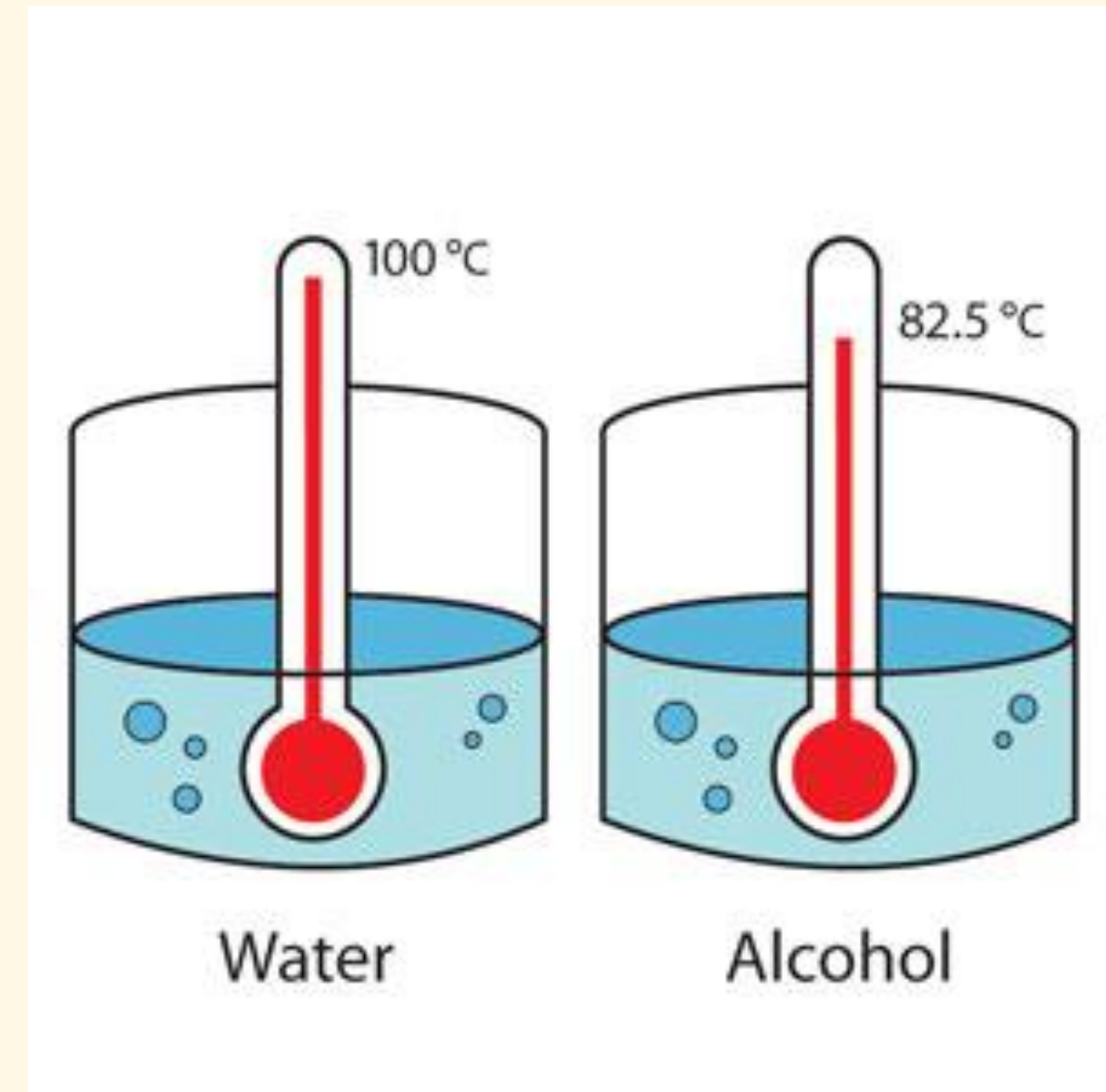
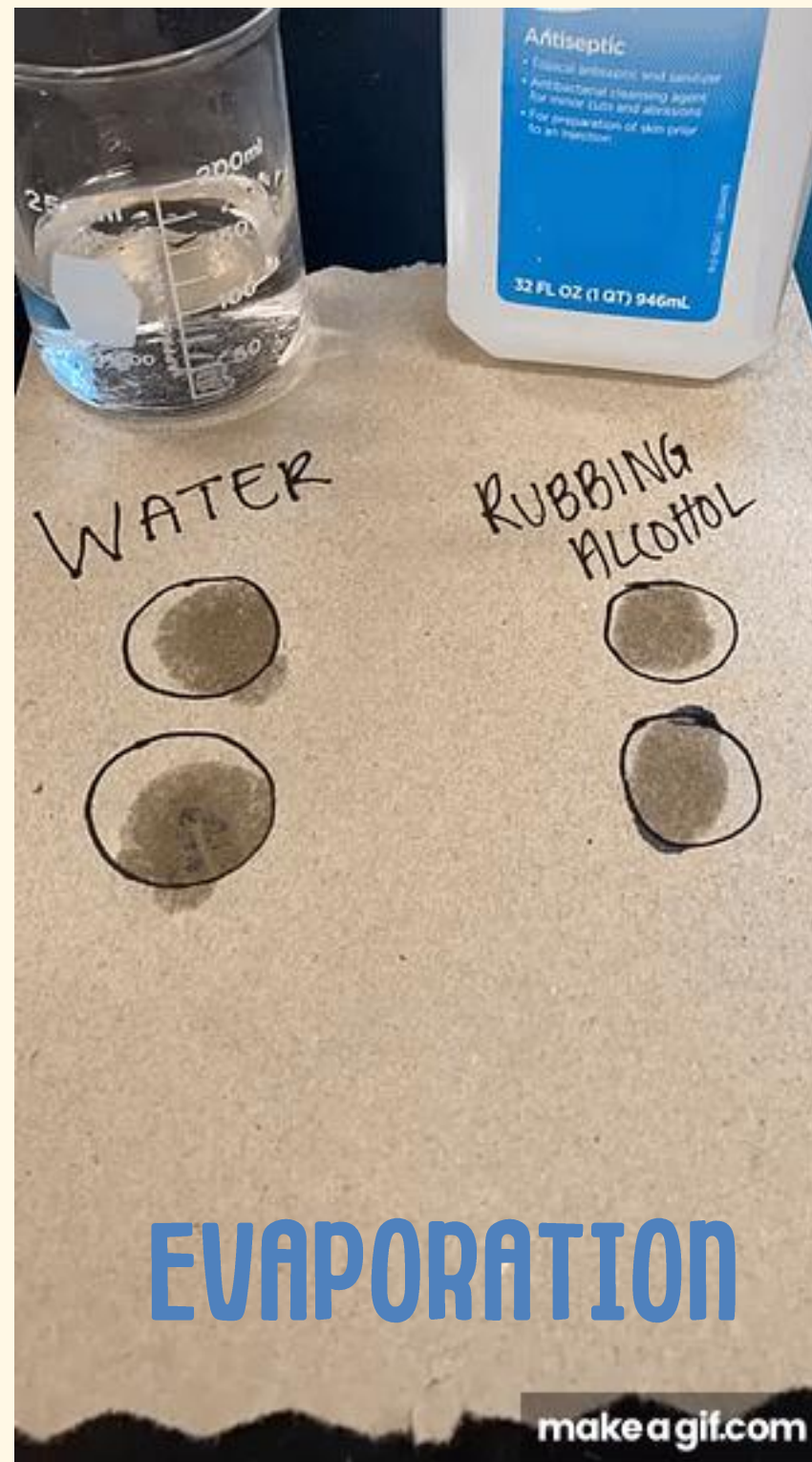


Additional info:

Boiling - occurs when the liquid reaches a specific boiling point, where bubbles of vapor form throughout the liquid and rise to the surface.

Boiling point of water is 100 °C





BOILING POINT OF WATER AND ALCOHOL

Freezing, Melting and Boiling Points of Water



Freezing/Melting point

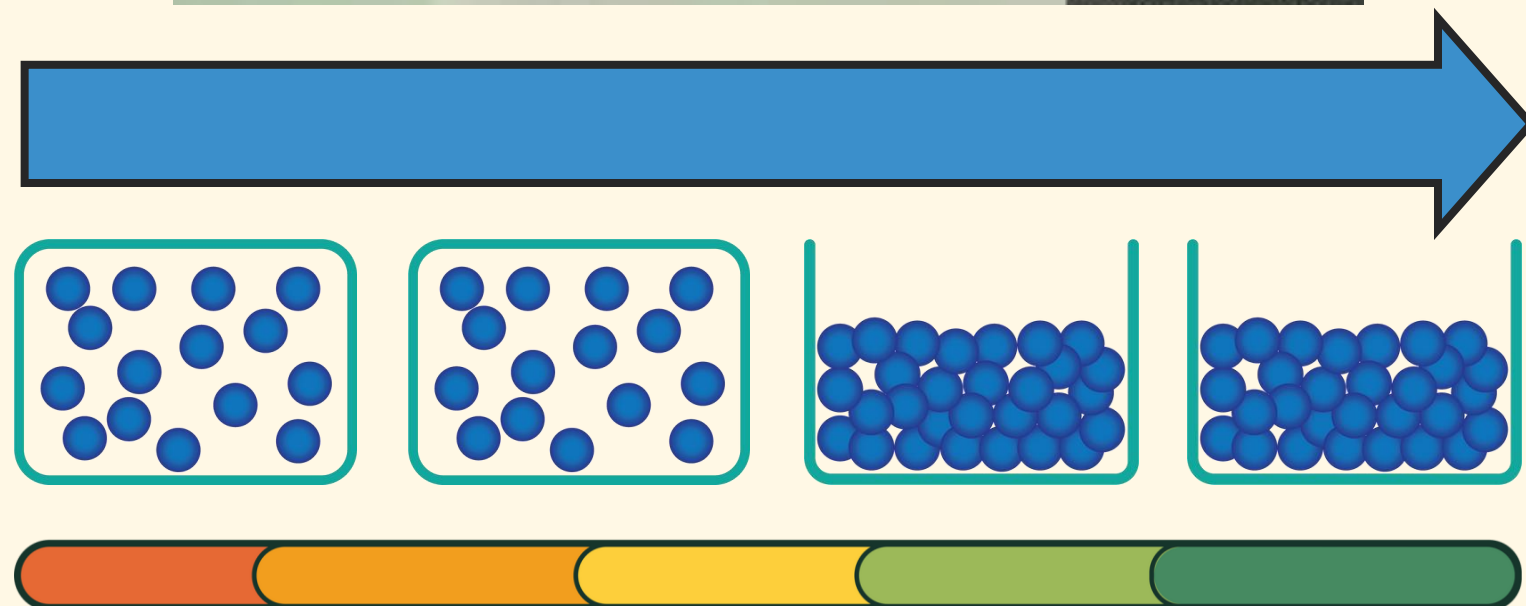


Room temperature



Boiling point

Decrease in Heat Energy



Condensation - The process in which a gas changes into a liquid as it cools and loses energy.

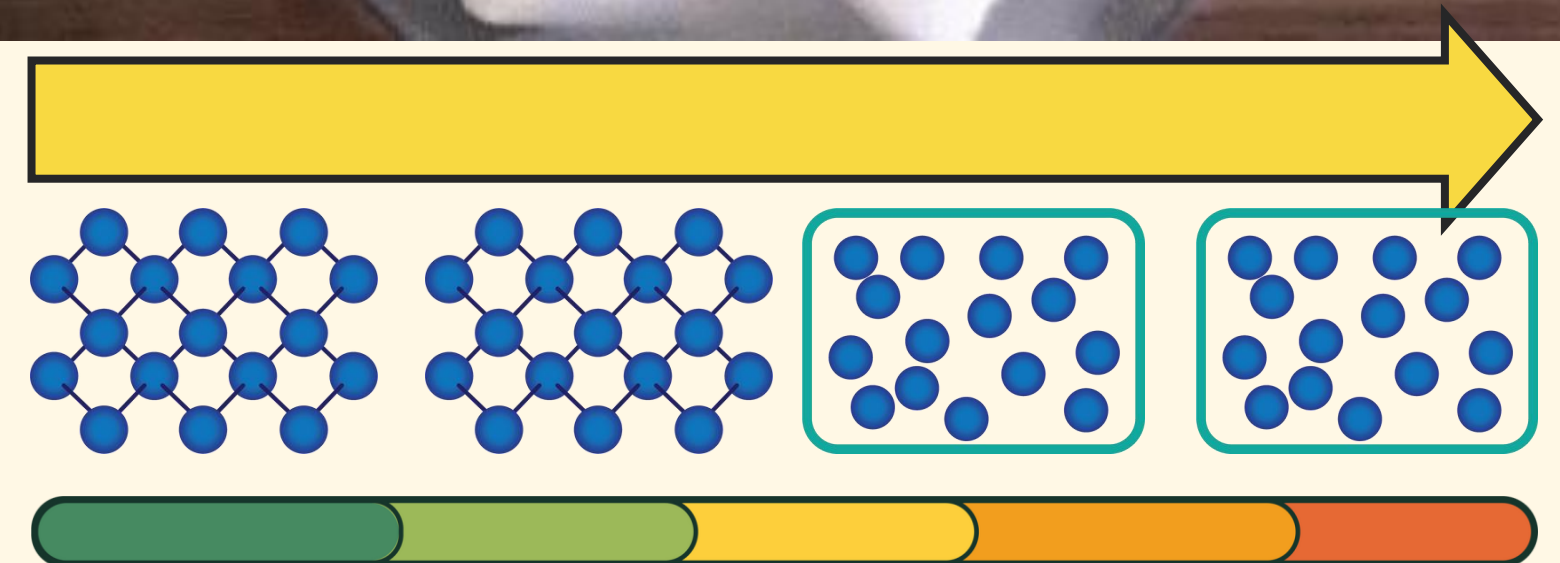


Condensation ex:

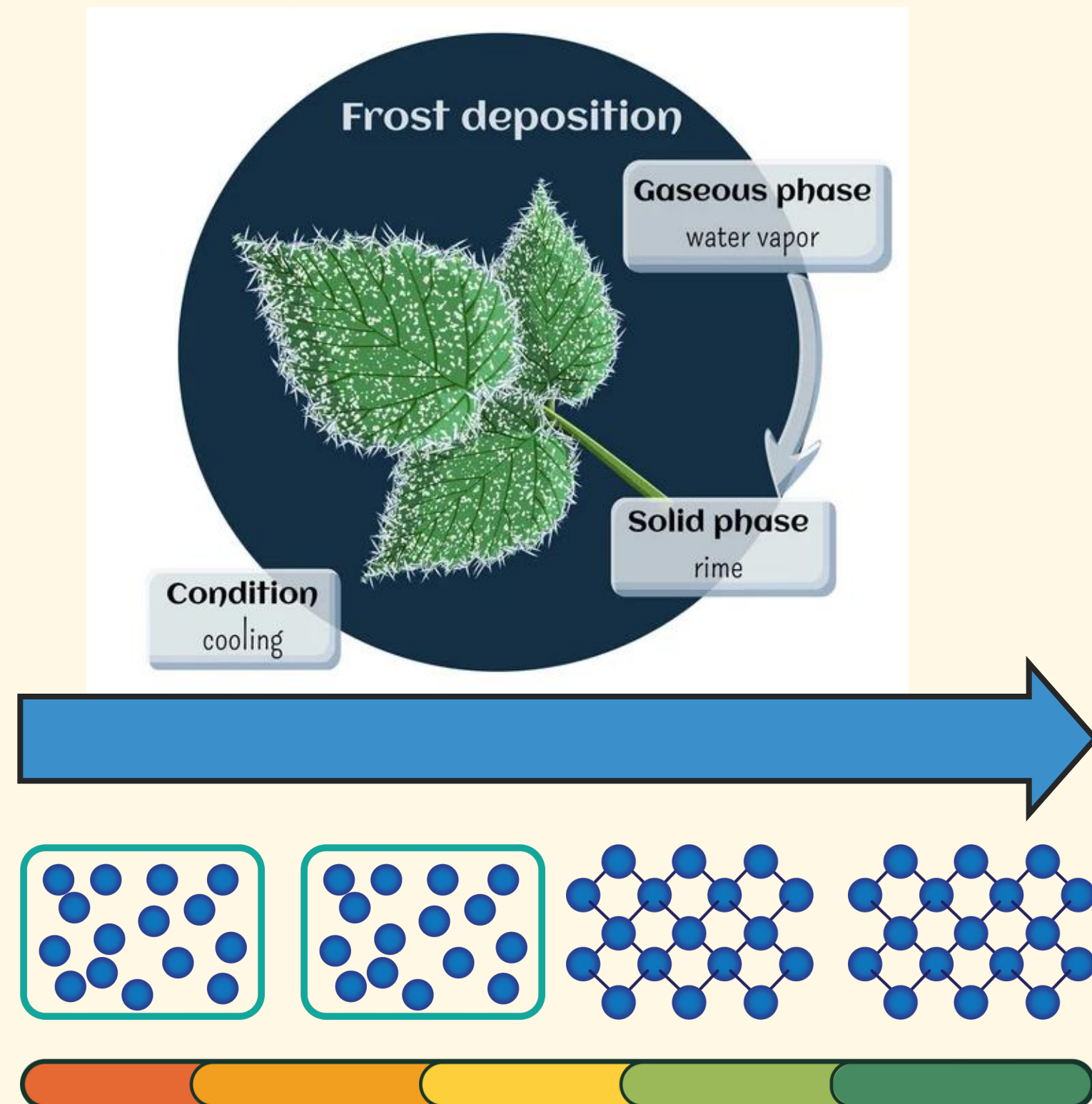
- 1. Dew forms on plants**
- 2. Formation of clouds**

Sublimation - The process in which a solid changes directly into a gas without passing through the liquid state.

Increase in Heat Energy

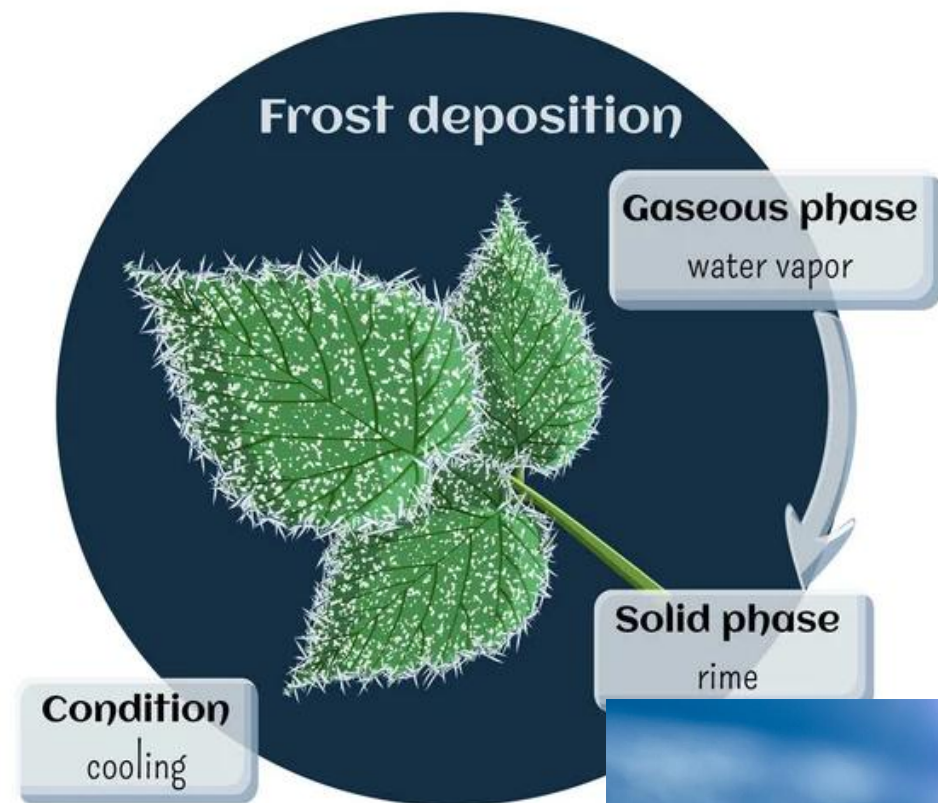


Decrease in Heat Energy



Deposition - process in which a gas changes directly into a solid without passing through the liquid state.

Decrease in Heat Energy

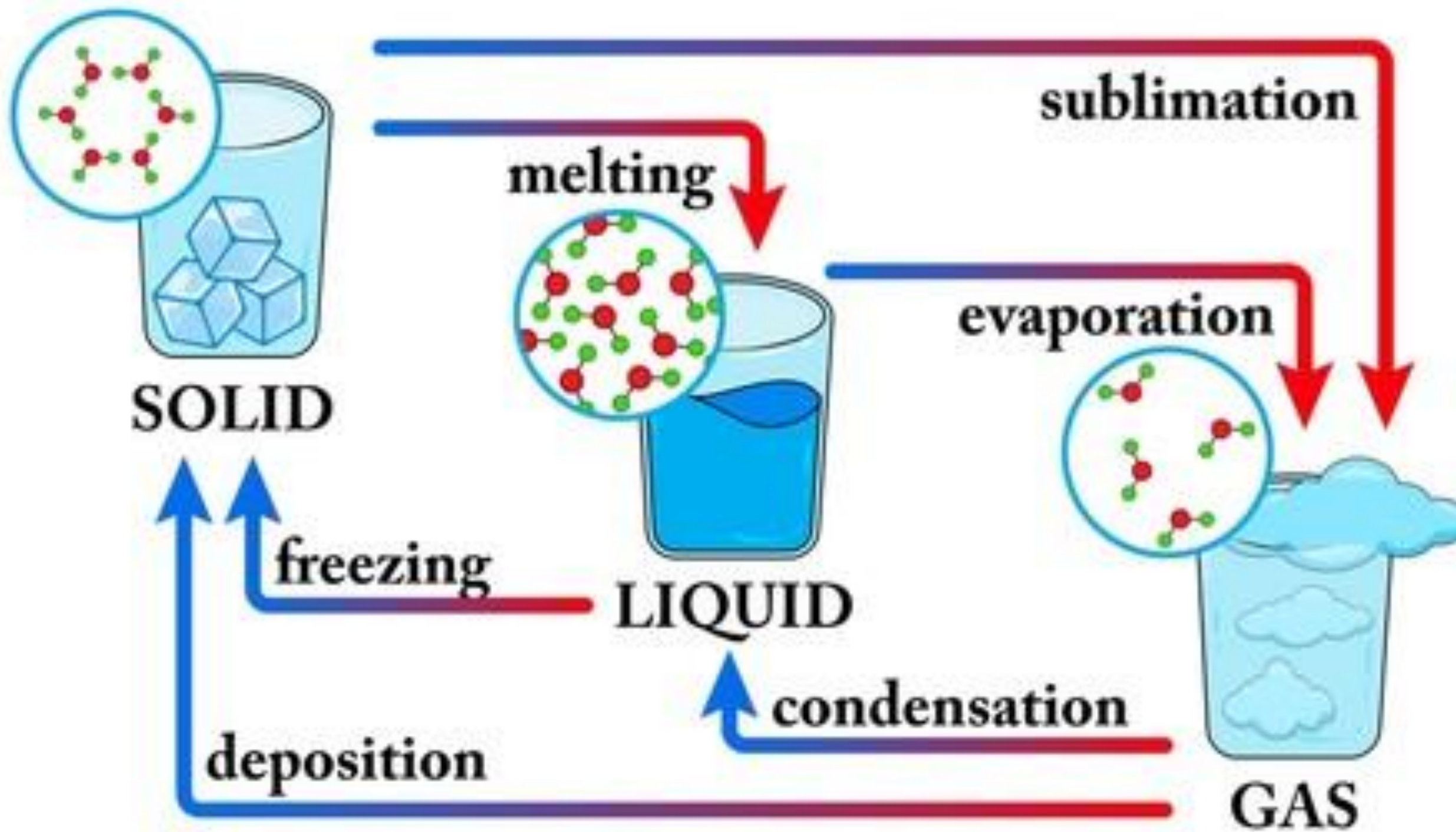


Deposition ex:

1. Formation of frost, snowflakes
2. Formation of some minerals



PHASE CHANGES OF MATTER



PHASE CHANGES OF MATTER

